

รายการอ้างอิง

ภาษาไทย

- กมล ฐนะนพวรรณ. การพัฒนาตัวคุณอัตตราการปล่อยฝุ่นละอองจากโรงโม่หิน (ปีการศึกษา 2540) สาขาวิศวกรรมสิ่งแวดล้อม จุฬาลงกรณ์มหาวิทยาลัย. วิทยานิพนธ์ปริญญาวิศวกรรมศาสตรมหาบัณฑิต ภาควิชาวิศวกรรมสิ่งแวดล้อม จุฬาลงกรณ์มหาวิทยาลัย.
- กรมควบคุมมลพิษ กระทรวงวิทยาศาสตร์ เทคโนโลยีและสิ่งแวดล้อม. การพัฒนา และสร้างระบบสาริตการกำจัดฝุ่นละออง จากอุตสาหกรรมโม่ บด และย่อยหิน. รายงานฉบับกลางฉบับที่ 1. คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. (กุมภาพันธ์ 2540)
- กรมควบคุมมลพิษ กระทรวงวิทยาศาสตร์ เทคโนโลยีและสิ่งแวดล้อม. การพัฒนา และสร้างระบบสาริตการกำจัดฝุ่นละออง จากอุตสาหกรรมโม่ บด และย่อยหิน. รายงานฉบับกลางฉบับที่ 2. คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. (สิงหาคม 2541)
- กองเหมืองแร่ กรมทรัพยากรธรณี. กรณีศึกษาโครงการแก้ไขปัญหาฝุ่นละอองจากอุตสาหกรรมหินก่อสร้างในพื้นที่ทดลอง ต.หน้าพระลาน และบริเวณใกล้เคียง จ.สระบุรี. เอกสารประกอบการสัมมนา โครงการแก้ปัญหามลภาวะจากการทำเหมืองหินและโรงโม่หิน. กรมทรัพยากรธรณี และคณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. (30 กันยายน – 1 ตุลาคม 2541)
- คณาจารย์ คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. โครงการศึกษาวิจัยเรื่อง การจัดการสิ่งแวดล้อมเพื่อแก้ไขปัญหามลพิษจากฝุ่นในพื้นที่เหมืองหินและโรงโม่หิน บริเวณตำบลหน้าพระลานและบริเวณใกล้เคียง จังหวัดสระบุรี. รายงานฉบับสมบูรณ์. กรมทรัพยากรธรณี, จุฬาลงกรณ์มหาวิทยาลัย, มกราคม 2541
- จักรกฤษณ์ แย้มเกตุ. ผลของสารช่วยในการตอกเม็ดยาโดยตรงต่อคุณสมบัติการไหลของผง และลักษณะสมบัติทางกายภาพของเม็ดยา (ปีการศึกษา 2541) สาขาวิศวกรรมเคมี จุฬาลงกรณ์มหาวิทยาลัย. วิทยานิพนธ์ปริญญาวิศวกรรมศาสตรมหาบัณฑิต ภาควิชาวิศวกรรมเคมี จุฬาลงกรณ์มหาวิทยาลัย.

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ภาคผนวก

ภาคผนวก ก.

รายละเอียดของอุปกรณ์ที่ใช้ในการทดลอง

1. เครื่องทดสอบลักษณะสมบัติของวัสดุผง (Powder Characteristic Tester)

รุ่น	Model PT-N
บริษัท	Hosokawa Micron Corporation
กำลังไฟฟ้า	AC 100 V. 50/60 Hz
อุปกรณ์ประกอบ	26 ชิ้น
เครื่องชั่งสาร	รุ่น FA-2000
น้ำหนักรวม	89 กิโลกรัม

2. เครื่องผสมรูปตัววี (V-Shape Mixer)

รุ่น	VA-5
บริษัท	Tokuju Kosakusho Co.,LTD.
กำลังไฟฟ้า	AC 100 V. 50/60 Hz. 1 phase
ความจุ	10 lite (สูงสุด)
ความเร็วรอบ	30 rpm (คงที่)

3. เครื่องร่อนแยกแบบสั่น (Sato Vibro separator)

รุ่น	400 – 3s
บริษัท	KOEI SANGYO Co.,LTD.
กำลังไฟฟ้า	AC 380 V. 50 Hz. 4 Hw
ความเร็วรอบ	2860 rpm (คงที่)

4. เครื่องวัดความเร็วลม (Air velocity measuring instrument)

รุ่น	471
บริษัท	Dwyer Instruments, INC.
กำลังไฟฟ้า	DC 9 V
ขนาด	166 x 71 x 23 มิลลิเมตร
น้ำหนักรวม	340 กรัม
ช่วงความเร็วที่วัดได้	0 – 30 เมตรต่อวินาที (คลาดเคลื่อน 4% FS.)

5. เครื่องวัดผลต่างความดัน (Pressure differential Measuring Instrument)

รุ่น	603A-4
บริษัท	Dwyer Instruments, INC.
กำลังไฟฟ้า	AC 220 V
น้ำหนักรวม	740 กรัม
ช่วงความดันที่วัดได้	0 – 15 นิ้วน้ำ (สูงสุด, มี %ความคลาดเคลื่อน = 0.5)

6. เทอร์โมคัปเปอ์ (Thermocouple)

บริษัท	เทคโนโลยีอินสตุเมนต์
ชนิด	2 สาย
ขนาดหัววัด	ศก. 3, ยาว 60 มิลลิเมตร
ช่วงอุณหภูมิที่วัดได้	0 – 100 องศาเซลเซียส

7. เครื่องวัดความทึบแสง (Opacity Meter)

รุ่น	6500
บริษัท	WAGER Co., LTD.
กำลังไฟฟ้า	AC 220 V
อุปกรณ์ประกอบ	3 ชั้น
ตัวกำเนิดแสง	LED-Green Gallium Phosphide 570 Nm
ตัวรับแสง	Si Photo Diode

8. เครื่องรับและบันทึกค่าสัญญาณ (Data logger)

รุ่น	DL2000
บริษัท	Wisco Industrail Instruments
กำลังไฟฟ้า	AC 220 V
ช่องสัญญาณ	8 ช่องรับสัญญาณ

9. กล้องควบคุมแบบโปรแกรม (Programable controller)

รุ่น	PROSEC T1 MDR16
บริษัท	Toshiba
กำลังไฟฟ้า	AC 220 V
อุปกรณ์ประกอบ	2 ชั้น

10. เครื่องกำเนิดลม(Blower)

รุ่น	AHD – 324 ขั้วตรง
บริษัท	ตั้งพิริยะ วิศวกรรม
กำลังไฟฟ้า	360 – 380 V. 50 Hz. 9 A. 3 phase
ความเร็วรอบมอเตอร์	2,900 รอบต่อนาที
อัตราการไหลลม	20 ลูกบาศก์เมตรต่อนาที ที่ 580 มิลลิเมตรน้ำ
ขนาด	535 X 840 X 805 มิลลิเมตร

11. เครื่องป้อนชนิดแม่นยำ(Accurate Feeder)

รุ่น	AHD – 324 ขั้วตรง
บริษัท	ตั้งพิริยะ วิศวกรรม
กำลังไฟฟ้า	360 – 380 V. 50 Hz. 9 A. 3 phase
อัตราการป้อน	1.5×10^{-5} ถึง 7.12×10^{-1} ลูกบาศก์ฟุตต่อชั่วโมง
น้ำหนักรวม	6.8 กิโลกรัม
ขนาด	187 X 216 X 191 มิลลิเมตร

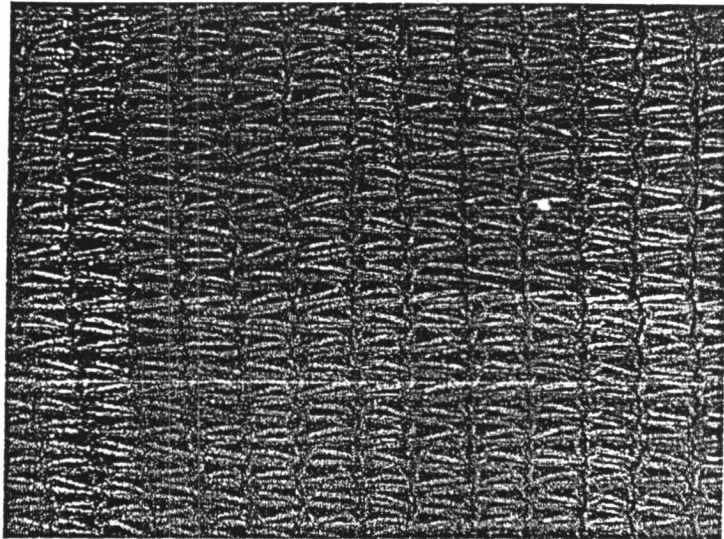
12. ปั๊มสุญญากาศ (Vacuum Pump)

รุ่น	0523 – V103
บริษัท	GAST Manufacturing Co.,LTD.
กำลังไฟฟ้า	220 – 350 V. 50 Hz. 2.8 A. 1 phase
ความเร็วรอบมอเตอร์	1,425 รอบต่อนาที
อัตราการปั๊มสุญญากาศ	4 ลูกบาศก์ฟุตต่อนาที ที่ 580 มิลลิเมตรน้ำ
น้ำหนักรวม	13.5 กิโลกรัม

13. กล้องถ่ายภาพ (Digital V.D.O Camera)

รุ่น	TRV20E
บริษัท	SONY
กำลังไฟฟ้า	DC 7.2 V.
ความกว้างของเลนส์	เส้นผ่าศูนย์กลางยาว 37 มิลลิเมตร
กำลังขยาย	10 – 120 เท่า
น้ำหนักรวม	0.78 กิโลกรัม

รายละเอียดของที่ใช้ในการทดลอง



รูปที่ ก.1 ภาพถ่ายลักษณะของตาข่ายที่ใช้ในการทดลอง

- ตาข่ายที่ใช้ในการทดลองและใช้จริงในโรงไม้หิน

รุ่น	เบอร์ 196
บริษัท	สยามอินดัสตรี จำกัด
ผลิตจากวัสดุ	High Density Polyethylene (HDPE)
เส้นผ่านศูนย์กลางเส้นใย	0.22 มิลลิเมตร ($\pm 5\%$)
เส้นผ่านศูนย์กลาง 1 ช่องเปิด	0.073 มิลลิเมตร

- คุณสมบัติพิเศษของตาข่ายที่ใช้
 1. ไม่ดูดซึมน้ำและสารเคมี
 2. น้ำหนักเบาและคืนตัวได้ดี
 3. มีความเหนียว และแข็งแรงทนทาน เมื่อฉีกขาดไม่มีการกระจายตัวของเส้นใยทอ
 4. มีลักษณะการทอของตาข่ายเป็นแบบลูกโซ่

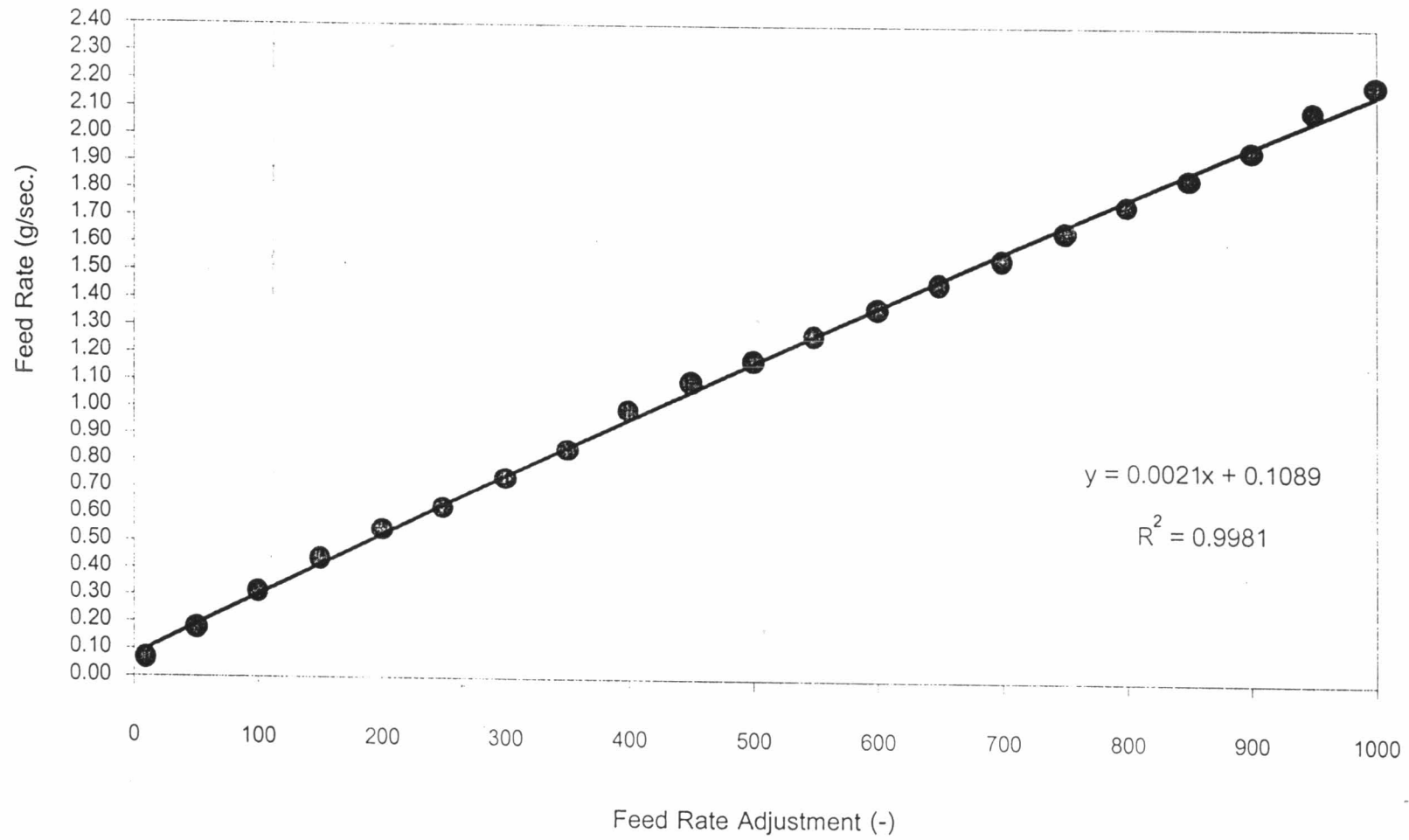
ภาคผนวก ข.

ตารางที่ ข.1 ผลการสอบเทียบเครื่องป้อนชนิดแม่นยำ (Accurate Feeder) สำหรับฝุ่นหิน

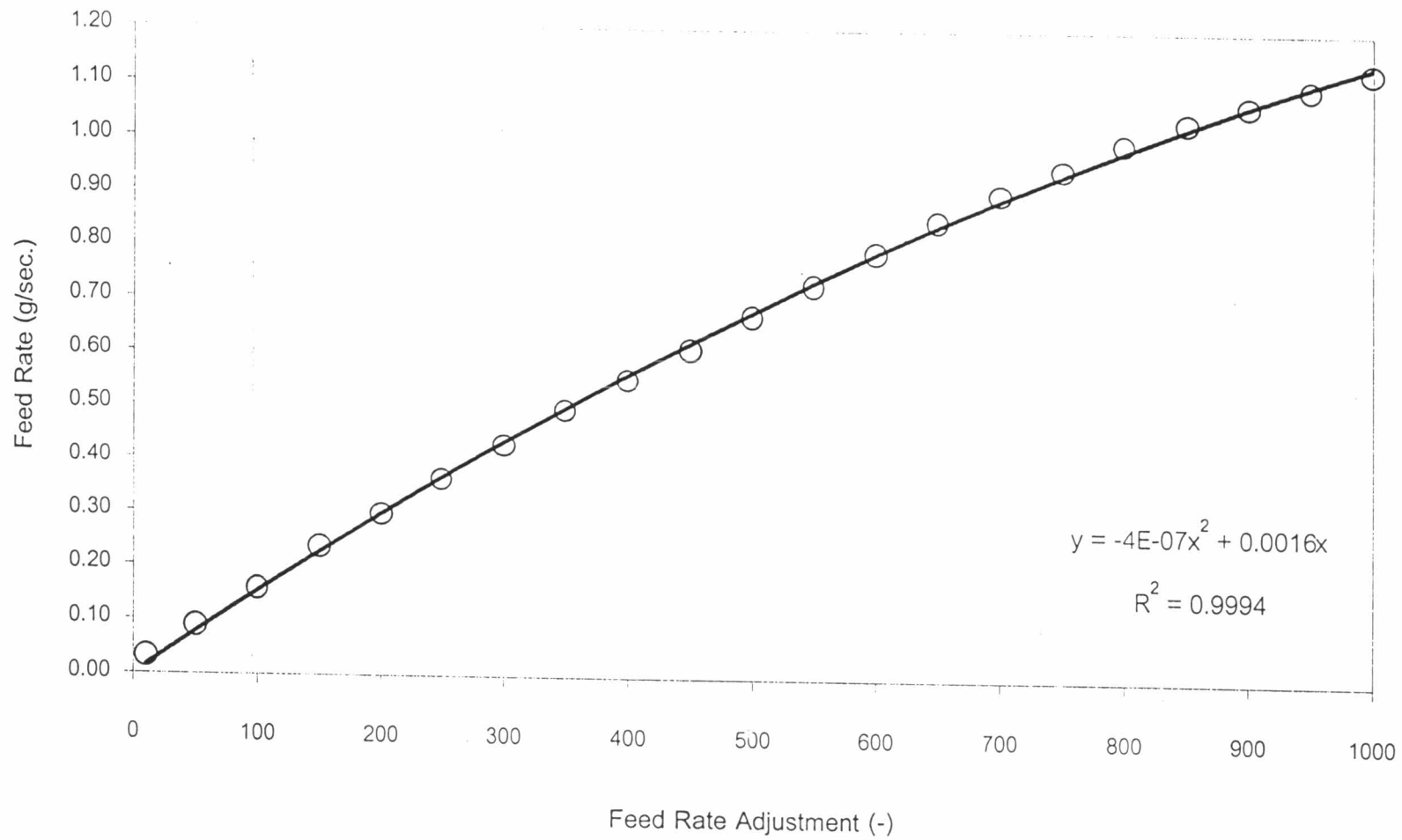
Adjustable Feed Rate	Feed (g)				Feed Rate (g/s)
	1st	2nd	3rd	average	
10	4.29	3.92	4.18	4.13	0.07
50	10.3	10.45	11.44	10.73	0.18
100	19.45	18.39	18.72	18.85	0.31
150	27.33	25.81	25.38	26.17	0.44
200	31.97	33.01	32.67	32.55	0.54
250	38.42	37.22	36.67	37.44	0.62
300	43.59	43.73	44.85	44.06	0.73
350	50.74	50.27	50.83	50.61	0.84
400	59.18	60.08	59.49	59.58	0.99
450	66.84	65.42	65.81	66.02	1.10
500	70.74	70.56	71.11	70.80	1.18
550	78.43	75.69	75.34	76.49	1.27
600	83.32	81.72	82.15	82.40	1.37
650	89.08	87.42	87.44	87.98	1.47
700	94.11	92.06	93.27	93.15	1.55
750	99.15	99.04	99.78	99.32	1.66
800	106.44	104.12	104.69	105.08	1.75
850	110.59	110.62	111.58	110.93	1.85
900	117.63	116.26	117.37	117.09	1.95
950	127.34	125.88	124.12	125.95	2.10
999	132.76	130.26	131.69	131.57	2.19

ตารางที่ ข.2 ผลการสอบเทียบเครื่องป้อนชนิดแม่นยำ(Accurate Feeder) สำหรับฝุ่น EVA

Adjustable Feed Rate	Feed (g)				Feed Rate (g/s)
	1st	2nd	3rd	average	
10	2.42	1.93	1.59	1.98	0.03
50	5.44	5.05	5.62	5.37	0.09
100	9.27	9.11	9.96	9.45	0.16
150	14.36	13.96	14.17	14.16	0.24
200	17.71	17.62	17.93	17.75	0.30
250	21.69	21.33	22.01	21.68	0.36
300	25.61	25.92	25.23	25.59	0.43
350	29.14	30.03	29.62	29.60	0.49
400	32.67	33.25	33.17	33.03	0.55
450	36.5	36.72	36.45	36.56	0.61
500	40.08	40.31	40.53	40.31	0.67
550	43.46	43.97	43.81	43.75	0.73
600	47.11	47.61	47.44	47.39	0.79
650	50.72	51.05	51.13	50.97	0.85
700	53.48	54.02	54.34	53.95	0.90
750	56.55	56.74	56.85	56.71	0.95
800	59.61	59.64	59.82	59.69	0.99
850	61.14	62.13	62.7	61.99	1.03
900	63.24	64.62	63.96	63.94	1.07
950	65.77	65.81	65.9	65.83	1.10
999	67.92	67.66	67.68	67.75	1.13



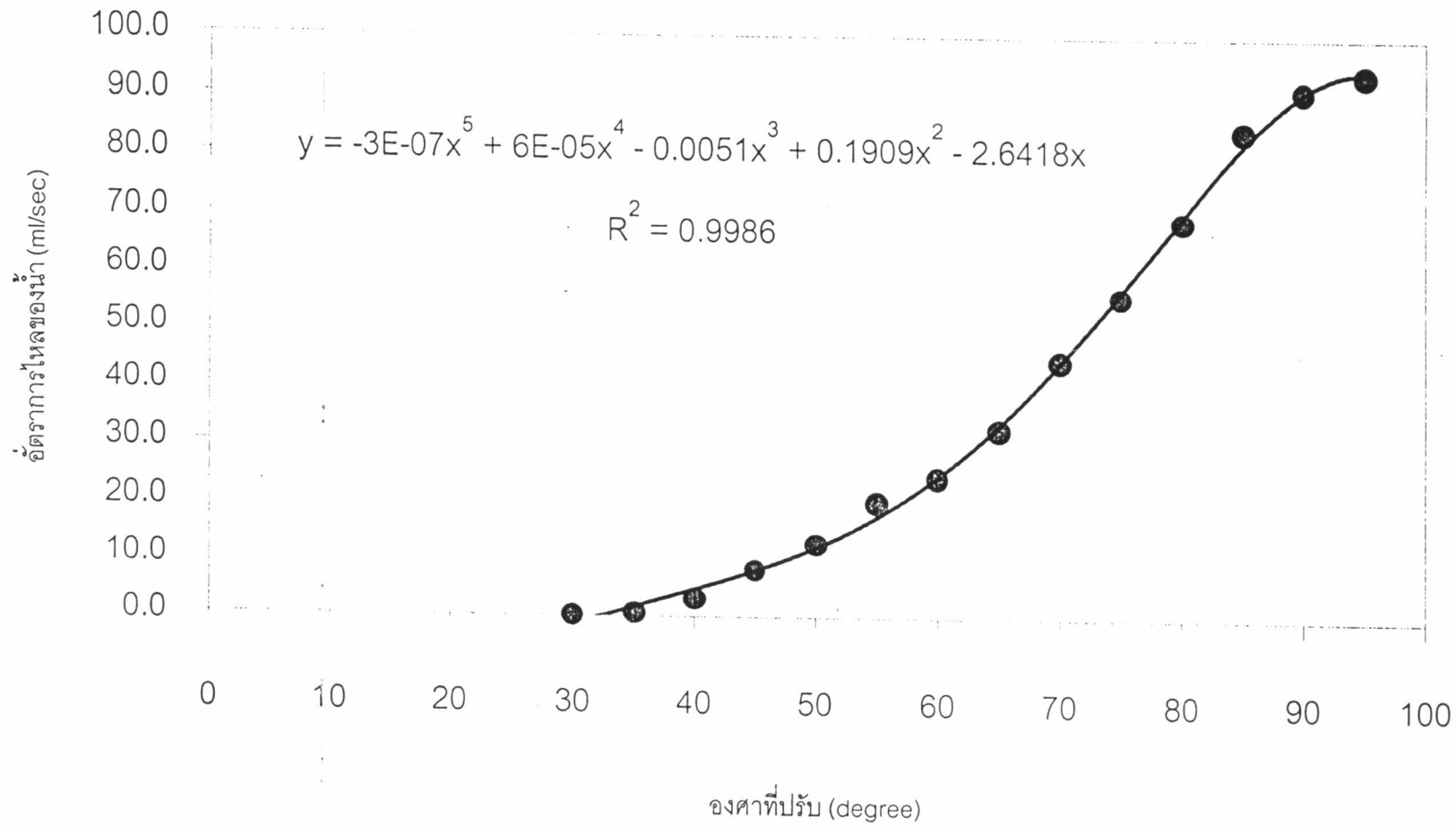
รูปที่ ข.2 ผลการสอบเทียบเครื่องป้อนชนิดแมนย่ำ(สำหรับฝุ่นจากโรงโม่หิน)



รูปที่ ข.2 ผลการสอบเทียบเครื่องป้อนชนิดแมนย่ำ(สำหรับฝุ่น EVA.)

ตารางที่ ข.3 ผลการสอบเทียบอัตราการไหลของน้ำ (Water Flowrate)

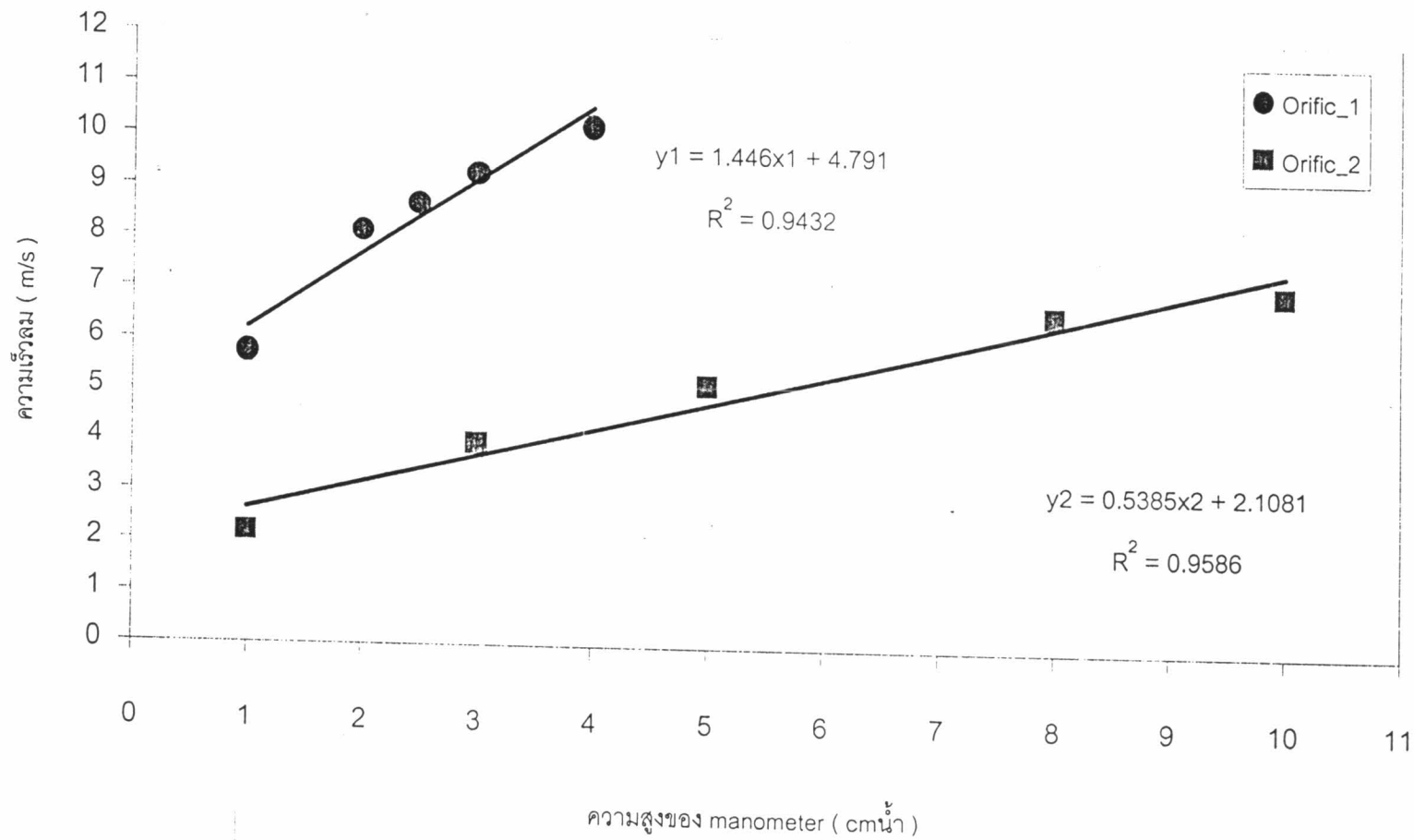
องศาที่ปรับ	อัตราการไหล (cm ³ /sec)				
	ครั้งที่ 1	ครั้งที่ 2	ครั้งที่ 3	ครั้งที่ 4	เฉลี่ย
30	0	0	0	0	0
35	0.51	0.49	0.47	0.48	0.49
40	3.13	3.00	2.95	3.04	3.03
45	8.47	7.77	7.79	8.27	8.07
50	13.28	12.74	12.71	12.21	12.73
55	20.02	20.59	20.12	20.03	20.19
60	23.83	24.58	24.68	24.59	24.42
65	33.11	32.26	33.33	32.47	32.79
70	44.09	44.84	44.05	45.58	44.64
75	55.56	58.21	53.65	55.19	55.65
80	68.97	68.31	69.35	68.59	68.80
85	85.62	86.06	83.33	81.97	84.24
90	89.93	94.52	89.93	90.42	91.20
95	94.88	94.52	92.76	94.16	94.08



รูปที่ ข.3 ผลการสอบเทียบอัตราการไหลของน้ำ (Water Flowrate)

ตารางที่ ข.4 ผลการสอบเทียบความเร็วลมในระบบท่อโดยใช้มาโนมิเตอร์ (Manometer) และแผ่นออริฟิส (Orifice Plate)

เบอร์ของแผ่นออริฟิส	ความสูงของมาโนมิเตอร์ (เซนติเมตร น้ำ)	ความเร็วลมก่อนเข้าสู่กล่องซึ่งตาข่ายที่ตรงกลางท่อ (Duct) [เมตรต่อวินาที]			
		ครั้งที่ 1	ครั้งที่ 2	ครั้งที่ 3	เฉลี่ย
ออริฟิส 1 เส้นผ่านศูนย์กลาง ของรูท่อ เท่ากับ 8 เซนติเมตร	1	5.73	5.77	5.81	5.77
	2	8.13	8.11	8.13	8.12
	2.5	8.66	8.69	8.66	8.67
	3	9.27	9.25	9.25	9.26
	4	10.23	10.21	10.20	10.21
ออริฟิส 2 เส้นผ่านศูนย์กลาง ของรูท่อ เท่ากับ 5 เซนติเมตร	1	2.15	2.17	2.20	2.17
	3	3.97	4.00	3.99	3.99
	5	5.19	5.20	5.22	5.20
	8	6.63	6.70	6.55	6.63
	10	7.03	7.14	7.11	7.09



รูปที่ ข.4 ผลการสอบเทียบความเร็วลมในระบบท่อโดยใช้มาโนมิเตอร์ (Manometer) และแผ่นออริฟิส (Orific Plate)

ผลการสอบเทียบความเข้มข้นฝุ่นหิน (Stone Dust Concentration) และตัวเลขจากเครื่องวัดความทึบแสง (Opacity meter)

ตารางที่ ข.5

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 4.71 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 2.984, (ft) 0.17

Accurate Feeder Adjust	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm3/s)	Dust conc. From calculate (g/m3)	Dust conc. Iso - Kinetics (g/m3)	Opacity Reading [-]
100	0.046	0.319	4.801	1.141	0.0152	180	16	21.5	488.7959	0.172	0.1755	9.1476
200	0.046	0.529	4.801	1.141	0.0222	180	16	21.5	488.7959	0.252	0.2565	18.8810
300	0.046	0.739	4.801	1.141	0.0321	180	16	21.5	488.7959	0.365	0.3718	26.2990
400	0.046	0.949	4.801	1.141	0.0382	180	16	21.5	488.7959	0.434	0.4417	28.5510
500	0.046	1.159	4.801	1.141	0.0442	180	16	21.5	488.7959	0.502	0.5115	37.7330
600	0.046	1.369	4.801	1.141	0.0526	180	16	21.5	488.7959	0.597	0.6083	41.9740
700	0.046	1.579	4.801	1.141	0.0552	180	16	21.5	488.7959	0.627	0.6388	42.6940
800	0.046	1.789	4.801	1.141	0.0606	180	16	21.5	488.7959	0.688	0.7009	47.3170
900	0.046	1.999	4.801	1.141	0.0636	180	16	21.5	488.7959	0.723	0.7356	54.0280

ตารางที่ ข.6

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 4.71 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 4.658 , (ft) 0.02

Accurate Feeder Adjust	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time Range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm3/s)	Dust conc. From calculate (g/m3)	Dust conc. Iso - Kinetics (g/m3)	Opacity Reading [-]
100	0.071	0.319	7.493	1.781	0.0133	180	26	20	738.8776	0.100	0.0984	8.8957
200	0.071	0.529	7.493	1.781	0.0256	180	26	20	738.8776	0.192	0.1898	19.0097
300	0.071	0.739	7.493	1.781	0.0294	180	26	20	738.8776	0.221	0.2180	26.8172
400	0.071	0.949	7.493	1.781	0.0399	180	26	20	738.8776	0.300	0.2958	29.5312
500	0.071	1.159	7.493	1.781	0.0481	180	26	20	738.8776	0.361	0.3564	38.7169
600	0.071	1.369	7.493	1.781	0.0543	180	26	20	738.8776	0.408	0.4024	42.8565
700	0.071	1.579	7.493	1.781	0.0565	180	26	20	738.8776	0.425	0.4192	42.4864
800	0.071	1.789	7.493	1.781	0.0581	180	26	20	738.8776	0.437	0.4305	47.5001
900	0.071	1.999	7.493	1.781	0.0669	180	26	20	738.8776	0.503	0.4963	53.6801

ตารางที่ ข.7

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 4.71 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 5.673 , (ft) 0

Accurate Feeder Adjust	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time Range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm3/s)	Dust conc. From calculate (g/m3)	Dust conc. Iso - Kinetics (g/m3)	Opacity Reading [-]
100	0.087	0.319	9.129	2.169	0.0142	180	34	19	917.9133	0.086	0.0862	9.1945
200	0.087	0.529	9.129	2.169	0.0328	180	34	19	917.9133	0.199	0.1996	19.7873
300	0.087	0.739	9.129	2.169	0.0439	180	34	19	917.9133	0.266	0.2672	27.6284
400	0.087	0.949	9.129	2.169	0.0500	180	34	19	917.9133	0.303	0.3043	29.0197
500	0.087	1.159	9.129	2.169	0.0597	180	34	19	917.9133	0.361	0.3633	36.4697
600	0.087	1.369	9.129	2.169	0.0678	180	34	19	917.9133	0.410	0.4126	42.6972
700	0.087	1.579	9.129	2.169	0.0689	180	34	19	917.9133	0.417	0.4193	45.1190
800	0.087	1.789	9.129	2.169	0.0711	180	34	19	917.9133	0.430	0.4327	47.3157
900	0.087	1.999	9.129	2.169	0.0823	180	34	19	917.9133	0.498	0.5008	55.6165

ผลการสอบเทียบความเข้มข้นฝุ่น EVA (EVA Dust Concentration) และตัวเลขจากเครื่องวัดความทึบแสง (Opacity meter)

ตารางที่ ข.8

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 30.57 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 60.852

Accurate Feeder Adjust	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time Range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm ³ /s)	Dust conc. From calculate (g/m ³)	Dust conc. Iso - Kinetics (g/m ³)	Opacity Reading [-]
100	0.046	0.156	4.801	1.141	0.0016	180	16	21.5	488.7959	0.018	0.0185	0.7595
200	0.046	0.304	4.801	1.141	0.0026	180	16	21.5	488.7959	0.030	0.0301	1.1119
300	0.046	0.444	4.801	1.141	0.0043	180	16	21.5	488.7959	0.049	0.0498	1.2313
400	0.046	0.576	4.801	1.141	0.0049	180	16	21.5	488.7959	0.056	0.0567	2.0650
500	0.046	0.700	4.801	1.141	0.0072	180	16	21.5	488.7959	0.082	0.0833	3.6971
600	0.046	0.816	4.801	1.141	0.0078	180	16	21.5	488.7959	0.089	0.0903	3.7707
700	0.046	0.924	4.801	1.141	0.0123	180	16	21.5	488.7959	0.140	0.1423	6.3088
800	0.046	1.024	4.801	1.141	0.0142	180	16	21.5	488.7959	0.161	0.1643	6.4506
900	0.046	1.116	4.801	1.141	0.0169	180	16	21.5	488.7959	0.192	0.1956	6.7346

ตารางที่ ข.9

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 30.57 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 94.984

Accurate Feeder Adjust	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time Range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm3/s)	Dust conc. From calculate (g/m3)	Dust conc. Iso - Kinetics (g/m3)	Opacity Reading [-]
100	0.071	0.156	7.493	1.781	0.0018	180	26	20	738.8776	0.014	0.0136	0.8737
200	0.071	0.304	7.493	1.781	0.0030	180	26	20	738.8776	0.023	0.0222	1.4344
300	0.071	0.444	7.493	1.781	0.0051	180	26	20	738.8776	0.038	0.0378	1.5826
400	0.071	0.576	7.493	1.781	0.0060	180	26	20	738.8776	0.045	0.0445	2.8814
500	0.071	0.700	7.493	1.781	0.0069	180	26	20	738.8776	0.052	0.0512	3.0449
600	0.071	0.816	7.493	1.781	0.0103	180	26	20	738.8776	0.077	0.0764	5.1146
700	0.071	0.924	7.493	1.781	0.0170	180	26	20	738.8776	0.128	0.1260	6.2208
800	0.071	1.024	7.493	1.781	0.0188	180	26	20	738.8776	0.141	0.1394	6.7272
900	0.071	1.116	7.493	1.781	0.0193	180	26	20	738.8776	0.145	0.1431	6.8495

ตารางที่ ข.10

เส้นผ่านศูนย์กลางท่อ 0.11 เมตร, พื้นที่หน้าตัดท่อ 0.0095 ตารางเมตร, เส้นผ่านศูนย์กลางภายในท่อหัวดูด 0.004 เซนติเมตร, พื้นที่หน้าตัดท่อหัวดูด 1.257×10^{-5} ตารางเซนติเมตร, ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter) 30.57 ไมโครเมตร, ความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, ตัวเลขสโตกส์ (St) 115.677

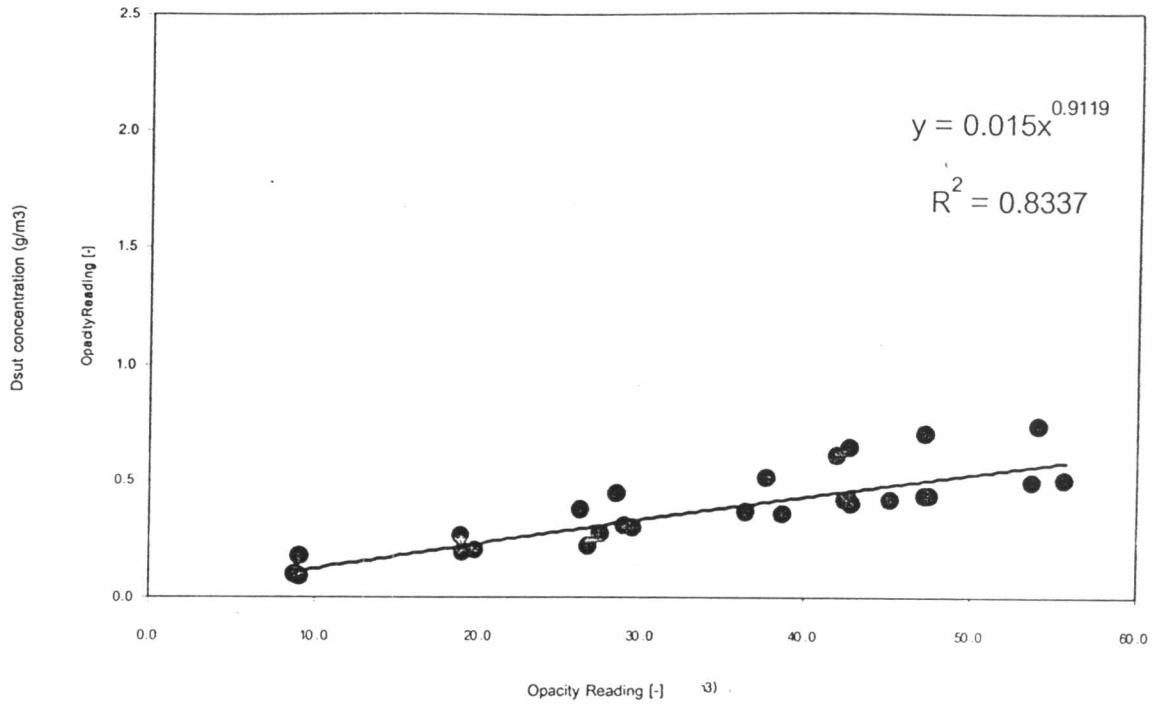
Accurate Feeder Adjust	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Average weight of dust (g)	Sampling Time Range (sec)	Rotameter Sampling Flowrate (l/min)	Pressure drop in Vacuum Pump (inHg)	Actual sampling Flow rate (cm ³ /s)	Dust conc. From calculate (g/m ³)	Dust conc. Iso - Kinetics (g/m ³)	Opacity Reading [-]
100	0.087	0.156	9.129	2.169	0.0024	180	34	19	917.9133	0.015	0.0146	0.7048
200	0.087	0.304	9.129	2.169	0.0042	180	34	19	917.9133	0.025	0.0256	1.1794
300	0.087	0.444	9.129	2.169	0.0052	180	34	19	917.9133	0.031	0.0316	1.5332
400	0.087	0.576	9.129	2.169	0.0061	180	34	19	917.9133	0.037	0.0371	2.8318
500	0.087	0.700	9.129	2.169	0.0068	180	34	19	917.9133	0.041	0.0414	3.7200
600	0.087	0.816	9.129	2.169	0.0098	180	34	19	917.9133	0.059	0.0596	4.2154
700	0.087	0.924	9.129	2.169	0.0170	180	34	19	917.9133	0.103	0.1035	6.2975
800	0.087	1.024	9.129	2.169	0.0198	180	34	19	917.9133	0.120	0.1205	6.5995
900	0.087	1.116	9.129	2.169	0.0275	180	34	19	917.9133	0.166	0.1674	7.7607

ตารางที่ ข.11 ความสัมพันธ์ระหว่างความเข้มข้นฝุ่นหิน (Stone Dust Concentration) และตัวเลขค่าความทึบแสง (Opacity)

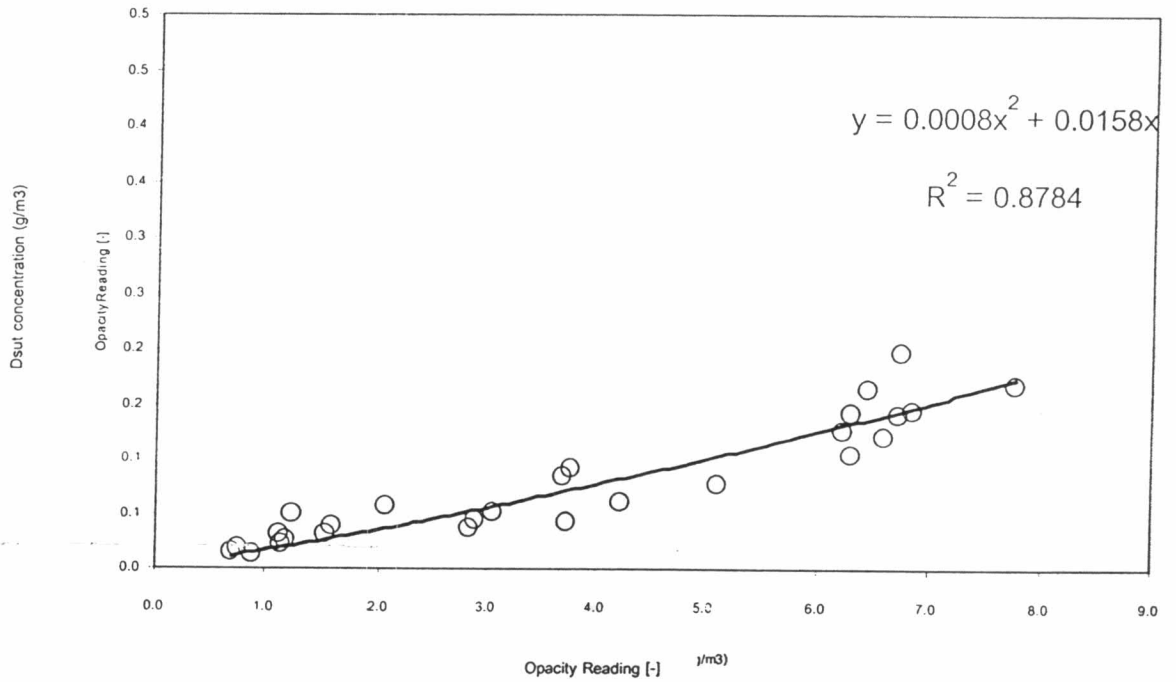
Opacity Reading [-]	Dust conc. (g/m ³)
8.8957	0.098
9.1945	0.086
9.1476	0.176
19.0097	0.190
19.7873	0.200
26.8172	0.218
18.8810	0.257
27.6284	0.267
29.5312	0.296
29.0197	0.304
38.7169	0.356
36.4697	0.363
26.2990	0.372
42.8565	0.402
42.6972	0.413
42.4864	0.419
45.1190	0.419
47.5001	0.431
47.3157	0.433
28.5510	0.442
53.6801	0.496
55.6165	0.501
37.7330	0.511
41.9740	0.608
42.6940	0.639
47.3170	0.701
54.0280	0.736

ตารางที่ ข.12 ความสัมพันธ์ระหว่างความเข้มข้นฝุ่น EVA (EVA Dust Concentration) และตัวเลขค่าความทึบแสง (Opaccity)

Opacity Reading [-]	Dust conc. (g/m3)
0.7048	0.015
0.8737	0.014
0.7595	0.019
1.1344	0.022
1.1794	0.026
1.1119	0.030
1.5332	0.032
2.8318	0.037
1.5826	0.038
3.7200	0.041
2.8814	0.044
1.2313	0.050
3.0449	0.051
2.0650	0.057
4.2154	0.060
5.1146	0.076
3.6971	0.083
3.7707	0.090
6.2975	0.103
6.5995	0.120
6.2208	0.126
6.7272	0.139
6.3088	0.142
6.8495	0.143
6.4506	0.164
7.7607	0.167
6.7346	0.196



รูปที่ ข.5 ผลการสอบเทียบความเข้มข้นฝุ่นหินกับตัวเลขค่าความทึบแสง



รูปที่ ข.6 ผลการสอบเทียบความเข้มข้นฝุ่น EVA กับตัวเลขค่าความทึบแสง

ตารางที่ ข.13 ความสัมพันธ์ระหว่างความเร็วลมปรากฏบริเวณหน้าตาข่ายและตัวเลขสโตกส์ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter, D_p) 4.71 ไมโครเมตร, ความหนาแน่นอากาศ (ρ_a) เท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนาแน่นอนุภาคฝุ่นหิน (ρ_s) เท่ากับ 2.6 กรัม/ลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, เส้นผ่านศูนย์กลางเส้นใยของตาข่าย (D) เท่ากับ 0.022 เซนติเมตร, Cunningham slip correction factor (C_c) เท่ากับ 1.026, อัตราส่วนระหว่าง D_p/D เท่ากับ 0.0292

$$S_t = \frac{[D_p^2 * \rho_p * U_o * C_c]}{18 * \mu * D}$$

เมื่อ S_t คือ ตัวเลขสโตกส์

U_o คือ ความเร็วลมปรากฏบริเวณหน้าตาข่ายเป็ยก

U_o (m/sec)	Stoke number, S_t [-]
1.141	2.9844
1.781	4.6583
2.169	5.6732

ตารางที่ ข.14 ความสัมพันธ์ระหว่างความเร็วลมปรากฏบริเวณหน้าตาข่ายและตัวเลขสโตกส์ขนาดอนุภาคเฉลี่ย (Geometric Mean Diameter, D_p) 30.57 ไมโครเมตร, ความหนาแน่นอากาศ (ρ_a) เท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนาแน่นอนุภาคฝุ่นหิน (ρ_s) เท่ากับ 1 กรัม/ลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที, เส้นผ่านศูนย์กลางเส้นใยของตาข่าย (D) เท่ากับ 0.022 เซนติเมตร, Cunningham slip correction factor (C_c) เท่ากับ 1.026, อัตราส่วนระหว่าง D_p/D เท่ากับ 0.0292

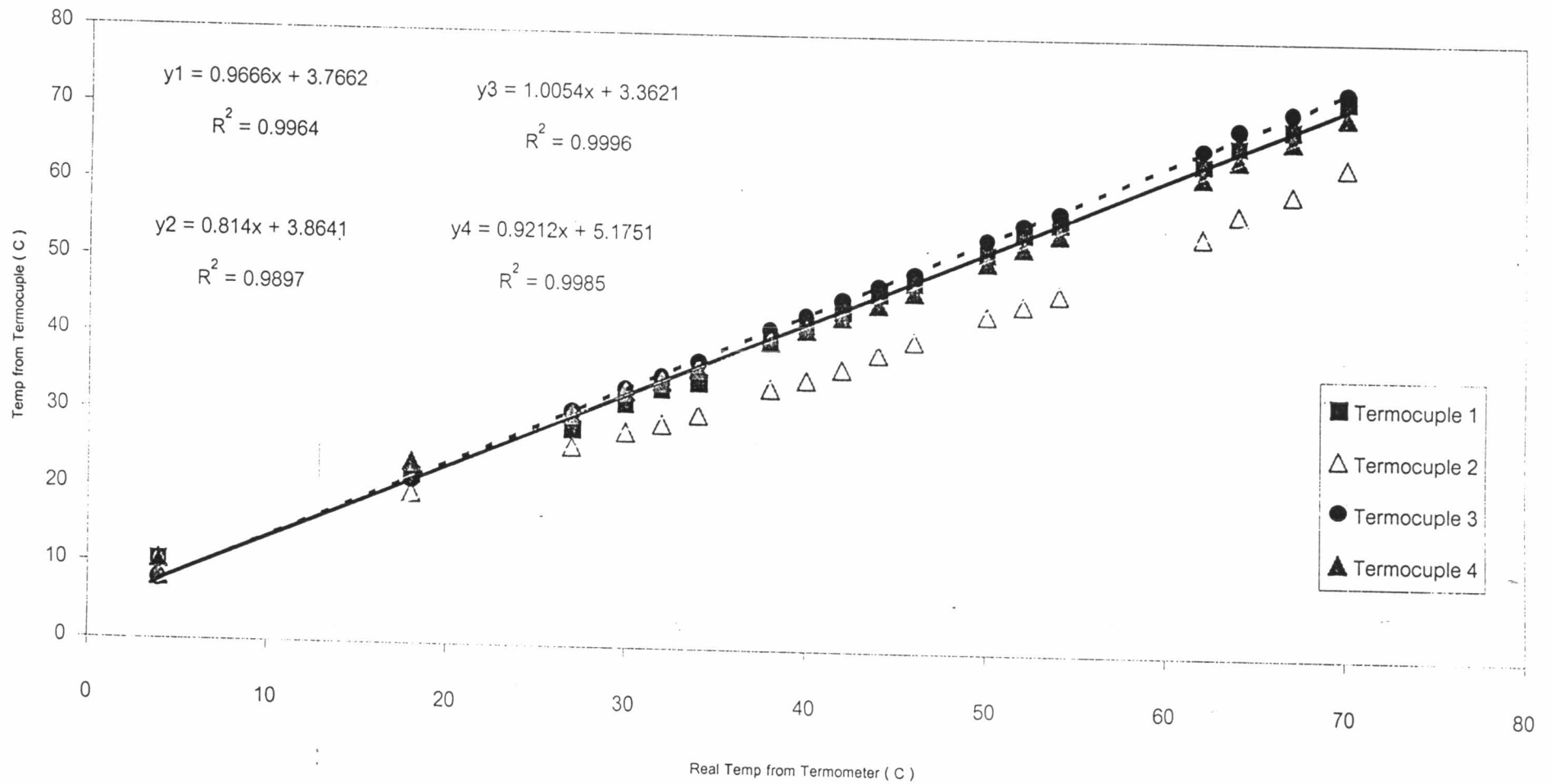
U_o (m/sec)	Stoke number, S_t [-]
1.141	60.8516
1.781	94.9839
2.169	115.6767

ตารางที่ ข.15 ผลการสอบเทียบอุณหภูมิกระเปาะแห้งและกระเปาะเปียกที่บริเวณก่อนทางเข้าและหลังทางออกจากห้องซึ่งตาข่ายจากเทอร์โมคัมเปอร์ โดยใช้เทอร์โมมิเตอร์มาตรฐาน หน่วยเป็นองศาเซลเซียส

เมื่อ Termo.1 คือ อุณหภูมิกระเปาะแห้งขาเข้าที่วัดได้จากเทอร์โมคัมเปอร์ Termo.3 คือ อุณหภูมิกระเปาะแห้งขาออกที่วัดได้จากเทอร์โมคัมเปอร์

Termo.2 คือ อุณหภูมิกระเปาะเปียกขาเข้าที่วัดได้จากเทอร์โมคัมเปอร์ Termo.4 คือ อุณหภูมิกระเปาะเปียกขาออกที่วัดได้จากเทอร์โมคัมเปอร์

Temp. Reff.	Termo. 1	Termo. 2	Termo. 3	Termo. 4	Termo. 1	Termo. 2	Termo. 3	Termo. 4	Termo. 1	Termo. 2	Termo. 3	Termo. 4	Termo. 1	Termo. 2	Termo. 3	Termo. 4
Degree C	Test 1	Test 1	Test 1	Test 1	Test 2	Test 2	Test 2	Test 2	Test 3	Test 3	Test 3	Test 3	Aver.(c)	Aver.(c)	Aver.(c)	Aver.(c)
4	8.156	6.862	6.886	5.763	9.109	19.853	1.563	2.295	13.431	4.347	15.263	16.337	10.232	10.354	7.904	8.131667
18	17.656	18.144	17.656	23.98	20.635	25.665	20.635	22.002	27.302	14.847	25.226	24.982	21.86433	19.552	21.17233	23.65467
27	21.587	23.687	26.984	27.155	30.501	33.26	32.21	31.258	33.04	21.05	32.454	32.308	28.376	25.999	30.54933	30.24033
30	25.495	25.201	29.695	29.817	33.187	35.067	35.287	35.116	36.654	23.736	35.824	35.018	31.77867	28.00133	33.602	33.317
32	27.497	25.958	31.331	30.623	36.63	36.606	37.289	37.118	37.045	24.811	37.143	36.142	33.724	29.125	35.25433	34.62767
34	28.889	27.448	34.139	32.454	36.288	37.363	38.608	38.584	38.681	26.398	39.072	37.998	34.61933	30.403	37.273	36.34533
38	34.603	32.454	38.584	36.264	41.88	39.096	42.271	41.587	44.371	30.159	44.151	42.295	40.28467	33.903	41.66867	40.04867
40	37.167	34.066	40.684	38.535	45.006	40.195	44.811	43.346	44.982	31.062	45.275	43.126	42.385	35.10767	43.59	41.669
42	39.463	36.02	42.759	40.269	46.203	41.197	46.838	45.226	47.106	32.479	47.668	44.737	44.25733	36.56533	45.755	43.41067
44	41.465	38.291	44.029	41.661	48.645	43.468	49.402	46.862	50.037	34.09	49.109	46.886	46.71567	38.61633	47.51333	45.13633
46	44.151	41.026	45.641	43.687	48.596	44.42	50.72	48.376	51.38	35.604	51.087	48.4	48.04233	40.35	49.14933	46.821
50	48.645	45.69	50.623	47.839	53.26	46.984	54.725	52.234	53.846	39.096	55.751	52.698	51.917	43.92333	53.69967	50.92367
52	50.867	47.619	52.21	50.452	55.116	47.717	57.143	53.871	57.582	40.513	57.558	54.286	54.52167	45.283	55.637	52.86967
54	52.308	49.231	54.042	52.625	57.363	49.109	58.291	55.482	58.022	41.954	59.389	55.678	55.89767	46.76467	57.24067	54.595
62	59.853	58.388	62.784	60.537	65.201	56.313	67.057	62.784	66.447	48.645	67.643	63.223	63.83367	54.44867	65.828	62.18133
64	62.662	63.077	66.691	63.81	66.496	58.291	69.231	64.567	69.792	50.916	69.988	65.397	66.31667	57.428	68.63667	64.59133
67	64.542	66.398	68.645	65.788	69.524	60	71.722	67.35	71.941	53.822	72.112	68.376	68.669	60.07333	70.82633	67.17133
70	69.035	71.16	71.819	69.353	73.504	63.199	74.603	71.087	75.018	56.752	73.822	70.891	72.519	63.70367	73.41467	70.44367



รูปที่ ข.7 ผลการสอบเทียบอุณหภูมิกระเปาะเปียกและกระเปาะแห้งที่บริเวณขาเข้าลำขาออกจากตาข่าย

ภาคผนวก ค.

ตารางที่ ค.1 ผลการทดลองด้านสมบัติการไหลของฝุ่นหิน

Sampling Test	test 1	test 2	test 3	Average	Unit	Index
Areat Density	0.578	0.578	0.573	<u>0.576</u>	g/cc	
Pack Density	0.934	1.049	1.083	<u>1.022</u>	g/cc	
Compressibility	38.100	44.800	47.000	<u>43.300</u>	%	
Angle of Repose	51.100	51.200	48.600	<u>50.300</u>	degree	
Index	12.000	12.000	12.000	<u>12.000</u>		
Angle of Fall	23.400	19.200	24.800	<u>22.467</u>	degree	
Index	21.000	22.000	20.000	<u>21.000</u>		
Angle of Different	27.700	32.000	23.800	<u>27.833</u>	degree	
Cohe.	90.000	81.700	85.000	<u>85.567</u>	%	
Index	0.000	0.000	0.000	<u>0.000</u>		
Angle of Spatula	76.200	74.900	85.000	<u>78.700</u>	degree	
Index	9.500	10.000	10.000	<u>9.833</u>		
Dispersibility	27.000	21.700	20.100	<u>22.933</u>	%	
Index	17.000	16.000	15.000	<u>16.000</u>		
Flow Index	26.000	24.000	22.000	<u>24.000</u>		Bad
Flood Index	65.000	68.000	55.000	<u>62.667</u>		Fairly High

ตารางที่ ค.2 ผลการทดลองด้านสมบัติการไหลของฝุ่น EVA

Sampling Test	test 1	test 2	test 3	Average	Unit	Index
Areat Density	0.246	0.256	0.260	<u>0.254</u>	g/cc	
Pack Density	0.471	0.465	0.485	<u>0.474</u>	g/cc	
Compressibility	47.771	44.946	46.392	<u>46.370</u>	%	
Angle of Repose	51.700	49.200	50.200	<u>50.367</u>	degree	
Index	12.000	12.000	12.000	<u>12.000</u>		
Angle of Fall	18.900	18.400	18.400	<u>18.567</u>	degree	
Index	24.000	24.000	24.000	<u>24.000</u>		
Angle of Different	32.800	30.800	31.800	<u>31.800</u>	degree	
Cohe.	6.700	8.200	8.500	<u>7.800</u>	%	
Index	14.000	14.500	14.500	<u>14.333</u>		
Angle of Spatula	66.900	65.300	63.800	<u>65.333</u>	degree	
Index	12.000	12.000	12.000	<u>12.000</u>		
Dispersibility	64.800	50.600	67.100	<u>60.833</u>	%	
Index	25.000	25.000	25.000	<u>25.000</u>		
Flow Index	38.500	40.500	38.500	<u>39.167</u>		<u>Bad</u>
Flood Index	89.000	90.000	89.000	<u>89.333</u>		<u>Very High</u>

ตารางที่ ค.3 ผลการวัดการกระจายของอนุภาคฝุ่นหิน

Class No.	Size Low(um)	Size High (um)	Under%			Class No.	Size Low(um)	Size High (um)	Under%		
			no.1	no.2	no.3				no.1	no.2	no.3
1	0.05	0.06	0.12	0.09	0.16	33	6.63	7.72	65.74	65.55	65.77
2	0.06	0.07	0.36	0.27	0.50	34	7.72	9	71.03	71.15	71.23
3	0.07	0.08	0.73	0.56	0.99	35	9	10.48	76.01	76.43	76.38
4	0.08	0.09	1.24	0.96	1.66	36	10.48	12.21	80.49	81.18	81.04
5	0.09	0.11	1.89	1.47	2.49	37	12.21	14.22	84.36	85.26	85.06
6	0.11	0.13	2.72	2.14	3.50	38	14.22	16.57	87.56	88.61	88.4
7	0.13	0.15	3.73	2.98	4.67	39	16.57	19.31	90.09	91.24	91.04
8	0.15	0.17	4.97	4.04	6.03	40	19.31	22.49	92.01	93.22	93.04
9	0.17	0.20	6.46	5.36	7.57	41	22.49	26.2	93.39	94.64	94.5
10	0.20	0.23	8.25	6.99	9.28	42	26.2	30.53	94.34	95.62	95.53
11	0.23	0.27	10.27	8.91	11.11	43	30.53	35.56	94.95	96.28	96.23
12	0.27	0.31	12.43	10.99	12.99	44	35.56	41.43	95.34	96.73	96.72
13	0.31	0.36	14.53	13.03	14.83	45	41.43	48.27	95.59	97.05	97.09
14	0.36	0.42	16.50	14.93	16.57	46	48.27	56.23	95.93	97.31	97.4
15	0.42	0.49	18.34	16.72	18.20	47	56.23	65.51	96.28	97.7	97.7
16	0.49	0.58	20.07	18.41	19.74	48	65.51	76.32	96.68	98.09	98.02
17	0.58	0.67	21.65	19.96	21.16	49	76.32	88.91	97.15	98.49	98.38
18	0.67	0.78	23.13	21.38	22.51	50	88.91	103.58	97.67	98.86	98.75
19	0.78	0.91	24.56	22.80	23.88	51	103.58	120.67	98.2	99.21	99.11
20	0.91	1.06	26.00	24.25	25.29	52	120.67	140.58	98.69	99.49	99.44
21	1.06	1.24	27.50	25.77	26.76	53	140.58	163.77	99.11	99.7	99.7
22	1.24	1.44	29.08	27.37	28.32	54	163.77	190.8	99.46	99.84	99.88
23	1.44	1.68	30.78	29.11	30.02	55	190.8	222.28	99.72	99.93	100
24	1.68	1.95	32.64	31.00	31.89	56	222.28	258.95	99.89	99.98	100
25	1.95	2.28	34.73	33.14	33.99	57	258.95	301.68	99.97	100	100
26	2.28	2.65	37.12	35.58	36.42	58	301.68	351.46	100	100	100
27	2.65	3.09	39.88	38.43	39.24	59	351.46	409.45	100	100	100
28	3.09	3.60	43.10	41.76	42.54	60	409.45	477.01	100	100	100
29	3.60	4.19	46.81	45.63	46.34	61	477.01	555.71	100	100	100
30	4.19	4.88	51.01	50.32	50.64	62	555.71	647.41	100	100	100
31	4.88	5.69	55.64	54.88	55.39	63	647.41	754.23	100	100	100
32	5.69	6.63	60.59	60.10	60.47	64	754.23	878.67	100	100	100

ตารางที่ ค.4 ผลการวัดการกระจายของอนุภาคฝุ่น EVA

Class No.	Size Low(um)	Size High (um)	Under%			Class No.	Size Low(um)	Size High (um)	Under%		
			no.1	no.2	no.3				no.1	no.2	no.3
1	0.05	0.06	0.04	0.04	0.04	33	6.63	7.72	21.06	21.11	20.83
2	0.06	0.07	0.12	0.12	0.11	34	7.72	9.00	23.35	23.37	23.04
3	0.07	0.08	0.25	0.24	0.23	35	9.00	10.48	25.83	25.81	25.42
4	0.08	0.09	0.43	0.41	0.40	36	10.48	12.21	28.49	28.42	27.96
5	0.09	0.11	0.67	0.64	0.62	37	12.21	14.22	31.33	31.19	30.65
6	0.11	0.13	0.98	0.93	0.91	38	14.22	16.57	34.39	34.15	33.53
7	0.13	0.15	1.37	1.31	1.28	39	16.57	19.31	37.72	37.36	36.67
8	0.15	0.17	1.87	1.79	1.75	40	19.31	22.49	41.39	40.90	40.14
9	0.17	0.20	2.52	2.40	2.35	41	22.49	26.20	45.45	44.82	44.00
10	0.20	0.23	3.32	3.17	3.10	42	26.20	30.53	49.96	49.18	48.30
11	0.23	0.27	4.26	4.08	3.99	43	30.53	35.56	54.90	53.98	53.05
12	0.27	0.31	5.26	5.04	4.93	44	35.56	41.43	60.20	59.16	58.19
13	0.31	0.36	6.20	5.94	5.82	45	41.43	48.27	65.75	64.62	63.62
14	0.36	0.42	7.02	6.74	6.59	46	48.27	56.23	71.41	70.23	69.20
15	0.42	0.49	7.72	7.42	7.26	47	56.23	65.51	77.08	75.87	74.83
16	0.49	0.58	8.32	8.01	7.84	48	65.51	76.32	82.20	81.00	79.99
17	0.58	0.67	8.80	8.48	8.31	49	76.32	88.91	86.58	85.40	84.46
18	0.67	0.78	9.19	8.88	8.70	50	88.91	103.58	90.14	89.00	88.16
19	0.78	0.91	9.55	9.24	9.06	51	103.58	120.67	92.92	91.83	91.13
20	0.91	1.06	9.89	9.59	9.41	52	120.67	140.58	95.06	94.06	93.51
21	1.06	1.24	10.21	9.93	9.75	53	140.58	163.77	96.72	95.84	95.44
22	1.24	1.44	10.54	10.28	10.10	54	163.77	190.80	98.04	97.31	97.04
23	1.44	1.68	10.88	10.64	10.46	55	190.80	222.28	99.03	98.49	98.34
24	1.68	1.95	11.23	11.02	10.85	56	222.28	258.95	99.68	99.34	99.26
25	1.95	2.28	11.63	11.45	11.28	57	258.95	301.68	100.00	99.84	99.81
26	2.28	2.65	12.10	11.96	11.80	58	301.68	351.46	100.00	100.00	100.00
27	2.65	3.09	12.70	12.59	12.43	59	351.46	409.45	100.00	100.00	100.00
28	3.09	3.60	13.47	13.40	13.24	60	409.45	477.01	100.00	100.00	100.00
29	3.60	4.19	14.45	14.42	14.25	61	477.01	555.71	100.00	100.00	100.00
30	4.19	4.88	15.69	15.69	15.52	62	555.71	647.41	100.00	100.00	100.00
31	4.88	5.69	17.21	17.24	17.04	63	647.41	754.23	100.00	100.00	100.00
32	5.69	6.63	19.01	19.05	18.82	64	754.23	878.67	100.00	100.00	100.00

ค่าพารามิเตอร์ (Parameter)

ตารางที่ ค.5

กรณีที่ซึ่งตาข่ายแนวตั้ง และฝุ่นหิน มีความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที

Particle size Parameter	$D_{[V,0.1]}$			$D_{[V,0.25]}$			$D_{[V,0.5]}$			$D_{[V,0.75]}$			$D_{[V,0.9]}$		
	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3
Inertia Impaction	15.23	23.76	28.96	55.65	86.83	105.81	275.91	430.49	524.61	596.34	930.45	1133.86	1123.56	1753.06	2136.30
Interception	1.1700E-04			4.2750E-04			2.1195E-03			4.5810E-03			8.6310E-03		

เมื่อ

$D_{[V,0.1]}$, $D_{[V,0.25]}$, $D_{[V,0.5]}$, $D_{[V,0.75]}$, $D_{[V,0.9]}$ คือ Median size diameter, these are the 10% , 25%, 50%, 75% and 90% cutoffs respectively for the distribution = 0.26, 0.95, 4.71, 10.18 และ 19.18 μm ตามลำดับ

V_1, V_2, V_3

คือ Superficial Velocity = 0.73, 1.139, 1.388 m/s ตามลำดับ

ตารางที่ ค.6

กรณีนี้ซึ่งตาข่ายเยี่ยง 10 องศาจากแนวตั้งไปข้างหน้า และฝุ่นหิน มีความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที

Particle size Parameter	$D_{[v,0.1]}$			$D_{[v,0.25]}$			$D_{[v,0.5]}$			$D_{[v,0.75]}$			$D_{[v,0.9]}$		
	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3
Inertia Impaction	23.81	37.16	45.25	86.98	135.77	165.35	431.25	673.14	819.79	932.09	1454.91	1771.87	1756.13	2741.17	3338.35
Interception	1.1700E-04			4.2750E-04			2.1195E-03			4.5810E-03			8.6310E-03		

เมื่อ $D_{[v,0.1]}$, $D_{[v,0.25]}$, $D_{[v,0.5]}$, $D_{[v,0.75]}$, $D_{[v,0.9]}$ คือ Median size diameter, these are the 10% , 25%, 50%, 75% and 90% cutoffs respectively for the distribution = 0.26, 0.95, 4.71, 10.18 และ 19.18 μm ตามลำดับ

V_1, V_2, V_3 คือ Superficial Velocity = 1.141, 1.781, 2.169 m/s ตามลำดับ

ตารางที่ ค.7

กรณีนี้ซึ่งตาข่ายแนวตั้งไป และ EVA มีความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที

Particle size Parameter	$D_{[V,0.1]}$			$D_{[V,0.25]}$			$D_{[V,0.5]}$			$D_{[V,0.75]}$			$D_{[V,0.9]}$		
	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3
Inertia Impaction	65.61	102.37	124.75	584.62	912.17	1111.59	1790.78	2794.10	3404.93	3637.79	5675.95	6916.79	6026.08	9402.34	11457.81
Interception	5.0400E-04			4.4910E-03			1.3757E-02			2.7945E-02			4.6292E-02		

เมื่อ

$D_{[V,0.1]}$, $D_{[V,0.25]}$, $D_{[V,0.5]}$, $D_{[V,0.75]}$, $D_{[V,0.9]}$ คือ Median size diameter, these are the 10% , 25%, 50%, 75% and 90% cutoffs respectively for the distribution = 1.12, 9.98, 30.57, 62.10 และ 102.87 μm ตามลำดับ

V_1, V_2, V_3

คือ Superficial Velocity = 0.73, 1.139, 1.388 m/s ตามลำดับ

ตารางที่ ค.8

กรณีที่ยิงตาข่ายเอียง 10 องศาจากแนวตั้งไปข้างหน้า และฝุ่น EVA มีความหนาแน่นอากาศเท่ากับ 0.0012 กรัมต่อลูกบาศก์เซนติเมตร, ความหนืดอากาศ 0.00018 กรัมต่อเซนติเมตรต่อวินาที

Particle size Parameter	$D_{[V,0.1]}$			$D_{[V,0.25]}$			$D_{[V,0.5]}$			$D_{[V,0.75]}$			$D_{[V,0.9]}$		
	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3	V_1	V_2	V_3
Inertia Impaction	102.55	160.07	194.94	913.78	1426.32	1737.05	2799.01	4369.01	5320.82	5685.92	8875.22	10808.73	9418.85	14701.99	17904.89
Interception	5.0400E-04			4.4910E-03			1.3757E-02			2.7945E-02			4.6292E-02		

เมื่อ

$D_{[V,0.1]}$, $D_{[V,0.25]}$, $D_{[V,0.5]}$, $D_{[V,0.75]}$, $D_{[V,0.9]}$ คือ Median size diameter, these are the 10% , 25%, 50%, 75% and 90% cutoffs respectively for the distribution = 1.12, 9.98, 30.57, 62.10 และ 102.87 μm ตามลำดับ

V_1, V_2, V_3

คือ Superficial Velocity = 1.141, 1.781, 2.169 m/s ตามลำดับ

Experimental data 1

Type of case กล่องกระดาษแข็ง

Projection area of case 625 cm²

Cycle time control

Type of dust ฝุ่นแป้ง

Source of dust โรงสีแป้ง

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	0.730	25.224	0.285	18.394	0.213	27.077	25.020	25.751	38.380	25.470	35.778	0.285
2	0.046	0.739	16.206	8.070	4.801	0.730	26.507	0.298	14.825	0.175	44.071	41.134	26.612	40.171	22.647	28.181	1.472
3	0.046	0.739	16.206	91.200	4.801	0.730	27.870	0.312	12.333	0.148	55.748	52.453	30.230	45.972	29.412	35.426	1.828
1	0.046	0.739	16.206	0.000	4.801	0.730	21.895	0.250	17.274	0.202	21.105	19.440	26.180	33.006	25.328	35.810	0.299
2	0.046	0.739	16.206	8.070	4.801	0.730	23.192	0.264	13.939	0.166	39.897	37.140	28.810	40.687	23.606	27.903	1.619
3	0.046	0.739	16.206	91.200	4.801	0.730	25.264	0.285	12.253	0.147	51.500	48.308	30.421	46.104	29.832	35.810	1.831
1	0.046	0.739	16.206	0.000	4.801	0.730	27.081	0.304	16.327	0.191	39.710	36.962	26.272	38.058	25.563	35.886	0.306
2	0.046	0.739	16.206	8.070	4.801	0.730	25.238	0.285	13.044	0.156	48.316	45.222	28.679	40.714	23.430	28.946	1.637
3	0.046	0.739	16.206	91.200	4.801	0.730	26.281	0.296	12.803	0.153	51.284	48.098	30.525	46.271	29.100	34.761	1.837
1	0.071	0.739	10.379	0.000	7.493	1.139	27.302	0.306	18.298	0.212	32.979	30.574	32.371	46.098	30.819	40.973	0.328
2	0.071	0.739	10.379	8.070	7.493	1.139	26.445	0.297	14.414	0.171	45.494	42.501	29.904	42.736	24.700	30.001	1.943
3	0.071	0.739	10.379	91.200	7.493	1.139	27.022	0.303	12.380	0.149	54.185	50.924	28.708	38.477	25.784	29.901	2.082
1	0.071	0.739	10.379	0.000	7.493	1.139	27.800	0.311	17.936	0.209	35.482	32.942	32.993	46.154	31.046	40.525	0.317
2	0.071	0.739	10.379	8.070	7.493	1.139	27.264	0.306	13.938	0.166	48.878	45.765	30.841	43.570	25.959	31.867	2.035
3	0.071	0.739	10.379	91.200	7.493	1.139	26.800	0.301	11.624	0.140	56.627	53.315	30.786	40.572	29.446	32.072	2.082
1	0.071	0.739	10.379	0.000	7.493	1.139	26.999	0.303	17.592	0.205	34.842	32.336	33.811	46.290	31.236	40.432	0.309
2	0.071	0.739	10.379	8.070	7.493	1.139	27.277	0.306	14.046	0.167	48.506	45.405	31.596	43.806	28.870	31.715	2.023
3	0.071	0.739	10.379	91.200	7.493	1.139	26.969	0.303	11.746	0.142	56.446	53.137	30.086	42.863	28.809	31.267	2.027
1	0.087	0.739	8.518	0.000	9.129	1.388	27.023	0.303	16.037	0.188	40.654	37.862	34.496	46.500	31.640	39.972	0.303
2	0.087	0.739	8.518	8.070	9.129	1.388	27.001	0.303	13.763	0.164	49.028	45.910	32.048	44.792	27.699	32.240	2.064
3	0.087	0.739	8.518	91.200	9.129	1.388	26.786	0.301	10.981	0.133	59.005	55.654	29.197	40.907	29.032	33.284	2.104
1	0.087	0.739	8.518	0.000	9.129	1.388	26.992	0.303	16.961	0.198	37.163	34.537	34.686	46.619	31.746	40.106	0.311
2	0.087	0.739	8.518	8.070	9.129	1.388	26.877	0.302	14.663	0.174	45.444	42.453	32.472	45.207	26.418	30.603	2.087
3	0.087	0.739	8.518	91.200	9.129	1.388	27.304	0.306	10.136	0.124	62.877	58.491	30.323	41.986	23.217	32.379	2.105
1	0.087	0.739	8.518	0.000	9.129	1.388	27.704	0.310	16.647	0.195	39.911	37.153	32.777	46.332	25.615	35.082	0.317
2	0.087	0.739	8.518	8.070	9.129	1.388	28.024	0.313	14.325	0.170	48.883	45.770	32.880	45.654	26.952	32.090	2.078
3	0.087	0.739	8.518	91.200	9.129	1.388	27.542	0.308	8.976	0.111	67.410	64.026	30.096	42.145	26.777	30.500	2.107

Experimental data 2

Type of case กล่องกระดาษแข็ง

Projection area of case 625 cm²

Cycle time control

Type of dust ฝุ่นปูน

Source of dust โรงปูน

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	0.730	37.928	0.413	26.282	0.296	30.706	28.430	30.943	42.857	27.753	37.696	0.331
2	0.046	1.159	25.417	8.070	4.801	0.730	36.103	0.395	21.577	0.247	40.235	37.462	30.112	39.193	28.092	30.293	1.662
3	0.046	1.159	25.417	91.200	4.801	0.730	38.010	0.414	18.953	0.219	50.137	46.984	25.335	34.453	25.179	27.730	1.902
1	0.046	1.159	25.417	0.000	4.801	0.730	37.832	0.412	27.127	0.304	28.296	25.164	31.019	43.874	28.605	35.926	0.337
2	0.046	1.159	25.417	8.070	4.801	0.730	37.397	0.408	21.156	0.243	43.429	40.517	30.413	41.259	29.143	31.874	1.661
3	0.046	1.159	25.417	91.200	4.801	0.730	37.275	0.407	17.537	0.204	52.952	49.721	32.216	44.983	28.543	30.369	1.903
1	0.046	1.159	25.417	0.000	4.801	0.730	38.103	0.415	28.034	0.313	26.426	24.409	30.996	42.055	28.911	36.536	0.336
2	0.046	1.159	25.417	8.070	4.801	0.730	37.559	0.409	20.147	0.232	46.359	43.333	25.376	39.118	24.212	28.065	1.660
3	0.046	1.159	25.417	91.200	4.801	0.730	36.862	0.402	17.477	0.204	52.588	49.366	32.420	45.228	29.018	30.638	1.941
1	0.071	1.159	16.278	0.000	7.493	1.139	38.515	0.419	24.706	0.279	35.854	33.295	31.098	44.179	25.050	34.487	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	38.161	0.415	20.207	0.233	47.048	43.997	31.964	41.865	25.896	29.811	2.136
3	0.071	1.159	16.278	91.200	7.493	1.139	36.734	0.401	16.358	0.192	55.469	52.179	32.639	45.509	29.276	30.912	2.319
1	0.071	1.159	16.278	0.000	7.493	1.139	38.960	0.423	23.983	0.272	38.442	35.754	29.041	41.102	26.315	34.819	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	36.307	0.397	19.818	0.228	45.415	42.425	30.478	42.536	24.935	29.452	2.129
3	0.071	1.159	16.278	91.200	7.493	1.139	36.277	0.397	15.344	0.181	57.703	54.372	32.681	45.633	29.562	30.825	2.325
1	0.071	1.159	16.278	0.000	7.493	1.139	38.734	0.421	24.226	0.274	37.455	34.815	31.267	44.169	25.084	33.395	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	37.471	0.408	19.797	0.228	47.167	44.112	30.236	42.821	24.846	28.918	2.126
3	0.071	1.159	16.278	91.200	7.493	1.139	37.439	0.408	16.475	0.193	55.995	52.695	32.737	45.794	29.969	31.293	2.330
1	0.087	1.159	13.359	0.000	9.129	1.388	36.452	0.398	23.547	0.267	35.403	32.867	31.122	44.140	25.207	34.705	0.338
2	0.087	1.159	13.359	8.070	9.129	1.388	37.879	0.413	20.770	0.238	45.168	42.187	30.101	43.235	24.684	29.065	2.518
3	0.087	1.159	13.359	91.200	9.129	1.388	39.612	0.430	15.014	0.177	62.097	58.715	32.922	45.931	29.980	31.631	2.357
1	0.087	1.159	13.359	0.000	9.129	1.388	36.967	0.403	23.320	0.265	36.917	34.304	31.172	44.242	25.237	35.096	0.345
2	0.087	1.159	13.359	8.070	9.129	1.388	36.985	0.404	20.363	0.234	44.943	41.970	30.273	43.505	24.582	29.701	2.611
3	0.087	1.159	13.359	91.200	9.129	1.388	37.237	0.406	15.074	0.178	59.519	56.162	32.979	46.182	30.202	31.738	2.374
1	0.087	1.159	13.359	0.000	9.129	1.388	36.754	0.401	23.883	0.271	35.019	32.504	32.270	45.225	26.218	34.632	0.350
2	0.087	1.159	13.359	8.070	9.129	1.388	38.040	0.414	21.540	0.247	43.375	40.466	30.593	43.722	24.607	29.683	2.507
3	0.087	1.159	13.359	91.200	9.129	1.388	38.390	0.418	15.257	0.180	60.258	56.892	34.075	46.376	30.273	32.377	2.374

Experimental data 3

Type of case การกระจายตัว

Projection area of case 625

Cycle time control

Type of dust ฝุ่นสี

Source of dust โรงสี

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc.(g/m ³)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	0.730	42.202	0.455	26.251	0.295	37.797	35.140	33.804	42.544	25.737	31.812	0.347
2	0.046	1.579	34.627	8.070	4.801	0.730	43.661	0.470	26.724	0.300	38.792	36.087	34.243	42.921	29.213	33.505	1.658
3	0.046	1.579	34.627	91.200	4.801	0.730	41.624	0.450	16.903	0.198	59.391	56.036	33.050	45.667	29.138	33.279	1.967
1	0.046	1.579	34.627	0.000	4.801	0.730	42.720	0.460	27.696	0.310	35.169	32.645	34.996	42.766	26.021	32.016	0.349
2	0.046	1.579	34.627	8.070	4.801	0.730	42.620	0.459	25.536	0.288	40.084	37.319	35.378	43.344	29.419	33.943	1.660
3	0.046	1.579	34.627	91.200	4.801	0.730	42.275	0.456	17.457	0.204	58.706	55.360	32.564	44.697	26.655	30.818	1.966
1	0.046	1.579	34.627	0.000	4.801	0.730	43.936	0.472	27.791	0.311	36.747	34.142	34.138	42.897	26.273	32.161	0.353
2	0.046	1.579	34.627	8.070	4.801	0.730	42.119	0.454	24.597	0.278	41.601	38.767	35.885	43.992	29.416	33.258	1.664
3	0.046	1.579	34.627	91.200	4.801	0.730	43.072	0.464	17.944	0.209	58.340	54.999	31.395	43.759	26.437	30.606	2.008
1	0.071	1.579	22.177	0.000	7.493	1.139	43.145	0.464	26.323	0.296	38.989	36.275	34.227	43.114	26.426	32.344	0.364
2	0.071	1.579	22.177	8.070	7.493	1.139	43.599	0.469	22.521	0.257	48.345	45.250	34.763	44.376	29.548	35.120	2.322
3	0.071	1.579	22.177	91.200	7.493	1.139	43.829	0.471	18.341	0.213	58.153	54.815	34.715	47.393	28.440	33.506	2.521
1	0.071	1.579	22.177	0.000	7.493	1.139	43.313	0.466	24.080	0.273	44.405	41.454	35.309	43.146	26.496	32.308	0.361
2	0.071	1.579	22.177	8.070	7.493	1.139	43.534	0.468	23.230	0.264	46.639	43.603	32.179	44.756	29.630	33.725	2.323
3	0.071	1.579	22.177	91.200	7.493	1.139	43.656	0.470	17.837	0.208	59.142	55.790	28.266	41.697	27.709	28.845	2.522
1	0.071	1.579	22.177	0.000	7.493	1.139	44.443	0.477	24.388	0.276	45.125	42.146	35.320	43.185	26.593	32.331	0.358
2	0.071	1.579	22.177	8.070	7.493	1.139	44.630	0.479	23.178	0.264	48.066	44.980	33.434	44.963	30.745	34.511	2.321
3	0.071	1.579	22.177	91.200	7.493	1.139	43.247	0.465	16.182	0.190	62.582	59.197	28.947	42.830	24.026	27.569	2.522
1	0.087	1.579	18.201	0.000	9.129	1.388	42.620	0.459	25.719	0.290	39.655	36.909	35.415	43.372	26.533	32.517	0.349
2	0.087	1.579	18.201	8.070	9.129	1.388	43.147	0.465	19.792	0.228	54.129	50.869	32.724	44.224	27.794	32.695	2.513
3	0.087	1.579	18.201	91.200	9.129	1.388	44.300	0.476	16.389	0.192	63.005	59.617	30.592	42.533	25.007	28.339	2.513
1	0.087	1.579	18.201	0.000	9.129	1.388	42.717	0.460	25.833	0.291	39.525	36.785	34.454	42.482	26.556	32.656	0.357
2	0.087	1.579	18.201	8.070	9.129	1.388	44.281	0.476	20.681	0.238	53.296	50.056	32.977	44.405	28.462	31.819	2.519
3	0.087	1.579	18.201	91.200	9.129	1.388	43.684	0.470	14.317	0.170	67.226	63.841	30.465	43.956	25.211	28.879	2.518
1	0.087	1.579	18.201	0.000	9.129	1.388	43.000	0.463	26.006	0.293	39.521	36.781	34.723	43.398	27.395	34.302	0.359
2	0.087	1.579	18.201	8.070	9.129	1.388	43.078	0.464	19.018	0.220	55.852	52.555	33.191	45.100	28.228	32.195	2.514
3	0.087	1.579	18.201	91.200	9.129	1.388	43.779	0.471	13.175	0.157	69.906	66.547	28.404	41.841	23.036	26.753	2.520

Experimental data 4

Type of case กล่องกระดาษแข็ง

Projection area of case 406.17 cm² cm²

Cycle time control

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	1.141	24.970	0.282	19.454	0.225	22.091	20.358	31.206	39.916	29.061	35.462	0.281
2	0.046	0.739	16.206	8.070	4.801	1.141	24.784	0.280	13.375	0.160	46.034	43.020	34.704	41.004	33.699	36.329	1.304
3	0.046	0.739	16.206	91.200	4.801	1.141	25.202	0.284	8.835	0.109	64.943	61.552	37.968	44.148	33.788	34.392	1.816
1	0.046	0.739	16.206	0.000	4.801	1.141	24.794	0.280	18.555	0.215	25.183	23.228	34.100	43.548	31.659	36.559	0.289
2	0.046	0.739	16.206	8.070	4.801	1.141	23.881	0.271	13.052	0.156	45.346	42.358	35.302	41.488	33.023	36.465	1.539
3	0.046	0.739	16.206	91.200	4.801	1.141	23.242	0.264	9.003	0.111	61.264	57.888	38.362	44.398	35.148	36.045	1.830
1	0.046	0.739	16.206	0.000	4.801	1.141	24.832	0.281	18.233	0.212	26.575	24.549	35.822	45.312	35.608	42.854	0.333
2	0.046	0.739	16.206	8.070	4.801	1.141	23.624	0.268	13.374	0.160	43.388	40.478	28.911	35.668	27.952	31.249	1.508
3	0.046	0.739	16.206	91.200	4.801	1.141	25.404	0.287	9.299	0.115	63.396	60.007	35.063	43.706	34.231	35.966	1.829
1	0.071	0.739	10.379	0.000	7.493	1.781	26.582	0.299	18.390	0.213	30.818	28.535	26.994	35.115	26.380	33.534	0.284
2	0.071	0.739	10.379	8.070	7.493	1.781	25.816	0.291	15.787	0.186	38.848	36.140	28.118	36.631	26.573	31.601	2.026
3	0.071	0.739	10.379	91.200	7.493	1.781	26.602	0.299	12.348	0.148	53.590	50.343	35.060	43.218	31.059	32.580	2.054
1	0.071	0.739	10.379	0.000	7.493	1.781	26.430	0.297	19.180	0.222	27.431	25.352	28.105	36.063	27.871	35.620	0.308
2	0.071	0.739	10.379	8.070	7.493	1.781	27.458	0.308	16.543	0.194	39.752	37.001	27.667	38.187	26.749	31.098	2.037
3	0.071	0.739	10.379	91.200	7.493	1.781	27.423	0.307	12.338	0.148	55.009	51.729	38.986	47.130	39.696	41.078	2.066
1	0.071	0.739	10.379	0.000	7.493	1.781	27.981	0.313	18.641	0.216	33.380	30.953	27.593	34.253	27.194	32.644	0.305
2	0.071	0.739	10.379	8.070	7.493	1.781	26.641	0.299	15.144	0.179	43.155	40.255	28.320	37.966	27.948	31.839	2.026
3	0.071	0.739	10.379	91.200	7.493	1.781	26.903	0.302	13.248	0.158	50.756	47.585	33.780	41.671	33.688	34.891	2.056
1	0.087	0.739	8.518	0.000	9.129	2.169	26.068	0.293	16.327	0.191	37.368	34.732	27.092	35.353	28.068	33.697	0.308
2	0.087	0.739	8.518	8.070	9.129	2.169	27.697	0.310	13.314	0.159	51.930	48.725	30.980	38.683	29.696	32.460	1.955
3	0.087	0.739	8.518	91.200	9.129	2.169	24.789	0.280	8.752	0.108	64.694	61.303	37.232	46.399	36.255	37.380	2.100
1	0.087	0.739	8.518	0.000	9.129	2.169	25.216	0.285	16.810	0.197	33.336	30.911	33.656	38.803	33.893	37.312	0.304
2	0.087	0.739	8.518	8.070	9.129	2.169	24.698	0.279	12.663	0.152	48.729	45.621	32.570	40.372	31.782	33.682	2.022
3	0.087	0.739	8.518	91.200	9.129	2.169	25.071	0.283	8.138	0.101	67.548	64.166	31.458	42.964	31.984	32.664	2.109
1	0.087	0.739	8.518	0.000	9.129	2.169	25.695	0.290	16.929	0.198	34.116	31.649	34.954	40.630	35.617	39.468	0.292
2	0.087	0.739	8.518	8.070	9.129	2.169	25.684	0.289	12.199	0.147	52.504	49.284	32.441	37.627	28.084	29.340	2.069
3	0.087	0.739	8.518	91.200	9.129	2.169	24.909	0.281	9.841	0.121	60.492	57.124	32.687	42.695	34.844	35.993	2.097

Experimental data 5

Type of case บดผงตัวแข็ง

Projection area of case 406.17 cm² cm²

Cycle time control

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (m/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	1.141	32.774	0.361	24.179	0.274	26.225	24.221	37.561	42.206	38.591	42.317	0.338
2	0.046	1.159	25.417	8.070	4.801	1.141	36.227	0.396	22.791	0.260	37.088	34.467	38.217	44.885	37.434	38.660	1.601
3	0.046	1.159	25.417	91.200	4.801	1.141	35.379	0.388	20.876	0.240	40.993	38.186	36.098	43.847	35.149	36.202	1.899
1	0.046	1.159	25.417	0.000	4.801	1.141	38.363	0.417	26.822	0.301	30.084	27.844	35.473	40.183	35.991	39.931	0.337
2	0.046	1.159	25.417	8.070	4.801	1.141	36.176	0.396	22.212	0.254	38.600	35.904	38.174	45.818	38.942	40.234	1.588
3	0.046	1.159	25.417	91.200	4.801	1.141	38.285	0.417	21.161	0.243	44.728	41.764	34.976	43.410	34.801	35.795	1.895
1	0.046	1.159	25.417	0.000	4.801	1.141	33.052	0.364	23.854	0.271	27.829	25.725	32.254	39.613	32.016	37.923	0.344
2	0.046	1.159	25.417	8.070	4.801	1.141	35.995	0.394	21.589	0.247	40.022	37.259	37.688	43.904	37.037	38.208	1.587
3	0.046	1.159	25.417	91.200	4.801	1.141	37.392	0.408	19.002	0.220	49.182	46.059	38.856	45.813	36.568	37.137	1.892
1	0.071	1.159	16.278	0.000	7.493	1.781	31.705	0.351	23.255	0.264	26.652	24.621	36.466	40.964	37.183	41.245	0.333
2	0.071	1.159	16.278	8.070	7.493	1.781	35.540	0.389	18.865	0.218	46.919	43.873	33.001	40.397	32.834	34.026	2.064
3	0.071	1.159	16.278	91.200	7.493	1.781	36.055	0.394	14.162	0.168	60.721	57.351	38.686	46.461	33.250	33.819	2.134
1	0.071	1.159	16.278	0.000	7.493	1.781	33.596	0.370	25.219	0.285	24.935	23.014	37.246	41.631	37.953	41.725	0.329
2	0.071	1.159	16.278	8.070	7.493	1.781	36.952	0.403	18.123	0.211	50.955	47.778	37.444	44.378	36.983	38.479	2.077
3	0.071	1.159	16.278	91.200	7.493	1.781	37.110	0.405	16.220	0.190	56.292	52.986	33.916	41.106	32.403	33.069	2.142
1	0.071	1.159	16.278	0.000	7.493	1.781	35.692	0.391	23.264	0.264	34.820	32.315	38.012	42.364	33.556	42.536	0.324
2	0.071	1.159	16.278	8.070	7.493	1.781	36.219	0.396	20.492	0.236	43.422	40.511	36.344	42.746	35.197	36.677	2.079
3	0.071	1.159	16.278	91.200	7.493	1.781	35.709	0.391	16.076	0.189	54.981	51.701	33.584	42.971	34.452	35.367	2.161
1	0.087	1.159	13.359	0.000	9.129	2.169	36.476	0.399	23.287	0.265	36.158	33.583	37.376	42.183	38.457	42.334	0.324
2	0.087	1.159	13.359	8.070	9.129	2.169	31.691	0.351	17.658	0.206	44.281	41.335	32.820	40.393	31.884	33.732	2.287
3	0.087	1.159	13.359	91.200	9.129	2.169	35.419	0.388	16.390	0.192	53.725	50.475	32.976	42.811	35.581	36.230	2.343
1	0.087	1.159	13.359	0.000	9.129	2.169	34.834	0.382	24.147	0.274	30.680	28.405	38.045	43.332	39.661	43.661	0.335
2	0.087	1.159	13.359	8.070	9.129	2.169	33.766	0.371	19.834	0.229	41.260	38.442	33.296	41.528	31.917	33.663	2.211
3	0.087	1.159	13.359	91.200	9.129	2.169	35.109	0.385	14.006	0.167	60.107	56.743	32.438	43.189	37.187	37.419	2.368
1	0.087	1.159	13.359	0.000	9.129	2.169	34.115	0.375	24.232	0.274	28.970	26.797	36.282	43.540	37.632	43.484	0.336
2	0.087	1.159	13.359	8.070	9.129	2.169	33.861	0.372	17.956	0.209	46.971	43.924	33.501	42.308	32.101	34.032	2.293
3	0.087	1.159	13.359	91.200	9.129	2.169	37.743	0.411	14.361	0.170	61.951	58.570	32.486	43.568	37.900	38.648	2.372

Experimental data 6

Type of case กล่องกระดาษแข็ง

Projection area of case 406.17 cm² cm²

Cycle time control

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc (g/m ³)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	1.141	41.000	0.443	27.190	0.305	33.683	31.239	31.535	36.643	32.553	36.656	0.360
2	0.046	1.579	34.627	8.070	4.801	1.141	43.620	0.469	27.496	0.308	36.965	34.349	37.150	42.146	38.594	40.035	1.599
3	0.046	1.579	34.627	91.200	4.801	1.141	41.420	0.448	10.684	0.130	74.206	70.935	37.174	44.775	37.469	38.267	1.914
1	0.046	1.579	34.627	0.000	4.801	1.141	43.382	0.467	28.964	0.303	37.845	35.186	32.179	37.103	32.370	36.429	0.352
2	0.046	1.579	34.627	8.070	4.801	1.141	42.207	0.455	28.067	0.314	33.502	31.068	36.338	41.608	37.702	39.431	1.615
3	0.046	1.579	34.627	91.200	4.801	1.141	43.063	0.464	10.065	0.123	76.627	73.434	36.775	42.779	35.974	38.420	1.922
1	0.046	1.579	34.627	0.000	4.801	1.141	43.836	0.471	26.874	0.302	38.694	35.994	31.296	37.788	31.590	36.820	0.343
2	0.046	1.579	34.627	8.070	4.801	1.141	43.218	0.465	26.754	0.300	38.095	35.424	36.846	41.735	38.280	39.644	1.606
3	0.046	1.579	34.627	91.200	4.801	1.141	41.738	0.451	9.852	0.121	76.396	73.194	37.959	43.280	37.400	37.984	1.920
1	0.071	1.579	22.177	0.000	7.493	1.781	39.113	0.425	25.981	0.292	33.575	31.137	33.810	40.086	33.810	38.720	0.367
2	0.071	1.579	22.177	8.070	7.493	1.781	41.252	0.446	19.872	0.229	51.828	48.626	34.960	40.496	36.563	38.880	2.286
3	0.071	1.579	22.177	91.200	7.493	1.781	44.073	0.474	18.591	0.216	57.818	54.485	35.844	43.399	34.847	35.951	2.200
1	0.071	1.579	22.177	0.000	7.493	1.781	42.275	0.456	25.429	0.287	39.849	37.094	34.568	40.697	33.657	38.797	0.356
2	0.071	1.579	22.177	8.070	7.493	1.781	43.520	0.468	21.057	0.241	51.615	48.420	39.335	44.424	40.490	41.781	2.323
3	0.071	1.579	22.177	91.200	7.493	1.781	41.878	0.452	12.434	0.149	70.309	66.956	35.680	41.742	34.693	35.074	2.211
1	0.071	1.579	22.177	0.000	7.493	1.781	42.347	0.457	25.921	0.292	38.789	36.084	33.584	40.148	33.661	38.050	0.353
2	0.071	1.579	22.177	8.070	7.493	1.781	44.218	0.475	18.591	0.216	57.956	54.821	39.973	44.100	40.288	41.212	2.210
3	0.071	1.579	22.177	91.200	7.493	1.781	43.155	0.465	12.915	0.155	70.073	66.717	35.099	42.859	36.824	37.132	2.219
1	0.087	1.579	18.201	0.000	9.129	2.169	42.952	0.463	27.004	0.303	37.130	34.506	36.734	42.268	35.762	40.515	0.359
2	0.087	1.579	18.201	8.070	9.129	2.169	45.533	0.488	20.195	0.232	55.648	52.354	29.653	34.788	29.474	30.763	2.285
3	0.087	1.579	18.201	91.200	9.129	2.169	42.859	0.462	14.352	0.170	66.513	63.125	33.104	44.605	38.418	39.305	2.385
1	0.087	1.579	18.201	0.000	9.129	2.169	45.609	0.489	27.671	0.310	39.330	36.599	38.351	43.568	38.036	42.987	0.352
2	0.087	1.579	18.201	8.070	9.129	2.169	41.450	0.448	18.747	0.217	64.772	61.497	30.713	37.915	30.188	31.464	2.298
3	0.087	1.579	18.201	91.200	9.129	2.169	43.737	0.470	15.852	0.184	64.213	60.822	34.445	42.076	37.086	37.564	2.388
1	0.087	1.579	18.201	0.000	9.129	2.169	42.944	0.463	26.524	0.298	38.236	35.557	38.118	44.585	38.125	43.978	0.366
2	0.087	1.579	18.201	8.070	9.129	2.169	43.115	0.464	20.545	0.236	52.348	49.133	30.628	38.085	27.723	28.560	2.296
3	0.087	1.579	18.201	91.200	9.129	2.169	44.919	0.482	16.459	0.193	63.358	59.970	34.086	43.632	38.872	39.821	2.382

Experimental data 7

Type of case เครื่องพ่นยาแบบฉีด

Projection area of case 625 cm²

Cycle Time control

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	0.730	2.561	0.046	1.770	0.030	30.886	33.337	32.219	42.809	30.327	38.982	0.155
2	0.046	0.444	9.737	8.070	4.801	0.730	2.389	0.042	1.482	0.025	37.966	40.507	33.684	44.570	27.154	31.754	1.421
3	0.046	0.444	9.737	91.200	4.801	0.730	2.576	0.046	1.257	0.021	51.203	54.086	33.073	46.965	29.427	32.959	2.125
1	0.046	0.444	9.737	0.000	4.801	0.730	2.731	0.049	1.909	0.033	30.099	32.855	32.770	42.129	31.157	33.232	0.158
2	0.046	0.444	9.737	8.070	4.801	0.730	2.728	0.049	1.633	0.028	40.139	43.055	35.244	45.320	29.139	33.774	1.540
3	0.046	0.444	9.737	91.200	4.801	0.730	2.206	0.039	1.010	0.017	54.216	56.710	33.170	47.039	29.340	33.050	2.151
1	0.046	0.444	9.737	0.000	4.801	0.730	2.053	0.036	1.505	0.026	26.693	28.535	34.952	43.646	30.760	36.700	0.159
2	0.046	0.444	9.737	8.070	4.801	0.730	2.432	0.043	1.361	0.023	44.038	46.740	35.128	44.839	29.588	33.498	1.546
3	0.046	0.444	9.737	91.200	4.801	0.730	2.395	0.042	1.108	0.018	53.737	56.426	33.275	47.107	30.354	34.123	2.178
1	0.071	0.444	6.236	0.000	7.493	1.139	2.323	0.041	1.373	0.023	40.895	43.439	33.373	47.234	33.218	44.269	0.342
2	0.071	0.444	6.236	8.070	7.493	1.139	2.706	0.049	1.485	0.025	45.122	48.106	36.533	43.078	37.791	39.200	2.013
3	0.071	0.444	6.236	91.200	7.493	1.139	2.820	0.047	1.251	0.021	52.252	55.174	34.756	44.767	39.609	41.524	2.055
1	0.071	0.444	6.236	0.000	7.493	1.139	2.478	0.044	1.494	0.025	39.709	42.378	33.236	47.052	33.511	44.070	0.365
2	0.071	0.444	6.236	8.070	7.493	1.139	2.595	0.046	1.351	0.023	47.938	50.837	34.244	41.320	37.139	39.774	2.013
3	0.071	0.444	6.236	91.200	7.493	1.139	2.488	0.044	1.036	0.017	58.360	61.079	34.052	45.120	40.837	42.178	2.056
1	0.071	0.444	6.236	0.000	7.493	1.139	2.432	0.043	1.480	0.025	39.145	41.757	33.272	43.962	33.942	42.850	0.388
2	0.071	0.444	6.236	8.070	7.493	1.139	2.386	0.042	1.232	0.021	48.365	51.057	34.875	44.039	39.310	41.706	2.083
3	0.071	0.444	6.236	91.200	7.493	1.139	2.672	0.048	1.189	0.020	55.501	58.445	36.326	45.349	40.197	41.430	2.056
1	0.087	0.444	5.118	0.000	9.129	1.388	2.935	0.053	1.392	0.024	52.572	55.798	38.574	42.522	38.157	41.585	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	2.868	0.052	1.271	0.021	55.683	58.812	33.733	43.431	39.346	41.904	2.173
3	0.087	0.444	5.118	91.200	9.129	1.388	2.734	0.049	1.059	0.018	61.266	64.151	34.128	45.839	34.588	36.098	2.212
1	0.087	0.444	5.118	0.000	9.129	1.388	2.908	0.053	1.324	0.022	54.470	57.653	35.702	44.669	33.515	40.608	0.376
2	0.087	0.444	5.118	8.070	9.129	1.388	2.791	0.050	1.223	0.021	56.181	59.229	33.741	43.364	39.371	42.563	2.177
3	0.087	0.444	5.118	91.200	9.129	1.388	2.768	0.050	1.082	0.018	60.882	63.808	36.451	45.016	35.973	37.419	2.218
1	0.087	0.444	5.118	0.000	9.129	1.388	2.876	0.052	1.475	0.025	48.713	51.889	35.747	42.553	35.718	41.714	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	2.818	0.051	1.273	0.021	54.826	57.919	33.760	44.297	38.888	41.687	2.180
3	0.087	0.444	5.118	91.200	9.129	1.388	2.856	0.052	1.102	0.018	61.415	64.408	36.099	46.241	34.920	36.344	2.229

Experimental data 8

Type of case การทดสอบแบบเปิด

Projection area of case 625 cm²

Cycle Time control -

Type of dust PM_{2.5}

Source of dust เครื่อง Cobra

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (ml/s)	Velocity In duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	0.730	3.595	0.067	2.280	0.040	36.579	40.151	31.465	41.180	31.421	39.097	0.160
2	0.046	0.700	15.351	8.070	4.801	0.730	3.561	0.066	2.012	0.035	43.499	47.253	31.939	39.832	30.826	33.510	1.559
3	0.046	0.700	15.351	91.200	4.801	0.730	3.723	0.070	1.938	0.034	47.945	51.904	32.876	40.284	30.725	32.023	2.455
1	0.046	0.700	15.351	0.000	4.801	0.730	3.745	0.070	2.738	0.049	26.889	30.023	31.692	40.425	31.434	38.349	0.182
2	0.046	0.700	15.351	8.070	4.801	0.730	3.787	0.071	2.194	0.039	42.065	45.986	32.154	40.396	30.983	33.266	1.565
3	0.046	0.700	15.351	91.200	4.801	0.730	3.818	0.072	2.135	0.037	44.081	48.074	33.006	42.101	30.785	32.215	2.568
1	0.046	0.700	15.351	0.000	4.801	0.730	3.778	0.071	2.342	0.041	38.010	41.793	32.579	39.915	32.912	39.767	0.170
2	0.046	0.700	15.351	8.070	4.801	0.730	3.689	0.069	2.109	0.037	42.830	46.684	32.559	40.888	30.855	33.900	1.565
3	0.046	0.700	15.351	91.200	4.801	0.730	3.855	0.073	1.920	0.033	50.195	54.277	33.100	42.114	30.768	32.579	2.713
1	0.071	0.700	9.831	0.000	7.493	1.139	3.735	0.070	2.317	0.041	37.965	41.711	27.826	38.692	28.596	38.351	0.489
2	0.071	0.700	9.831	8.070	7.493	1.139	3.675	0.069	2.025	0.035	44.898	48.779	32.537	38.295	31.445	32.613	2.568
3	0.071	0.700	9.831	91.200	7.493	1.139	3.846	0.073	1.923	0.033	50.000	54.075	31.735	39.435	30.089	30.810	2.504
1	0.071	0.700	9.831	0.000	7.493	1.139	3.616	0.068	2.387	0.042	33.988	37.460	33.962	42.996	35.253	42.694	0.490
2	0.071	0.700	9.831	8.070	7.493	1.139	3.755	0.071	1.988	0.035	47.057	51.037	32.376	40.148	30.732	32.652	2.577
3	0.071	0.700	9.831	91.200	7.493	1.139	3.875	0.073	1.728	0.030	55.406	59.459	31.453	39.784	30.179	31.194	2.543
1	0.071	0.700	9.831	0.000	7.493	1.139	3.670	0.069	2.221	0.039	39.482	43.227	34.674	45.863	32.309	41.260	0.493
2	0.071	0.700	9.831	8.070	7.493	1.139	3.418	0.063	2.153	0.038	37.010	40.449	32.247	40.892	30.258	32.696	2.582
3	0.071	0.700	9.831	91.200	7.493	1.139	3.698	0.069	1.779	0.031	51.893	55.830	31.394	39.497	30.279	30.996	2.588
1	0.087	0.700	8.069	0.000	9.129	1.388	3.825	0.072	2.439	0.043	36.235	39.984	31.927	40.022	32.009	39.720	0.451
2	0.087	0.700	8.069	8.070	9.129	1.388	3.719	0.070	1.868	0.032	49.771	53.733	30.194	38.194	29.152	34.383	2.594
3	0.087	0.700	8.069	91.200	9.129	1.388	3.758	0.071	1.864	0.032	50.399	54.395	30.834	40.380	30.173	32.286	2.740
1	0.087	0.700	8.069	0.000	9.129	1.388	3.756	0.071	2.115	0.037	43.690	47.621	30.176	37.476	30.340	36.458	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	3.666	0.069	1.782	0.031	51.391	55.302	30.610	40.563	29.367	34.526	2.625
3	0.087	0.700	8.069	91.200	9.129	1.388	3.654	0.068	1.899	0.033	48.030	51.927	31.671	41.033	31.009	34.039	2.746
1	0.087	0.700	8.069	0.000	9.129	1.388	3.755	0.071	2.172	0.038	42.157	46.053	29.212	38.783	29.025	37.912	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	3.784	0.071	1.872	0.032	50.529	54.548	30.610	40.723	30.039	34.858	2.694
3	0.087	0.700	8.069	91.200	9.129	1.388	3.765	0.071	1.807	0.031	52.005	56.002	29.607	39.258	29.557	32.482	2.750

Experimental data 9

Type of case การทดสอบแบบที่ 1

Projection area of case 625 cm²

Cycle Time control -

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm -)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	0.730	6.801	0.144	4.268	0.082	37.245	43.231	35.839	46.267	35.253	44.030	0.205
2	0.046	0.924	20.263	8.070	4.801	0.730	6.844	0.146	3.838	0.072	43.922	50.260	32.282	42.489	31.792	35.582	1.604
3	0.046	0.924	20.263	91.200	4.801	0.730	6.789	0.144	3.206	0.059	52.777	59.152	32.526	42.797	31.010	32.706	2.958
1	0.046	0.924	20.263	0.000	4.801	0.730	6.658	0.141	4.184	0.080	37.459	43.365	30.667	36.460	30.824	35.285	0.218
2	0.046	0.924	20.263	8.070	4.801	0.730	6.645	0.140	3.637	0.068	45.267	51.505	32.257	43.491	31.233	35.430	1.587
3	0.046	0.924	20.263	91.200	4.801	0.730	6.544	0.138	3.246	0.060	50.397	56.619	32.921	42.893	30.910	32.554	2.997
1	0.046	0.924	20.263	0.000	4.801	0.730	6.718	0.142	4.632	0.090	31.051	36.485	32.608	40.844	32.282	39.124	0.221
2	0.046	0.924	20.263	8.070	4.801	0.730	6.782	0.144	3.552	0.066	47.626	54.002	32.965	42.349	32.280	35.184	1.592
3	0.046	0.924	20.263	91.200	4.801	0.730	6.636	0.140	3.494	0.065	47.348	53.618	32.822	42.708	30.457	31.142	3.004
1	0.071	0.924	12.978	0.000	7.493	1.139	6.733	0.143	3.705	0.070	44.973	51.264	30.730	40.994	30.264	38.611	0.491
2	0.071	0.924	12.978	8.070	7.493	1.139	6.925	0.148	3.031	0.055	56.231	62.620	31.830	41.461	30.362	33.238	3.077
3	0.071	0.924	12.978	91.200	7.493	1.139	6.832	0.145	3.082	0.056	54.889	61.253	32.133	41.888	29.991	30.709	3.010
1	0.071	0.924	12.978	0.000	7.493	1.139	6.629	0.140	3.917	0.074	40.911	46.986	30.641	40.947	30.556	38.438	0.498
2	0.071	0.924	12.978	8.070	7.493	1.139	6.872	0.146	3.087	0.056	55.079	61.465	31.231	41.530	29.387	33.217	3.076
3	0.071	0.924	12.978	91.200	7.493	1.139	6.752	0.143	3.013	0.055	55.376	61.672	31.229	40.999	30.235	32.186	3.047
1	0.071	0.924	12.978	0.000	7.493	1.139	6.929	0.148	4.034	0.077	41.781	48.098	29.749	40.875	31.136	40.466	0.496
2	0.071	0.924	12.978	8.070	7.493	1.139	6.680	0.141	3.114	0.057	53.383	59.673	31.235	41.226	30.181	33.446	3.077
3	0.071	0.924	12.978	91.200	7.493	1.139	6.802	0.144	3.080	0.056	54.719	61.067	30.449	41.265	29.845	31.036	3.059
1	0.087	0.924	10.651	0.000	9.129	1.388	6.884	0.147	3.322	0.061	51.743	58.197	31.166	43.841	31.479	40.622	0.491
2	0.087	0.924	10.651	8.070	9.129	1.388	6.920	0.148	3.245	0.060	53.107	59.569	31.968	43.478	31.373	34.293	3.014
3	0.087	0.924	10.651	91.200	9.129	1.388	6.865	0.146	2.936	0.053	57.232	63.546	32.917	43.466	31.112	32.303	3.297
1	0.087	0.924	10.651	0.000	9.129	1.388	6.954	0.149	3.267	0.061	52.732	59.223	31.045	43.620	30.962	40.443	0.485
2	0.087	0.924	10.651	8.070	9.129	1.388	6.806	0.145	3.201	0.059	52.968	59.353	31.317	42.645	30.156	33.362	3.076
3	0.087	0.924	10.651	91.200	9.129	1.388	6.792	0.144	2.890	0.052	57.450	63.705	32.901	43.596	31.596	32.292	3.331
1	0.087	0.924	10.651	0.000	9.129	1.388	6.885	0.147	3.244	0.060	52.883	59.324	31.250	43.385	30.906	39.234	0.489
2	0.087	0.924	10.651	8.070	9.129	1.388	6.824	0.145	3.281	0.060	51.920	58.330	31.908	42.528	31.444	34.250	3.075
3	0.087	0.924	10.651	91.200	9.129	1.388	6.895	0.147	2.999	0.055	56.505	62.865	32.524	43.164	31.136	33.404	3.352

Experimental data 10

Type of case ผังห้องควบคุมเสียง

Projection area of case 406.17 cm²

Type of dust ผง EVA

Source of dust โรงงาน Cobra

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	1.141	3.167	0.058	1.969	0.034	37.828	41.078	28.371	37.973	27.819	35.098	0.145
2	0.046	0.444	9.737	8.070	4.801	1.141	2.860	0.052	1.181	0.020	58.706	61.773	31.904	42.736	29.700	34.001	1.572
3	0.046	0.444	9.737	91.200	4.801	1.141	2.941	0.053	1.212	0.020	58.790	61.930	28.506	38.240	27.098	29.295	2.031
1	0.046	0.444	9.737	0.000	4.801	1.141	2.819	0.051	1.814	0.031	35.651	38.518	32.993	48.154	31.048	29.525	0.152
2	0.046	0.444	9.737	8.070	4.801	1.141	2.906	0.053	1.261	0.021	56.607	59.758	32.041	43.570	29.959	33.887	1.594
3	0.046	0.444	9.737	91.200	4.801	1.141	2.892	0.052	1.067	0.018	63.105	66.079	29.981	39.686	26.684	27.460	2.130
1	0.046	0.444	9.737	0.000	4.801	1.141	2.772	0.050	1.636	0.028	40.981	43.958	33.611	46.290	31.238	40.032	0.158
2	0.046	0.444	9.737	8.070	4.801	1.141	2.806	0.051	1.271	0.021	54.704	57.787	32.566	43.308	29.870	32.715	1.608
3	0.046	0.444	9.737	91.200	4.801	1.141	2.972	0.054	1.208	0.020	59.354	62.509	31.334	40.891	26.816	27.816	2.146
1	0.071	0.444	6.236	0.000	7.493	1.781	2.761	0.050	1.632	0.028	40.891	43.855	34.096	46.500	31.640	40.872	0.357
2	0.071	0.444	6.236	8.070	7.493	1.781	2.834	0.051	1.316	0.022	53.564	56.685	36.466	46.785	31.368	34.006	1.982
3	0.071	0.444	6.236	91.200	7.493	1.781	2.908	0.053	1.024	0.017	64.783	67.890	35.384	43.288	25.290	26.593	2.041
1	0.071	0.444	6.236	0.000	7.493	1.781	2.693	0.048	1.548	0.026	42.518	45.450	34.788	46.619	32.046	41.619	0.361
2	0.071	0.444	6.236	8.070	7.493	1.781	2.890	0.052	1.412	0.024	51.142	54.331	36.474	46.894	31.672	34.943	2.002
3	0.071	0.444	6.236	91.200	7.493	1.781	2.930	0.053	1.057	0.018	63.925	66.904	38.739	46.267	31.685	32.319	2.047
1	0.071	0.444	6.236	0.000	7.493	1.781	2.888	0.048	1.674	0.029	37.877	40.488	34.582	45.232	31.616	40.627	0.342
2	0.071	0.444	6.236	8.070	7.493	1.781	2.690	0.048	1.333	0.022	50.446	53.443	34.940	48.715	31.474	35.772	2.002
3	0.071	0.444	6.236	91.200	7.493	1.781	2.813	0.051	1.244	0.021	55.777	58.852	36.626	46.547	31.805	32.660	2.053
1	0.087	0.444	5.118	0.000	9.129	2.169	3.025	0.055	1.642	0.028	45.719	49.015	33.612	44.181	30.647	40.171	0.337
2	0.087	0.444	5.118	8.070	9.129	2.169	2.652	0.048	1.130	0.019	57.391	60.286	35.933	45.781	31.823	34.985	2.116
3	0.087	0.444	5.118	91.200	9.129	2.169	2.808	0.051	1.121	0.019	60.078	63.064	39.172	46.607	32.256	32.559	2.023
1	0.087	0.444	5.118	0.000	9.129	2.169	2.773	0.050	1.747	0.030	37.000	39.870	33.810	44.903	31.606	40.607	0.334
2	0.087	0.444	5.118	8.070	9.129	2.169	2.957	0.054	1.199	0.020	59.452	62.591	35.510	45.541	31.379	34.714	2.047
3	0.087	0.444	5.118	91.200	9.129	2.169	2.884	0.052	1.091	0.018	62.171	65.187	39.288	46.692	32.483	32.722	2.094
1	0.087	0.444	5.118	0.000	9.129	2.169	2.559	0.046	1.578	0.027	38.335	41.047	30.679	41.714	29.930	37.946	0.332
2	0.087	0.444	5.118	8.070	9.129	2.169	3.076	0.056	1.365	0.023	55.624	58.951	36.516	45.931	31.515	34.192	2.041
3	0.087	0.444	5.118	91.200	9.129	2.169	2.924	0.053	1.197	0.020	59.063	62.181	33.364	46.087	31.046	32.073	2.056

Experimental data 11

Type of case ทดสอบการพ่นฝอย

Projection area of case 406.17 cm²

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity	Conc.	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)	[-]	[-]	Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	1.141	3.730	0.070	2.412	0.043	35.335	38.965	29.710	39.439	24.319	32.391	0.174
2	0.046	0.700	15.351	8.070	4.801	1.141	3.880	0.073	2.441	0.043	37.088	40.919	31.711	41.340	29.980	32.256	1.582
3	0.046	0.700	15.351	91.200	4.801	1.141	3.955	0.075	1.339	0.023	66.144	69.880	31.789	41.344	30.029	31.590	2.200
1	0.046	0.700	15.351	0.000	4.801	1.141	3.823	0.072	2.772	0.050	27.491	30.724	30.731	40.564	25.665	33.407	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	3.620	0.068	2.000	0.035	44.751	48.581	31.728	41.472	29.639	32.458	1.677
3	0.046	0.700	15.351	91.200	4.801	1.141	3.977	0.075	1.471	0.025	63.012	66.919	31.365	42.002	29.306	31.040	2.238
1	0.046	0.700	15.351	0.000	4.801	1.141	3.784	0.071	2.359	0.042	37.659	41.433	28.810	40.923	26.210	36.512	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	3.792	0.071	2.052	0.036	45.886	49.886	31.467	41.225	29.216	33.157	1.614
3	0.046	0.700	15.351	91.200	4.801	1.141	3.777	0.071	1.327	0.022	64.866	68.525	31.192	41.799	29.496	30.903	2.265
1	0.071	0.700	9.831	0.000	7.493	1.781	3.699	0.069	2.333	0.041	36.929	40.603	27.401	38.903	23.236	31.066	0.478
2	0.071	0.700	9.831	8.070	7.493	1.781	3.763	0.071	1.766	0.030	53.069	57.055	33.379	41.296	29.993	31.746	2.376
3	0.071	0.700	9.831	91.200	7.493	1.781	3.646	0.068	1.191	0.020	67.334	70.762	31.112	41.770	29.460	30.827	2.583
1	0.071	0.700	9.831	0.000	7.493	1.781	3.738	0.070	2.263	0.040	39.460	43.261	39.232	47.567	32.052	38.454	0.477
2	0.071	0.700	9.831	8.070	7.493	1.781	3.740	0.070	1.912	0.033	48.877	52.855	31.307	40.236	29.937	31.676	2.378
3	0.071	0.700	9.831	91.200	7.493	1.781	4.019	0.076	1.314	0.022	67.305	71.026	31.189	41.717	29.539	30.964	2.577
1	0.071	0.700	9.831	0.000	7.493	1.781	3.646	0.068	2.160	0.038	40.757	44.520	29.607	39.180	23.253	30.242	0.480
2	0.071	0.700	9.831	8.070	7.493	1.781	3.925	0.074	1.716	0.029	56.280	60.360	32.954	40.347	29.684	31.001	2.379
3	0.071	0.700	9.831	91.200	7.493	1.781	3.897	0.074	1.289	0.022	66.923	70.571	31.088	41.504	29.764	30.839	2.543
1	0.087	0.700	8.069	0.000	9.129	2.169	3.895	0.074	2.256	0.040	42.080	46.094	28.519	37.270	23.830	30.821	0.469
2	0.087	0.700	8.069	8.070	9.129	2.169	3.796	0.072	1.645	0.028	56.665	60.624	36.104	46.349	29.531	30.163	2.655
3	0.087	0.700	8.069	91.200	9.129	2.169	3.889	0.074	1.234	0.021	68.269	71.833	31.150	41.462	29.809	30.600	2.644
1	0.087	0.700	8.069	0.000	9.129	2.169	3.947	0.075	2.384	0.042	39.600	43.584	28.636	37.946	23.665	30.969	0.452
2	0.087	0.700	8.069	8.070	9.129	2.169	3.965	0.075	1.813	0.031	64.275	68.424	25.434	36.693	21.862	22.639	2.682
3	0.087	0.700	8.069	91.200	9.129	2.169	4.028	0.077	1.718	0.030	57.349	61.492	31.149	41.461	29.856	30.650	2.643
1	0.087	0.700	8.069	0.000	9.129	2.169	3.921	0.074	2.323	0.041	40.755	44.754	28.740	38.513	23.915	31.050	0.467
2	0.087	0.700	8.069	8.070	9.129	2.169	3.758	0.071	1.835	0.032	51.171	55.165	25.328	35.943	20.427	22.444	2.653
3	0.087	0.700	8.069	91.200	9.129	2.169	3.625	0.068	1.177	0.020	67.531	70.931	31.132	41.234	30.069	30.773	2.650

Experimental data 12

Type of case กล่องทาบวงเวียน

Projection area of case 406.17 cm²

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc. (g/m ³)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	1.141	7.703	0.169	4.681	0.091	39.231	45.921	30.512	42.859	27.411	35.186	0.193
2	0.046	0.924	20.263	8.070	4.801	1.141	7.253	0.157	3.344	0.062	53.895	60.569	28.618	38.150	25.113	26.547	1.585
3	0.046	0.924	20.263	91.200	4.801	1.141	7.053	0.151	2.725	0.049	61.364	67.603	27.773	37.913	25.396	28.598	2.310
1	0.046	0.924	20.263	0.000	4.801	1.141	7.296	0.158	4.084	0.078	44.024	50.672	31.473	42.834	27.687	35.343	0.202
2	0.046	0.924	20.263	8.070	4.801	1.141	7.019	0.150	3.167	0.058	54.880	61.372	29.216	39.424	24.624	26.101	1.606
3	0.046	0.924	20.263	91.200	4.801	1.141	7.019	0.150	2.389	0.042	65.964	71.851	27.769	38.877	25.418	28.400	2.335
1	0.046	0.924	20.263	0.000	4.801	1.141	7.123	0.153	4.198	0.080	41.064	47.479	31.977	42.915	27.717	36.484	0.221
2	0.046	0.924	20.263	8.070	4.801	1.141	7.448	0.162	2.996	0.055	59.774	66.359	28.943	39.958	25.199	26.024	1.637
3	0.046	0.924	20.263	91.200	4.801	1.141	7.084	0.152	2.510	0.045	64.568	70.608	27.828	38.490	25.521	25.393	2.379
1	0.071	0.924	12.978	0.000	7.493	1.781	7.144	0.154	4.118	0.079	42.357	48.843	31.544	42.926	27.734	35.603	0.483
2	0.071	0.924	12.978	8.070	7.493	1.781	7.185	0.155	3.151	0.058	56.145	62.713	28.329	40.217	24.737	26.830	2.469
3	0.071	0.924	12.978	91.200	7.493	1.781	7.106	0.153	2.601	0.047	63.397	69.537	28.206	38.842	25.584	25.475	2.867
1	0.071	0.924	12.978	0.000	7.493	1.781	7.059	0.151	4.143	0.079	41.309	47.693	28.851	40.137	25.117	33.806	0.482
2	0.071	0.924	12.978	8.070	7.493	1.781	7.252	0.157	2.571	0.046	64.548	70.694	28.811	40.686	25.170	27.361	2.464
3	0.071	0.924	12.978	91.200	7.493	1.781	7.524	0.164	2.514	0.045	66.587	72.725	28.171	39.144	25.670	26.440	2.959
1	0.071	0.924	12.978	0.000	7.493	1.781	7.131	0.153	3.419	0.063	52.054	58.675	31.764	43.013	27.806	34.745	0.486
2	0.071	0.924	12.978	8.070	7.493	1.781	7.100	0.153	2.960	0.054	58.310	64.738	29.608	41.174	25.490	27.931	2.483
3	0.071	0.924	12.978	91.200	7.493	1.781	7.077	0.152	2.067	0.036	70.793	76.247	28.362	38.517	25.694	26.445	2.833
1	0.087	0.924	10.651	0.000	9.129	2.169	7.082	0.152	3.806	0.072	46.258	52.820	31.584	43.034	27.936	34.870	0.469
2	0.087	0.924	10.651	8.070	9.129	2.169	7.257	0.157	2.444	0.043	66.322	72.324	29.978	42.481	26.680	28.001	2.707
3	0.087	0.924	10.651	91.200	9.129	2.169	7.273	0.157	1.969	0.034	72.927	78.241	30.295	40.589	25.570	26.181	3.039
1	0.087	0.924	10.651	0.000	9.129	2.169	6.974	0.149	3.837	0.072	44.981	51.440	31.213	42.940	28.205	35.731	0.463
2	0.087	0.924	10.651	8.070	9.129	2.169	7.447	0.162	2.364	0.042	68.256	74.189	30.956	42.611	26.962	32.097	2.717
3	0.087	0.924	10.651	91.200	9.129	2.169	7.471	0.163	1.920	0.033	74.301	79.541	30.430	40.604	25.554	28.817	3.072
1	0.087	0.924	10.651	0.000	9.129	2.169	7.128	0.153	3.954	0.075	44.529	51.079	30.926	40.218	25.083	32.921	0.468
2	0.087	0.924	10.651	8.070	9.129	2.169	7.155	0.154	2.839	0.051	60.321	66.687	30.419	42.733	27.165	31.215	2.699
3	0.087	0.924	10.651	91.200	9.129	2.169	7.217	0.156	1.903	0.033	73.632	78.828	29.726	40.831	26.726	27.367	3.058

Experimental data 13

Type of case กล่องกระดาษแข็ง Projection area of case 625 cm² Cycle time control open 60 sec.
 Type of dust ฝุ่นหิน Source of dust โรงโม่หิน Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity	Conc.	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)	[-]	[-]	Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	0.730	25.224	0.285	18.394	0.213	27.077	25.020	25.751	38.380	25.470	35.778	0.285
2	0.046	0.739	16.206	8.070	4.801	0.730	28.356	0.317	18.356	0.213	35.266	32.738	34.014	41.764	29.303	32.954	1.401
3	0.046	0.739	16.206	91.200	4.801	0.730	26.747	0.300	16.561	0.194	38.083	35.412	33.675	41.592	29.123	32.519	1.697
1	0.046	0.739	16.206	0.000	4.801	0.730	21.895	0.250	17.274	0.202	21.105	19.440	26.180	38.008	25.226	35.810	0.285
2	0.046	0.739	16.206	8.070	4.801	0.730	27.615	0.309	17.230	0.201	37.606	34.959	34.237	42.351	25.311	33.699	1.691
3	0.046	0.739	16.206	91.200	4.801	0.730	26.598	0.299	16.135	0.189	39.338	36.606	34.834	41.596	29.238	33.013	1.695
1	0.046	0.739	16.206	0.000	4.801	0.730	27.081	0.304	16.327	0.191	39.710	36.962	26.272	38.058	25.563	35.886	0.306
2	0.046	0.739	16.206	8.070	4.801	0.730	24.864	0.281	18.813	0.218	24.336	22.454	34.504	42.022	29.227	33.643	1.688
3	0.046	0.739	16.206	91.200	4.801	0.730	26.781	0.301	17.200	0.201	35.775	33.221	34.103	40.664	29.272	33.531	1.696
1	0.071	0.739	10.379	0.000	7.493	1.139	27.302	0.306	18.298	0.212	32.979	30.574	32.371	46.098	30.819	40.973	0.328
2	0.071	0.739	10.379	8.070	7.493	1.139	25.664	0.289	13.172	0.157	48.676	45.569	33.546	40.283	29.839	32.516	1.498
3	0.071	0.739	10.379	91.200	7.493	1.139	27.981	0.313	13.087	0.157	53.229	49.991	33.051	40.642	29.092	31.277	1.608
1	0.071	0.739	10.379	0.000	7.493	1.139	27.800	0.311	17.936	0.209	35.482	32.942	32.993	46.154	31.046	40.525	0.317
2	0.071	0.739	10.379	8.070	7.493	1.139	27.445	0.307	14.656	0.174	46.599	43.564	33.617	40.408	28.960	32.802	1.488
3	0.071	0.739	10.379	91.200	7.493	1.139	26.406	0.297	13.585	0.162	48.553	45.451	33.388	40.852	28.400	32.668	1.600
1	0.071	0.739	10.379	0.000	7.493	1.139	26.999	0.303	17.592	0.205	34.842	32.336	33.611	44.290	31.236	40.432	0.309
2	0.071	0.739	10.379	8.070	7.493	1.139	26.980	0.303	13.899	0.165	48.484	45.384	36.367	41.311	32.910	36.206	1.432
3	0.071	0.739	10.379	91.200	7.493	1.139	27.961	0.313	13.699	0.163	51.007	47.828	33.537	41.080	28.667	32.422	1.600
1	0.087	0.739	8.518	0.000	9.129	1.388	27.023	0.303	16.037	0.188	40.654	37.862	34.496	46.500	31.640	39.972	0.303
2	0.087	0.739	8.518	8.070	9.129	1.388	26.455	0.297	14.955	0.177	43.470	40.557	31.884	39.200	26.924	39.792	1.437
3	0.087	0.739	8.518	91.200	9.129	1.388	26.793	0.301	13.785	0.164	48.550	45.448	28.414	38.278	27.885	30.837	1.670
1	0.087	0.739	8.518	0.000	9.129	1.388	26.992	0.303	16.961	0.198	37.163	34.537	34.688	46.619	31.746	40.106	0.311
2	0.087	0.739	8.518	8.070	9.129	1.388	26.984	0.303	17.279	0.202	35.966	33.401	32.394	43.791	27.396	30.103	1.529
3	0.087	0.739	8.518	91.200	9.129	1.388	25.682	0.289	13.305	0.159	48.193	45.103	30.408	38.988	26.468	29.000	1.741
1	0.087	0.739	8.518	0.000	9.129	1.388	27.704	0.310	16.647	0.195	39.911	37.153	32.777	46.332	25.615	35.082	0.317
2	0.087	0.739	8.518	8.070	9.129	1.388	27.497	0.308	18.766	0.217	31.753	29.416	32.756	40.263	27.786	30.356	1.515
3	0.087	0.739	8.518	91.200	9.129	1.388	26.329	0.296	14.165	0.168	46.200	43.180	29.350	39.334	26.528	29.189	1.738

Experimental data 14

Type of case กล่องตัวช่วยแนวตั้ง

Projection area of case 625 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	0.730	37.928	0.413	26.282	0.296	30.706	28.430	30.943	42.857	27.753	37.696	0.331
2	0.046	1.159	25.417	8.070	4.801	0.730	36.114	0.395	17.119	0.200	52.597	49.375	34.727	41.610	29.235	34.387	1.579
3	0.046	1.159	25.417	91.200	4.801	0.730	37.196	0.406	14.331	0.170	61.472	58.094	32.889	39.647	27.766	30.293	1.303
1	0.046	1.159	25.417	0.000	4.801	0.730	37.832	0.412	27.127	0.304	28.296	26.164	31.019	43.974	28.906	25.926	0.337
2	0.046	1.159	25.417	8.070	4.801	0.730	37.762	0.411	18.959	0.219	49.793	46.651	31.896	40.738	28.166	31.079	1.610
3	0.046	1.159	25.417	91.200	4.801	0.730	38.265	0.416	13.808	0.164	63.915	60.524	37.112	44.727	31.475	34.492	1.375
1	0.046	1.159	25.417	0.000	4.801	0.730	38.103	0.415	28.034	0.313	26.426	24.409	30.996	42.055	28.911	36.536	0.336
2	0.046	1.159	25.417	8.070	4.801	0.730	37.359	0.407	18.673	0.216	50.017	46.868	36.158	42.673	32.352	35.824	1.564
3	0.046	1.159	25.417	91.200	4.801	0.730	36.858	0.402	14.115	0.168	61.704	58.325	34.271	43.581	30.175	33.915	1.369
1	0.071	1.159	16.278	0.000	7.493	1.139	38.515	0.419	24.706	0.279	35.854	33.295	31.068	44.179	26.050	34.482	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	36.060	0.394	16.097	0.189	55.361	52.073	34.875	41.689	29.867	35.407	1.363
3	0.071	1.159	16.278	91.200	7.493	1.139	37.432	0.408	11.490	0.139	69.304	65.938	35.496	40.591	28.601	34.576	1.675
1	0.071	1.159	16.278	0.000	7.493	1.139	38.960	0.423	23.983	0.272	38.442	35.754	29.041	41.102	26.315	34.819	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	36.349	0.397	16.089	0.189	55.737	52.442	37.699	45.745	35.645	41.460	1.398
3	0.071	1.159	16.278	91.200	7.493	1.139	36.211	0.396	11.336	0.137	68.695	65.322	35.814	42.749	28.805	34.692	1.661
1	0.071	1.159	16.278	0.000	7.493	1.139	38.734	0.421	24.226	0.274	37.455	34.815	31.267	44.169	25.084	33.396	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	37.045	0.404	17.409	0.203	53.006	49.773	32.880	40.007	28.456	31.051	1.311
3	0.071	1.159	16.278	91.200	7.493	1.139	35.755	0.391	11.230	0.136	68.592	65.218	36.687	42.720	29.027	36.163	1.679
1	0.087	1.159	13.359	0.000	9.129	1.388	36.452	0.398	23.547	0.267	35.403	32.867	31.122	44.140	25.207	34.705	0.338
2	0.087	1.159	13.359	8.070	9.129	1.388	35.881	0.393	16.507	0.193	53.995	50.738	34.565	43.734	30.777	34.482	1.470
3	0.087	1.159	13.359	91.200	9.129	1.388	36.854	0.402	10.111	0.124	72.565	69.254	35.553	42.380	28.934	38.965	1.645
1	0.087	1.159	13.359	0.000	9.129	1.388	36.967	0.403	23.320	0.265	36.917	34.304	31.172	44.242	25.237	35.066	0.345
2	0.087	1.159	13.359	8.070	9.129	1.388	36.956	0.403	16.989	0.199	54.029	50.771	34.663	44.569	29.836	35.479	1.472
3	0.087	1.159	13.359	91.200	9.129	1.388	37.143	0.405	10.115	0.124	72.767	69.461	34.826	44.133	28.847	33.845	1.686
1	0.087	1.159	13.359	0.000	9.129	1.388	36.754	0.401	23.883	0.271	35.019	32.504	32.270	45.225	26.218	34.632	0.350
2	0.087	1.159	13.359	8.070	9.129	1.388	37.013	0.404	16.717	0.196	54.835	51.559	34.479	40.396	28.913	33.992	1.479
3	0.087	1.159	13.359	91.200	9.129	1.388	36.850	0.402	9.937	0.122	73.034	69.733	35.716	43.139	30.635	34.531	1.677

Experimental data 15

Type of case กล่องกระดาษแข็ง

Projection area of case 625 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	0.730	42.202	0.455	26.251	0.295	37.797	35.140	33.804	42.544	25.737	31.812	0.347
2	0.046	1.579	34.627	8.070	4.801	0.730	48.252	0.514	27.628	0.309	42.742	39.859	32.784	40.706	33.568	35.512	1.701
3	0.046	1.579	34.627	91.200	4.801	0.730	46.795	0.500	17.029	0.199	63.609	60.220	32.705	37.967	33.823	35.347	1.909
1	0.046	1.579	34.627	0.000	4.801	0.730	42.720	0.460	27.696	0.310	35.169	32.645	34.986	42.766	26.021	32.016	0.349
2	0.046	1.579	34.627	8.070	4.801	0.730	46.596	0.498	25.244	0.285	45.824	42.818	33.791	40.169	32.606	34.976	1.640
3	0.046	1.579	34.627	91.200	4.801	0.730	47.243	0.505	18.568	0.215	60.697	57.326	33.022	38.074	34.597	35.167	1.886
1	0.046	1.579	34.627	0.000	4.801	0.730	43.936	0.472	27.791	0.311	36.747	34.142	34.138	42.897	26.273	32.161	0.353
2	0.046	1.579	34.627	8.070	4.801	0.730	46.425	0.497	25.723	0.290	44.592	41.634	32.779	39.002	33.189	34.840	1.637
3	0.046	1.579	34.627	91.200	4.801	0.730	48.899	0.521	19.045	0.220	61.052	57.679	33.481	38.472	34.330	35.416	2.090
1	0.071	1.579	22.177	0.000	7.493	1.139	43.145	0.464	26.323	0.296	38.989	36.275	34.227	43.114	26.426	32.344	0.364
2	0.071	1.579	22.177	8.070	7.493	1.139	49.799	0.529	23.134	0.263	53.645	50.299	33.730	38.838	33.106	36.864	1.833
3	0.071	1.579	22.177	91.200	7.493	1.139	47.809	0.510	16.146	0.190	66.228	62.839	34.835	41.876	35.078	36.382	2.004
1	0.071	1.579	22.177	0.000	7.493	1.139	43.313	0.466	24.080	0.273	44.405	41.454	35.309	43.146	26.496	32.308	0.361
2	0.071	1.579	22.177	8.070	7.493	1.139	48.574	0.518	23.840	0.270	50.920	47.744	34.076	39.014	33.574	36.352	1.747
3	0.071	1.579	22.177	91.200	7.493	1.139	48.346	0.515	16.527	0.194	65.815	62.425	32.006	41.983	38.991	39.342	2.087
1	0.071	1.579	22.177	0.000	7.493	1.139	44.443	0.477	24.388	0.276	45.125	42.146	35.320	43.185	26.593	32.331	0.358
2	0.071	1.579	22.177	8.070	7.493	1.139	46.966	0.502	22.767	0.259	51.525	48.331	34.687	39.474	33.357	35.266	1.888
3	0.071	1.579	22.177	91.200	7.493	1.139	48.419	0.516	16.904	0.198	65.088	61.697	31.568	39.276	30.306	32.262	1.932
1	0.087	1.579	18.201	0.000	9.129	1.388	42.620	0.459	25.719	0.290	39.655	36.909	35.415	43.372	26.533	32.517	0.349
2	0.087	1.579	18.201	8.070	9.129	1.388	48.155	0.513	20.403	0.235	57.631	54.301	32.341	42.372	35.672	37.032	1.752
3	0.087	1.579	18.201	91.200	9.129	1.388	49.791	0.529	11.708	0.141	76.486	73.287	33.055	40.094	34.806	35.933	2.010
1	0.087	1.579	18.201	0.000	9.129	1.388	42.717	0.460	25.833	0.291	39.525	36.785	34.464	42.482	26.566	32.656	0.357
2	0.087	1.579	18.201	8.070	9.129	1.388	47.265	0.506	19.523	0.225	58.686	55.340	32.669	40.778	35.913	37.277	1.790
3	0.087	1.579	18.201	91.200	9.129	1.388	47.870	0.511	11.391	0.138	76.204	72.996	33.222	40.302	35.021	36.128	1.909
1	0.087	1.579	18.201	0.000	9.129	1.388	43.000	0.463	26.006	0.293	39.521	36.781	34.723	43.398	27.395	34.302	0.359
2	0.087	1.579	18.201	8.070	9.129	1.388	48.086	0.513	19.593	0.226	59.254	55.900	33.759	40.937	35.461	37.560	1.767
3	0.087	1.579	18.201	91.200	9.129	1.388	48.114	0.513	9.711	0.119	79.817	76.761	33.371	38.065	31.116	33.190	2.259

Experimental data 16

Type of case กล่องความชื้น

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	1.141	24.970	0.282	19.454	0.225	22.091	20.358	31.206	39.916	29.061	35.462	0.281
2	0.046	0.739	16.206	8.070	4.801	1.141	25.344	0.286	17.713	0.206	30.110	27.869	29.396	35.927	27.506	30.755	0.938
3	0.046	0.739	16.206	91.200	4.801	1.141	26.418	0.297	14.389	0.171	45.533	42.538	34.896	39.523	30.175	33.881	1.111
1	0.046	0.739	16.206	0.000	4.801	1.141	24.764	0.280	18.555	0.215	25.163	23.228	34.100	43.549	31.658	38.559	0.289
2	0.046	0.739	16.206	8.070	4.801	1.141	26.549	0.298	17.938	0.209	32.434	30.060	31.734	37.780	28.033	32.319	0.970
3	0.046	0.739	16.206	91.200	4.801	1.141	26.561	0.298	14.864	0.176	44.038	41.102	35.425	43.256	30.637	37.443	1.117
1	0.046	0.739	16.206	0.000	4.801	1.141	24.832	0.281	18.233	0.212	26.575	24.549	35.822	45.312	35.608	42.854	0.333
2	0.046	0.739	16.206	8.070	4.801	1.141	27.489	0.308	17.254	0.201	37.233	34.604	33.213	39.528	29.703	32.508	0.939
3	0.046	0.739	16.206	91.200	4.801	1.141	26.349	0.296	14.768	0.175	43.952	41.019	36.080	43.705	31.318	35.948	1.112
1	0.071	0.739	10.379	0.000	7.493	1.781	26.582	0.299	18.390	0.213	30.818	28.535	26.994	35.115	26.880	33.534	0.284
2	0.071	0.739	10.379	8.070	7.493	1.781	27.774	0.311	14.217	0.169	48.812	45.701	36.922	41.168	31.722	36.411	1.187
3	0.071	0.739	10.379	91.200	7.493	1.781	25.468	0.287	13.758	0.164	45.975	42.983	37.248	44.920	32.714	38.925	1.205
1	0.071	0.739	10.379	0.000	7.493	1.781	26.430	0.297	19.180	0.222	27.431	25.352	28.105	36.063	27.871	35.620	0.308
2	0.071	0.739	10.379	8.070	7.493	1.781	25.918	0.292	14.625	0.173	43.572	40.655	36.982	41.973	32.177	35.565	1.094
3	0.071	0.739	10.379	91.200	7.493	1.781	25.959	0.292	12.830	0.154	50.576	47.410	37.462	45.140	32.890	38.543	1.166
1	0.071	0.739	10.379	0.000	7.493	1.781	27.981	0.313	18.641	0.218	33.380	30.953	27.593	34.353	27.194	32.644	0.305
2	0.071	0.739	10.379	8.070	7.493	1.781	26.813	0.301	13.545	0.161	49.483	46.351	37.506	44.824	32.431	38.054	1.122
3	0.071	0.739	10.379	91.200	7.493	1.781	25.661	0.289	13.723	0.163	46.522	43.490	37.822	45.192	33.070	38.097	1.160
1	0.087	0.739	8.518	0.000	9.129	2.169	26.068	0.293	16.327	0.191	37.368	34.732	27.092	35.353	28.066	33.697	0.308
2	0.087	0.739	8.518	8.070	9.129	2.169	26.154	0.294	13.678	0.163	47.702	44.629	37.900	42.298	33.883	39.361	1.136
3	0.087	0.739	8.518	91.200	9.129	2.169	24.471	0.277	11.885	0.143	51.432	48.242	37.108	44.342	34.667	37.240	1.193
1	0.087	0.739	8.518	0.000	9.129	2.169	25.216	0.285	16.810	0.197	33.336	30.911	33.866	38.803	33.893	37.312	0.304
2	0.087	0.739	8.518	8.070	9.129	2.169	27.379	0.307	13.643	0.163	50.170	47.016	38.409	42.512	34.139	40.016	1.142
3	0.087	0.739	8.518	91.200	9.129	2.169	23.783	0.270	9.398	0.116	60.451	57.083	37.744	44.605	34.813	38.421	1.168
1	0.087	0.739	8.518	0.000	9.129	2.169	25.695	0.290	16.929	0.198	34.116	31.649	34.954	40.630	35.617	39.468	0.292
2	0.087	0.739	8.518	8.070	9.129	2.169	26.040	0.293	12.945	0.155	50.288	47.131	34.026	40.224	30.417	35.913	1.260
3	0.087	0.739	8.518	91.200	9.129	2.169	24.677	0.279	9.364	0.115	62.054	58.672	38.276	45.641	38.204	37.365	1.221

Experimental data 17

Type of case ทดสอบการดูดซับ

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่นปูน

Source of dust โรงปูน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	1.141	32.774	0.361	24.179	0.274	26.225	24.221	37.561	42.206	38.591	42.317	0.338
2	0.046	1.159	25.417	8.070	4.801	1.141	35.568	0.389	18.925	0.219	46.792	43.751	38.221	43.624	34.475	39.828	0.927
3	0.046	1.159	25.417	91.200	4.801	1.141	35.478	0.389	16.116	0.189	54.575	51.304	30.072	36.772	26.568	30.771	1.286
1	0.046	1.159	25.417	0.000	4.801	1.141	38.383	0.417	26.822	0.301	30.084	27.844	35.473	40.183	35.091	39.891	0.337
2	0.046	1.159	25.417	8.070	4.801	1.141	35.113	0.385	18.714	0.217	46.704	43.665	38.509	43.709	32.814	38.080	0.948
3	0.046	1.159	25.417	91.200	4.801	1.141	33.274	0.367	14.869	0.176	55.313	52.027	33.183	39.597	25.852	31.770	1.154
1	0.046	1.159	25.417	0.000	4.801	1.141	33.052	0.364	23.854	0.271	27.829	25.725	32.254	39.613	32.016	37.923	0.344
2	0.046	1.159	25.417	8.070	4.801	1.141	36.659	0.400	18.626	0.216	49.191	46.068	36.614	42.811	30.723	35.449	0.943
3	0.046	1.159	25.417	91.200	4.801	1.141	34.294	0.377	15.429	0.182	55.010	51.730	34.380	40.502	26.572	33.526	1.203
1	0.071	1.159	16.278	0.000	7.493	1.781	31.705	0.351	23.255	0.264	26.652	24.621	36.466	40.994	37.183	41.245	0.333
2	0.071	1.159	16.278	8.070	7.493	1.781	34.436	0.378	17.714	0.206	48.560	45.457	35.289	41.065	27.583	32.060	0.871
3	0.071	1.159	16.278	91.200	7.493	1.781	32.149	0.355	15.651	0.184	51.317	48.130	36.375	43.095	31.116	35.412	1.126
1	0.071	1.159	16.278	0.000	7.493	1.781	33.596	0.370	25.219	0.285	24.935	23.014	37.246	41.631	37.953	41.725	0.329
2	0.071	1.159	16.278	8.070	7.493	1.781	35.478	0.389	18.007	0.209	49.245	46.120	35.913	41.589	29.512	32.702	0.840
3	0.071	1.159	16.278	91.200	7.493	1.781	35.006	0.384	16.214	0.190	53.682	50.433	36.422	43.015	31.948	35.905	1.180
1	0.071	1.159	16.278	0.000	7.493	1.781	35.692	0.391	23.264	0.264	34.820	32.315	38.012	42.384	29.556	42.538	0.324
2	0.071	1.159	16.278	8.070	7.493	1.781	36.036	0.394	20.733	0.238	42.466	39.595	36.082	42.929	30.302	35.429	0.822
3	0.071	1.159	16.278	91.200	7.493	1.781	34.888	0.383	16.460	0.193	52.820	49.592	36.642	43.092	32.405	36.106	1.198
1	0.087	1.159	13.359	0.000	9.129	2.169	36.476	0.399	23.287	0.265	36.158	33.583	37.376	42.183	38.457	42.334	0.324
2	0.087	1.159	13.359	8.070	9.129	2.169	35.340	0.387	14.936	0.177	57.736	54.405	36.843	43.129	32.773	36.059	1.024
3	0.087	1.159	13.359	91.200	9.129	2.169	36.372	0.398	10.186	0.125	71.995	68.672	35.452	42.812	31.923	36.198	1.164
1	0.087	1.159	13.359	0.000	9.129	2.169	34.834	0.382	24.147	0.274	30.680	28.405	38.046	43.332	38.681	43.661	0.335
2	0.087	1.159	13.359	8.070	9.129	2.169	36.276	0.397	16.863	0.197	53.515	50.269	34.397	42.847	32.152	38.865	1.247
3	0.087	1.159	13.359	91.200	9.129	2.169	36.689	0.401	11.559	0.140	68.495	65.120	36.246	41.793	30.976	35.761	1.180
1	0.087	1.159	13.359	0.000	9.129	2.169	34.115	0.375	24.232	0.274	28.970	26.797	36.282	43.540	37.632	43.484	0.336
2	0.087	1.159	13.359	8.070	9.129	2.169	37.028	0.404	16.680	0.195	54.953	51.674	34.665	43.063	32.069	38.042	1.205
3	0.087	1.159	13.359	91.200	9.129	2.169	36.619	0.400	11.491	0.139	68.620	65.247	36.271	41.208	29.150	38.551	1.144

Experimental data 18

Type of case กล่องควบคุมเสียง

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	1.141	41.000	0.443	27.190	0.305	33.683	31.239	31.535	36.643	32.553	36.656	0.360
2	0.046	1.579	34.627	8.070	4.801	1.141	44.029	0.473	23.164	0.263	47.389	44.327	35.564	40.367	33.014	36.055	1.547
3	0.046	1.579	34.627	91.200	4.801	1.141	43.187	0.465	17.339	0.202	59.851	56.490	32.611	38.404	32.980	35.002	1.892
1	0.046	1.579	34.627	0.000	4.801	1.141	43.382	0.467	26.964	0.303	37.845	35.186	32.179	37.103	32.370	35.429	0.362
2	0.046	1.579	34.627	8.070	4.801	1.141	46.458	0.497	23.458	0.286	49.507	46.374	36.576	40.340	33.015	36.018	1.548
3	0.046	1.579	34.627	91.200	4.801	1.141	44.973	0.482	17.346	0.202	61.430	58.053	32.550	38.287	32.841	34.663	1.841
1	0.046	1.579	34.627	0.000	4.801	1.141	43.836	0.471	26.874	0.302	38.694	35.994	31.296	37.788	31.590	36.820	0.343
2	0.046	1.579	34.627	8.070	4.801	1.141	45.743	0.490	23.802	0.270	47.966	44.883	35.672	40.518	33.194	36.163	1.503
3	0.046	1.579	34.627	91.200	4.801	1.141	44.895	0.482	16.476	0.193	63.301	59.913	32.666	38.404	32.972	34.996	1.757
1	0.071	1.579	22.177	0.000	7.493	1.781	39.113	0.425	25.981	0.292	33.575	31.137	33.810	40.066	33.810	36.720	0.367
2	0.071	1.579	22.177	8.070	7.493	1.781	43.223	0.465	19.792	0.228	64.210	50.948	33.036	40.926	31.452	35.581	1.630
3	0.071	1.579	22.177	91.200	7.493	1.781	43.992	0.473	13.042	0.156	70.354	67.002	34.626	41.496	35.988	36.236	1.767
1	0.071	1.579	22.177	0.000	7.493	1.781	42.275	0.456	25.429	0.287	39.849	37.094	34.568	40.697	33.657	38.797	0.356
2	0.071	1.579	22.177	8.070	7.493	1.781	42.502	0.458	19.209	0.222	64.804	51.529	33.258	39.184	31.708	35.782	1.641
3	0.071	1.579	22.177	91.200	7.493	1.781	41.778	0.451	11.800	0.142	71.755	68.428	34.714	40.790	35.007	36.582	1.673
1	0.071	1.579	22.177	0.000	7.493	1.781	42.347	0.457	25.921	0.292	38.789	36.084	33.584	40.148	33.661	38.050	0.353
2	0.071	1.579	22.177	8.070	7.493	1.781	43.992	0.473	19.042	0.220	66.715	53.401	33.626	39.496	31.938	36.236	1.679
3	0.071	1.579	22.177	91.200	7.493	1.781	42.523	0.458	12.031	0.145	71.707	68.378	34.691	41.054	35.269	36.835	1.856
1	0.087	1.579	18.201	0.000	9.129	2.169	42.952	0.463	27.004	0.303	37.130	34.506	36.734	42.268	35.762	40.515	0.359
2	0.087	1.579	18.201	8.070	9.129	2.169	42.413	0.457	15.210	0.180	64.138	60.748	33.336	40.504	33.012	35.210	1.724
3	0.087	1.579	18.201	91.200	9.129	2.169	43.519	0.468	8.819	0.109	79.735	76.675	33.319	38.685	32.438	35.469	1.934
1	0.087	1.579	18.201	0.000	9.129	2.169	45.609	0.489	27.671	0.310	39.330	36.599	38.351	43.568	38.038	42.987	0.352
2	0.087	1.579	18.201	8.070	9.129	2.169	42.315	0.456	16.120	0.169	61.905	58.524	33.414	40.843	35.636	37.263	1.785
3	0.087	1.579	18.201	91.200	9.129	2.169	43.849	0.471	9.283	0.114	78.830	75.727	33.179	38.650	34.476	35.192	1.940
1	0.087	1.579	18.201	0.000	9.129	2.169	42.944	0.463	26.524	0.298	38.236	35.557	38.118	44.585	38.125	43.976	0.366
2	0.087	1.579	18.201	8.070	9.129	2.169	44.645	0.479	15.959	0.188	64.254	60.863	33.386	40.537	35.928	27.211	1.706
3	0.087	1.579	18.201	91.200	9.129	2.169	45.943	0.492	10.927	0.133	76.216	73.008	33.292	38.726	34.516	35.364	1.925

Experimental data 19

Type of case การกระจายแบบวง

Projection area of case 625 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc. (g/m ³)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	0.730	25.224	0.285	18.394	0.213	27.077	25.020	25.751	38.380	25.470	35.778	0.285
2	0.046	0.739	16.206	8.070	4.801	0.730	25.610	0.289	15.222	0.180	40.562	37.775	28.199	36.856	23.939	26.173	1.205
3	0.046	0.739	16.206	91.200	4.801	0.730	27.930	0.312	10.092	0.123	63.867	60.477	31.372	38.933	25.558	28.067	1.387
1	0.046	0.739	16.206	0.000	4.801	0.730	21.895	0.250	17.274	0.202	21.105	19.440	26.180	38.006	25.229	25.810	0.299
2	0.046	0.739	16.206	8.070	4.801	0.730	27.568	0.309	14.835	0.175	46.188	43.168	29.590	38.787	23.893	26.782	1.219
3	0.046	0.739	16.206	91.200	4.801	0.730	26.672	0.300	9.256	0.114	65.297	61.906	32.006	39.546	26.522	28.633	1.380
1	0.046	0.739	16.206	0.000	4.801	0.730	27.081	0.304	16.327	0.191	39.710	36.962	26.272	38.058	25.563	35.866	0.306
2	0.046	0.739	16.206	8.070	4.801	0.730	25.952	0.292	15.010	0.177	42.162	39.304	30.679	38.073	24.591	27.454	1.215
3	0.046	0.739	16.206	91.200	4.801	0.730	25.789	0.291	9.670	0.119	62.503	59.119	32.439	38.037	28.957	32.616	1.414
1	0.071	0.739	10.379	0.000	7.493	1.139	27.302	0.306	18.293	0.212	32.979	30.574	32.371	46.096	30.819	40.973	0.328
2	0.071	0.739	10.379	8.070	7.493	1.139	27.140	0.304	16.196	0.190	40.324	37.547	32.897	38.566	23.379	33.317	1.233
3	0.071	0.739	10.379	91.200	7.493	1.139	26.641	0.299	10.156	0.124	61.878	58.498	30.696	38.739	26.177	29.957	1.439
1	0.071	0.739	10.379	0.000	7.493	1.139	27.800	0.311	17.936	0.209	35.482	32.942	32.993	46.154	31.046	40.525	0.317
2	0.071	0.739	10.379	8.070	7.493	1.139	28.010	0.313	16.078	0.189	42.599	39.722	33.125	40.812	29.606	33.839	1.218
3	0.071	0.739	10.379	91.200	7.493	1.139	29.494	0.328	8.380	0.104	71.587	68.256	31.541	39.656	29.387	33.047	1.515
1	0.071	0.739	10.379	0.000	7.493	1.139	26.999	0.303	17.592	0.205	34.842	32.336	33.611	46.290	31.236	40.432	0.309
2	0.071	0.739	10.379	8.070	7.493	1.139	29.139	0.325	16.255	0.191	44.216	41.272	30.204	38.376	28.709	32.179	1.234
3	0.071	0.739	10.379	91.200	7.493	1.139	23.793	0.270	9.064	0.112	61.905	58.524	28.341	38.122	23.449	27.639	1.454
1	0.087	0.739	8.518	0.000	9.129	1.388	27.023	0.303	16.037	0.188	40.654	37.862	34.496	46.500	31.640	39.972	0.303
2	0.087	0.739	8.518	8.070	9.129	1.388	25.372	0.286	11.633	0.141	54.150	50.890	29.727	38.675	23.032	27.252	1.258
3	0.087	0.739	8.518	91.200	9.129	1.388	24.786	0.280	9.963	0.122	59.804	56.443	31.687	39.126	25.571	28.857	1.462
1	0.087	0.739	8.518	0.000	9.129	1.388	26.992	0.303	16.961	0.198	37.163	34.537	34.608	46.619	31.746	40.106	0.311
2	0.087	0.739	8.518	8.070	9.129	1.388	27.367	0.307	11.619	0.140	57.544	54.215	30.583	39.840	23.701	27.850	1.227
3	0.087	0.739	8.518	91.200	9.129	1.388	24.894	0.282	8.518	0.108	65.928	62.538	32.087	39.520	26.266	29.222	1.439
1	0.087	0.739	8.518	0.000	9.129	1.388	27.704	0.310	16.647	0.195	39.911	37.153	32.777	46.332	25.615	35.082	0.317
2	0.087	0.739	8.518	8.070	9.129	1.388	25.405	0.287	10.363	0.127	59.209	55.856	31.206	39.620	24.658	28.542	1.259
3	0.087	0.739	8.518	91.200	9.129	1.388	24.139	0.274	7.614	0.096	68.458	65.083	32.449	39.899	26.969	29.532	1.472

Experimental data 20

Type of case กล่องตัวขนแนวตั้ง

Projection area of case 625 cm²

Cycle time control open 120 sec

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc.(g/m ³)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	0.730	37.928	0.413	26.282	0.296	30.706	28.430	30.943	42.857	27.753	37.696	0.331
2	0.046	1.159	25.417	8.070	4.801	0.730	36.462	0.398	17.147	0.200	52.973	49.741	32.644	40.124	26.676	31.311	1.203
3	0.046	1.159	25.417	91.200	4.801	0.730	35.965	0.393	10.882	0.132	69.743	66.382	37.879	44.886	32.480	36.705	0.788
1	0.046	1.159	25.417	0.000	4.801	0.730	37.832	0.412	27.127	0.304	28.296	26.164	31.019	43.974	28.908	35.629	0.337
2	0.046	1.159	25.417	8.070	4.801	0.730	35.339	0.387	15.195	0.179	57.002	53.683	33.138	40.503	27.040	31.589	1.226
3	0.046	1.159	25.417	91.200	4.801	0.730	35.598	0.390	11.143	0.135	68.698	65.325	40.046	45.033	32.660	40.431	0.232
1	0.046	1.159	25.417	0.000	4.801	0.730	38.103	0.415	28.034	0.313	26.426	24.409	30.996	42.055	28.911	36.536	0.336
2	0.046	1.159	25.417	8.070	4.801	0.730	35.721	0.391	16.070	0.189	55.012	51.732	33.046	40.493	29.985	32.118	1.224
3	0.046	1.159	25.417	91.200	4.801	0.730	36.686	0.401	11.947	0.144	67.434	64.051	32.176	39.899	29.186	30.077	1.478
1	0.071	1.159	16.278	0.000	7.493	1.139	38.515	0.419	24.706	0.279	35.854	33.295	31.068	44.179	25.050	34.482	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	34.849	0.382	13.418	0.180	61.497	58.119	30.386	39.662	25.247	30.279	1.330
3	0.071	1.159	16.278	91.200	7.493	1.139	33.937	0.373	8.408	0.105	75.225	71.984	28.345	36.854	24.261	26.308	1.518
1	0.071	1.159	16.278	0.000	7.493	1.139	38.960	0.423	23.983	0.272	38.442	35.754	29.041	41.102	26.315	34.819	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	34.674	0.381	12.831	0.154	62.995	59.608	32.636	38.337	31.980	37.981	1.220
3	0.071	1.159	16.278	91.200	7.493	1.139	32.200	0.356	7.857	0.098	75.599	72.371	28.976	36.134	26.887	29.552	1.463
1	0.071	1.159	16.278	0.000	7.493	1.139	38.734	0.421	24.226	0.274	37.455	34.815	31.267	44.169	25.064	33.395	0.349
2	0.071	1.159	16.278	8.070	7.493	1.139	33.998	0.374	13.810	0.164	59.380	56.025	37.264	43.343	32.507	38.896	0.782
3	0.071	1.159	16.278	91.200	7.493	1.139	32.648	0.360	8.133	0.101	75.089	71.844	30.070	37.614	22.981	24.511	1.421
1	0.087	1.159	13.359	0.000	9.129	1.388	36.452	0.398	23.547	0.267	35.403	32.867	31.122	44.140	25.207	34.705	0.338
2	0.087	1.159	13.359	8.070	9.129	1.388	33.751	0.371	12.230	0.147	63.764	60.374	30.838	38.553	25.074	29.903	1.206
3	0.087	1.159	13.359	91.200	9.129	1.388	31.455	0.348	9.013	0.111	71.346	68.011	33.754	40.465	30.830	34.037	1.481
1	0.087	1.159	13.359	0.000	9.129	1.388	36.967	0.403	23.320	0.265	36.917	34.304	31.172	44.242	25.237	35.096	0.345
2	0.087	1.159	13.359	8.070	9.129	1.388	32.192	0.356	11.556	0.140	64.103	60.712	31.300	39.078	25.454	29.825	1.225
3	0.087	1.159	13.359	91.200	9.129	1.388	31.961	0.353	8.570	0.106	73.186	69.889	33.745	41.661	33.321	33.154	1.417
1	0.087	1.159	13.359	0.000	9.129	1.388	36.754	0.401	23.883	0.271	35.019	32.504	32.270	45.225	26.218	34.632	0.350
2	0.087	1.159	13.359	8.070	9.129	1.388	32.896	0.363	10.998	0.134	66.567	63.179	31.716	39.716	28.854	33.689	1.283
3	0.087	1.159	13.359	91.200	9.129	1.388	33.821	0.372	8.647	0.107	74.433	71.169	33.288	39.019	30.930	33.410	1.459

Experimental data 21

Type of case บดผงสาคั่วด้วยผงขี้เถ้า

Projection area of case 625 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	0.730	42.202	0.455	26.251	0.295	37.797	35.140	33.804	42.544	25.737	31.812	0.347
2	0.046	1.579	34.627	8.070	4.801	0.730	44.575	0.479	26.559	0.298	40.417	37.636	32.386	42.405	34.675	38.457	1.700
3	0.046	1.579	34.627	91.200	4.801	0.730	45.132	0.484	15.600	0.184	65.435	62.044	26.366	33.299	26.878	30.347	2.032
1	0.046	1.579	34.627	0.000	4.801	0.730	42.720	0.460	27.696	0.310	35.169	32.645	34.986	42.766	26.021	32.016	0.349
2	0.046	1.579	34.627	8.070	4.801	0.730	45.189	0.485	25.580	0.288	43.393	40.483	32.139	42.223	34.788	38.172	1.700
3	0.046	1.579	34.627	91.200	4.801	0.730	43.792	0.471	15.582	0.184	64.418	61.027	26.005	37.065	27.411	30.654	2.095
1	0.046	1.579	34.627	0.000	4.801	0.730	43.936	0.472	27.791	0.311	36.747	34.142	34.138	42.897	26.273	32.161	0.353
2	0.046	1.579	34.627	8.070	4.801	0.730	44.664	0.479	25.775	0.290	42.291	39.427	34.176	42.163	34.729	37.769	1.707
3	0.046	1.579	34.627	91.200	4.801	0.730	42.628	0.459	14.172	0.168	66.754	63.367	29.854	38.329	30.219	32.765	2.082
1	0.071	1.579	22.177	0.000	7.493	1.139	43.145	0.464	26.323	0.296	38.989	36.275	34.227	43.114	26.426	32.344	0.364
2	0.071	1.579	22.177	8.070	7.493	1.139	43.088	0.464	19.712	0.227	54.252	50.989	30.423	37.136	30.270	33.999	1.767
3	0.071	1.579	22.177	91.200	7.493	1.139	43.368	0.467	15.542	0.183	64.163	60.772	33.501	40.636	29.824	32.752	2.112
1	0.071	1.579	22.177	0.000	7.493	1.139	43.313	0.466	24.080	0.273	44.405	41.454	35.309	43.146	26.496	32.308	0.361
2	0.071	1.579	22.177	8.070	7.493	1.139	42.510	0.458	19.738	0.228	53.569	50.322	30.848	37.772	30.369	34.243	1.760
3	0.071	1.579	22.177	91.200	7.493	1.139	43.482	0.468	15.740	0.185	63.801	60.411	33.629	40.767	31.927	33.045	2.108
1	0.071	1.579	22.177	0.000	7.493	1.139	44.443	0.477	24.388	0.276	45.125	42.146	35.320	43.185	26.593	32.331	0.358
2	0.071	1.579	22.177	8.070	7.493	1.139	41.761	0.451	18.806	0.228	52.573	49.351	31.209	38.297	30.517	34.583	1.748
3	0.071	1.579	22.177	91.200	7.493	1.139	44.573	0.478	15.951	0.187	64.214	60.823	33.911	41.146	32.726	35.141	2.101
1	0.087	1.579	18.201	0.000	9.129	1.388	42.620	0.459	25.719	0.290	39.655	36.909	35.415	43.372	26.533	32.517	0.349
2	0.087	1.579	18.201	8.070	9.129	1.388	43.303	0.466	18.466	0.214	57.356	54.031	34.278	41.394	30.268	35.258	2.049
3	0.087	1.579	18.201	91.200	9.129	1.388	41.687	0.450	9.667	0.119	76.811	73.624	35.035	41.850	34.353	36.685	2.091
1	0.087	1.579	18.201	0.000	9.129	1.388	42.717	0.460	25.833	0.291	39.525	36.785	34.454	42.482	26.556	32.656	0.357
2	0.087	1.579	18.201	8.070	9.129	1.388	42.819	0.461	18.207	0.211	57.479	54.152	34.474	41.606	30.326	35.516	2.046
3	0.087	1.579	18.201	91.200	9.129	1.388	42.628	0.459	8.927	0.110	79.058	75.966	35.112	41.962	34.817	36.773	2.128
1	0.087	1.579	18.201	0.000	9.129	1.388	43.000	0.463	26.006	0.293	39.521	36.781	34.723	43.398	27.395	34.302	0.359
2	0.087	1.579	18.201	8.070	9.129	1.388	42.827	0.461	17.379	0.203	59.420	56.065	34.819	41.825	31.071	35.563	2.040
3	0.087	1.579	18.201	91.200	9.129	1.388	43.743	0.470	10.251	0.125	76.565	73.370	35.194	42.079	34.785	36.745	2.130

Experimental data 22

Type of case กล่องกระดาษแข็ง

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.739	16.206	0.000	4.801	1.141	24.970	0.282	19.454	0.225	22.091	20.358	31.206	39.916	29.061	35.462	0.281
2	0.046	0.739	16.206	8.070	4.801	1.141	28.506	0.318	18.166	0.211	36.273	33.693	33.095	43.463	29.701	33.364	1.063
3	0.046	0.739	16.206	91.200	4.801	1.141	27.933	0.312	15.462	0.182	44.646	41.685	37.731	44.699	33.742	35.855	1.382
1	0.046	0.739	16.206	0.000	4.801	1.141	24.794	0.280	18.555	0.215	25.183	23.228	34.100	43.648	31.658	38.558	0.289
2	0.046	0.739	16.206	8.070	4.801	1.141	27.526	0.308	18.759	0.217	31.850	29.508	35.712	41.249	33.310	35.272	1.071
3	0.046	0.739	16.206	91.200	4.801	1.141	28.247	0.316	12.821	0.154	54.611	51.340	37.724	44.736	34.063	35.783	1.390
1	0.046	0.739	16.206	0.000	4.801	1.141	24.832	0.281	18.233	0.212	26.575	24.549	35.822	45.312	35.608	42.854	0.333
2	0.046	0.739	16.206	8.070	4.801	1.141	27.493	0.308	17.903	0.208	34.882	32.374	37.058	44.547	33.519	37.850	1.033
3	0.046	0.739	16.206	91.200	4.801	1.141	28.535	0.319	12.362	0.149	56.678	53.365	38.127	44.741	34.236	36.850	1.422
1	0.071	0.739	10.379	0.000	7.493	1.781	26.592	0.299	18.390	0.213	30.818	28.535	26.994	35.115	26.860	33.534	0.284
2	0.071	0.739	10.379	8.070	7.493	1.781	28.612	0.319	14.370	0.170	49.776	46.635	39.006	44.894	34.341	38.473	0.925
3	0.071	0.739	10.379	91.200	7.493	1.781	25.820	0.291	9.945	0.122	61.483	58.108	31.036	39.956	30.589	33.268	1.268
1	0.071	0.739	10.379	0.000	7.493	1.781	26.430	0.297	19.180	0.222	27.431	25.352	28.105	36.063	27.871	35.620	0.308
2	0.071	0.739	10.379	8.070	7.493	1.781	26.488	0.298	13.726	0.163	48.180	45.090	27.168	34.838	24.039	29.119	1.250
3	0.071	0.739	10.379	91.200	7.493	1.781	26.748	0.300	10.363	0.127	61.257	57.881	34.542	40.956	31.541	34.821	1.292
1	0.071	0.739	10.379	0.000	7.493	1.781	27.981	0.313	18.641	0.218	33.380	30.953	27.593	34.253	27.194	32.644	0.305
2	0.071	0.739	10.379	8.070	7.493	1.781	25.022	0.283	12.829	0.154	48.729	45.621	31.417	38.326	27.022	32.376	1.079
3	0.071	0.739	10.379	91.200	7.493	1.781	26.760	0.300	10.870	0.132	59.380	56.024	34.249	41.821	32.503	33.235	1.332
1	0.087	0.739	8.518	0.000	9.129	2.169	26.068	0.293	16.327	0.191	37.368	34.732	27.092	35.353	28.066	33.697	0.308
2	0.087	0.739	8.518	8.070	9.129	2.169	25.991	0.293	14.558	0.172	43.988	41.054	35.260	42.615	30.391	33.802	1.036
3	0.087	0.739	8.518	91.200	9.129	2.169	27.371	0.307	10.575	0.129	61.364	57.988	37.051	43.766	36.871	38.316	1.315
1	0.087	0.739	8.518	0.000	9.129	2.169	25.216	0.285	16.810	0.197	33.336	30.911	33.656	38.803	33.893	37.312	0.304
2	0.087	0.739	8.518	8.070	9.129	2.169	25.157	0.284	14.132	0.168	43.825	40.897	36.150	43.114	34.095	37.376	0.969
3	0.087	0.739	8.518	91.200	9.129	2.169	26.943	0.302	10.329	0.128	61.664	58.285	37.313	44.030	37.302	39.458	1.166
1	0.087	0.739	8.518	0.000	9.129	2.169	25.695	0.290	16.929	0.198	34.116	31.649	34.954	40.630	35.617	39.468	0.292
2	0.087	0.739	8.518	8.070	9.129	2.169	27.232	0.305	13.102	0.157	51.887	48.684	36.268	43.540	34.684	37.287	0.972
3	0.087	0.739	8.518	91.200	9.129	2.169	27.070	0.304	9.338	0.115	65.504	62.113	37.041	44.150	37.821	37.453	1.262

Experimental data 23

Type of case กล่องกระดาษแข็ง

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust con.: (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity	Conc.	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)	[-]	[-]	Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.159	25.417	0.000	4.801	1.141	32.774	0.361	24.179	0.274	26.225	24.221	37.561	42.206	38.591	42.317	0.338
2	0.046	1.159	25.417	8.070	4.801	1.141	37.998	0.414	16.104	0.189	57.619	54.289	35.233	44.373	33.381	36.981	0.918
3	0.046	1.159	25.417	91.200	4.801	1.141	36.878	0.403	10.922	0.133	70.383	67.032	35.866	43.093	35.937	38.093	1.264
1	0.046	1.159	25.417	0.000	4.801	1.141	38.363	0.417	26.822	0.301	30.084	27.844	35.473	40.183	35.991	39.931	0.337
2	0.046	1.159	25.417	8.070	4.801	1.141	37.182	0.406	15.852	0.186	57.378	54.052	36.083	44.483	33.667	36.691	0.840
3	0.046	1.159	25.417	91.200	4.801	1.141	37.705	0.411	11.166	0.135	70.386	67.035	36.503	41.898	34.005	37.354	1.038
1	0.046	1.159	25.417	0.000	4.801	1.141	33.052	0.364	23.854	0.271	27.829	25.725	32.254	39.613	32.016	37.923	0.344
2	0.046	1.159	25.417	8.070	4.801	1.141	36.036	0.394	15.238	0.180	57.715	54.383	35.471	44.570	33.810	38.401	0.927
3	0.046	1.159	25.417	91.200	4.801	1.141	36.862	0.402	11.017	0.134	70.113	66.757	35.900	41.919	33.889	35.786	1.280
1	0.071	1.159	16.278	0.000	7.493	1.781	31.705	0.351	23.255	0.264	26.652	24.621	36.468	40.994	37.183	41.245	0.333
2	0.071	1.159	16.278	8.070	7.493	1.781	36.349	0.397	14.655	0.174	59.683	56.323	37.030	45.937	33.624	36.187	1.034
3	0.071	1.159	16.278	91.200	7.493	1.781	35.779	0.392	8.596	0.107	75.975	72.758	36.125	42.164	34.251	36.320	1.311
1	0.071	1.159	16.278	0.000	7.493	1.781	33.596	0.370	25.219	0.285	24.935	23.014	37.246	41.631	37.953	41.725	0.329
2	0.071	1.159	16.278	8.070	7.493	1.781	37.102	0.405	15.219	0.180	58.981	55.631	36.668	42.042	34.129	37.783	1.085
3	0.071	1.159	16.278	91.200	7.493	1.781	36.459	0.398	8.712	0.108	76.105	72.893	35.676	41.985	34.691	35.957	1.270
1	0.071	1.159	16.278	0.000	7.493	1.781	35.692	0.391	23.264	0.264	34.820	32.315	34.012	42.284	34.554	42.536	0.324
2	0.071	1.159	16.278	8.070	7.493	1.781	36.097	0.395	14.268	0.169	60.473	57.105	36.192	42.130	34.185	36.692	0.905
3	0.071	1.159	16.278	91.200	7.493	1.781	36.414	0.398	10.279	0.126	71.772	68.444	35.657	41.657	33.102	35.828	1.270
1	0.087	1.159	13.359	0.000	9.129	2.169	36.476	0.399	23.287	0.265	36.158	33.583	37.376	42.183	38.457	42.334	0.324
2	0.087	1.159	13.359	8.070	9.129	2.169	36.903	0.403	13.410	0.160	63.661	60.272	37.845	44.647	33.552	37.492	1.300
3	0.087	1.159	13.359	91.200	9.129	2.169	36.055	0.394	9.979	0.122	72.323	69.007	36.970	43.263	33.554	35.975	1.510
1	0.087	1.159	13.359	0.000	9.129	2.169	34.834	0.382	24.147	0.274	30.680	28.405	38.046	43.332	39.661	43.661	0.335
2	0.087	1.159	13.359	8.070	9.129	2.169	36.398	0.398	13.730	0.164	62.278	58.895	37.906	44.435	35.563	36.496	1.287
3	0.087	1.159	13.359	91.200	9.129	2.169	36.604	0.400	9.884	0.121	72.997	69.696	34.585	44.566	33.076	36.060	1.487
1	0.087	1.159	13.359	0.000	9.129	2.169	34.115	0.375	24.232	0.274	28.970	26.797	36.282	43.540	37.632	43.484	0.336
2	0.087	1.159	13.359	8.070	9.129	2.169	37.147	0.405	13.699	0.163	63.122	59.734	37.906	44.435	35.553	38.496	1.287
3	0.087	1.159	13.359	91.200	9.129	2.169	37.398	0.408	8.769	0.109	76.552	73.356	37.090	43.244	32.812	35.854	1.470

Experimental data 24

Type of case ทดสอบความชื้น

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่นหิน

Source of dust โรงโม่หิน

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	1.579	34.627	0.000	4.801	1.141	41.000	0.443	27.190	0.305	33.683	31.239	31.535	36.643	32.553	36.656	0.360
2	0.046	1.579	34.627	8.070	4.801	1.141	42.693	0.460	24.863	0.281	41.763	38.922	33.409	42.162	32.425	36.923	1.727
3	0.046	1.579	34.627	91.200	4.801	1.141	43.739	0.470	19.333	0.223	55.799	52.503	33.747	42.356	35.440	37.285	2.032
1	0.046	1.579	34.627	0.000	4.801	1.141	43.382	0.467	26.964	0.303	37.845	35.186	32.179	37.103	32.370	36.429	0.352
2	0.046	1.579	34.627	8.070	4.801	1.141	43.079	0.464	24.480	0.277	43.174	40.273	33.139	42.223	32.488	36.172	1.700
3	0.046	1.579	34.627	91.200	4.801	1.141	43.242	0.465	19.023	0.220	56.008	52.708	33.941	42.462	34.245	36.081	2.029
1	0.046	1.579	34.627	0.000	4.801	1.141	43.836	0.471	26.874	0.302	38.694	35.994	31.296	37.788	31.590	36.820	0.343
2	0.046	1.579	34.627	8.070	4.801	1.141	42.440	0.458	25.358	0.286	40.250	37.476	33.613	42.335	31.989	37.093	1.719
3	0.046	1.579	34.627	91.200	4.801	1.141	42.473	0.458	17.977	0.209	57.674	54.344	34.044	42.494	34.122	36.726	2.031
1	0.071	1.579	22.177	0.000	7.493	1.781	39.113	0.425	25.981	0.292	33.575	31.137	33.810	40.086	33.610	36.720	0.367
2	0.071	1.579	22.177	8.070	7.493	1.781	42.335	0.457	19.042	0.220	55.021	51.741	36.023	42.543	32.841	37.066	1.719
3	0.071	1.579	22.177	91.200	7.493	1.781	43.686	0.470	11.891	0.143	72.781	69.474	34.109	40.282	34.278	36.299	2.121
1	0.071	1.579	22.177	0.000	7.493	1.781	42.275	0.456	25.429	0.287	39.849	37.094	34.568	40.697	33.657	38.797	0.356
2	0.071	1.579	22.177	8.070	7.493	1.781	43.140	0.464	24.808	0.280	42.494	39.622	35.897	42.504	28.806	35.279	1.718
3	0.071	1.579	22.177	91.200	7.493	1.781	42.632	0.459	11.682	0.141	72.598	69.288	34.094	40.091	34.478	36.237	2.116
1	0.071	1.579	22.177	0.000	7.493	1.781	42.347	0.457	25.921	0.292	38.789	36.084	33.584	40.148	33.661	36.050	0.353
2	0.071	1.579	22.177	8.070	7.493	1.781	42.758	0.461	21.004	0.241	50.877	47.702	35.976	42.644	34.130	36.732	1.748
3	0.071	1.579	22.177	91.200	7.493	1.781	41.602	0.449	11.628	0.141	72.049	68.727	33.874	40.033	34.497	36.130	2.114
1	0.087	1.579	18.201	0.000	9.129	2.169	42.952	0.463	27.004	0.303	37.130	34.506	36.734	42.268	35.762	40.515	0.359
2	0.087	1.579	18.201	8.070	9.129	2.169	41.492	0.448	13.991	0.166	66.280	62.891	35.934	43.094	34.335	37.345	2.021
3	0.087	1.579	18.201	91.200	9.129	2.169	44.087	0.474	9.760	0.120	77.862	74.717	32.495	42.752	34.680	36.620	2.159
1	0.087	1.579	18.201	0.000	9.129	2.169	45.609	0.489	27.671	0.310	39.330	36.599	36.351	43.568	36.036	42.987	0.352
2	0.087	1.579	18.201	8.070	9.129	2.169	42.127	0.454	13.836	0.165	67.156	63.771	36.079	42.987	34.483	36.838	2.019
3	0.087	1.579	18.201	91.200	9.129	2.169	43.611	0.469	9.673	0.119	77.820	74.673	32.568	42.034	34.536	36.501	2.154
1	0.087	1.579	18.201	0.000	9.129	2.169	42.944	0.463	26.524	0.298	38.236	35.557	36.118	44.585	38.125	43.976	0.366
2	0.087	1.579	18.201	8.070	9.129	2.169	42.762	0.461	14.134	0.168	66.947	63.561	36.222	42.971	33.622	37.111	2.016
3	0.087	1.579	18.201	91.200	9.129	2.169	42.626	0.459	9.705	0.119	77.232	74.062	33.601	41.875	35.773	37.106	2.150

Experimental data 25

Type of case การดูดฝุ่น

Projection area of case 625 cm²

Cycle time control open 60 sec.

Type of dust หิน EVA

Source of dust หิน EVA Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (m3/s)	Velocity in duct (m/s)	Wetted Scree Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	0.730	2.561	0.046	1.770	0.030	30.886	33.337	32.219	42.809	30.327	38.982	0.155
2	0.046	0.444	9.737	8.070	4.801	0.730	2.505	0.045	1.414	0.024	43.553	46.320	26.506	35.633	26.442	29.436	1.212
3	0.046	0.444	9.737	91.200	4.801	0.730	2.747	0.049	1.135	0.019	58.678	61.639	30.698	35.999	31.251	33.092	1.293
1	0.046	0.444	9.737	0.000	4.801	0.730	2.731	0.049	1.909	0.033	30.099	32.655	32.770	42.129	31.167	38.332	0.158
2	0.046	0.444	9.737	8.070	4.801	0.730	2.458	0.044	1.261	0.021	48.696	51.462	30.215	36.395	26.430	31.283	1.193
3	0.046	0.444	9.737	91.200	4.801	0.730	2.645	0.047	1.058	0.018	60.010	62.845	29.024	34.912	27.218	28.130	1.261
1	0.046	0.444	9.737	0.000	4.801	0.730	2.053	0.036	1.505	0.026	26.693	28.535	34.952	43.646	30.760	36.700	0.159
2	0.046	0.444	9.737	8.070	4.801	0.730	2.462	0.044	1.184	0.020	51.913	54.680	37.280	37.280	31.774	33.126	1.284
3	0.046	0.444	9.737	91.200	4.801	0.730	2.421	0.043	0.871	0.014	64.016	66.532	29.024	34.912	27.218	28.130	1.261
1	0.071	0.444	6.236	0.000	7.493	1.139	2.323	0.041	1.373	0.023	40.895	43.439	33.373	47.234	33.218	44.268	0.342
2	0.071	0.444	6.236	8.070	7.493	1.139	2.159	0.038	0.650	0.011	69.911	71.983	28.931	35.373	27.781	29.051	1.277
3	0.071	0.444	6.236	91.200	7.493	1.139	3.283	0.061	0.843	0.014	74.325	77.045	31.686	37.843	28.943	30.626	1.288
1	0.071	0.444	6.236	0.000	7.493	1.139	2.478	0.044	1.494	0.025	39.709	42.378	33.236	47.052	33.511	44.070	0.365
2	0.071	0.444	6.236	8.070	7.493	1.139	2.313	0.041	0.492	0.008	78.709	80.466	30.337	36.525	27.815	29.436	1.268
3	0.071	0.444	6.236	91.200	7.493	1.139	2.677	0.048	0.817	0.013	69.497	72.027	32.669	38.817	29.505	31.023	1.283
1	0.071	0.444	6.236	0.000	7.493	1.139	2.432	0.043	1.480	0.025	39.145	41.757	33.272	43.962	33.942	42.860	0.368
2	0.071	0.444	6.236	8.070	7.493	1.139	2.422	0.043	0.684	0.011	71.779	73.992	31.738	37.734	28.368	30.054	1.274
3	0.071	0.444	6.236	91.200	7.493	1.139	2.281	0.040	0.848	0.011	71.687	73.788	32.653	38.968	29.956	31.281	1.271
1	0.087	0.444	5.118	0.000	9.129	1.388	2.935	0.053	1.392	0.024	52.572	55.798	38.574	42.522	38.157	41.585	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	1.605	0.027	0.411	0.007	74.393	75.824	33.272	39.543	30.578	31.960	1.239
3	0.087	0.444	5.118	91.200	9.129	1.388	2.303	0.041	0.670	0.011	70.900	73.054	33.535	37.609	28.832	30.629	1.255
1	0.087	0.444	5.118	0.000	9.129	1.388	2.908	0.053	1.324	0.022	54.470	57.853	35.702	44.658	33.616	40.608	0.378
2	0.087	0.444	5.118	8.070	9.129	1.388	2.745	0.049	0.892	0.015	67.516	70.192	33.187	38.819	31.025	32.325	1.242
3	0.087	0.444	5.118	91.200	9.129	1.388	2.626	0.047	0.703	0.012	73.222	75.523	33.494	37.701	30.749	32.997	1.260
1	0.087	0.444	5.118	0.000	9.129	1.388	2.876	0.052	1.475	0.025	48.713	51.889	35.747	42.553	35.718	41.714	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	1.446	0.025	0.530	0.009	63.389	64.973	34.141	39.987	30.391	32.593	1.257
3	0.087	0.444	5.118	91.200	9.129	1.388	2.104	0.037	0.558	0.009	73.473	75.350	33.672	37.830	30.867	33.150	1.251

Experimental data 26

Type of case กล่องกระดาษแข็ง

Projection area of case 625 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	0.730	3.595	0.067	2.280	0.040	36.579	40.151	31.465	41.180	31.421	39.097	0.160
2	0.046	0.700	15.351	8.070	4.801	0.730	3.913	0.074	1.171	0.020	70.063	73.532	33.668	37.956	27.965	29.246	2.175
3	0.046	0.700	15.351	91.200	4.801	0.730	4.024	0.077	1.015	0.017	74.776	77.969	34.542	38.658	31.693	34.036	2.181
1	0.046	0.700	15.351	0.000	4.801	0.730	3.745	0.070	2.738	0.049	26.889	30.023	31.692	40.425	31.434	38.349	0.162
2	0.046	0.700	15.351	8.070	4.801	0.730	4.104	0.078	1.010	0.017	75.392	78.584	35.541	42.064	33.290	35.666	2.182
3	0.046	0.700	15.351	91.200	4.801	0.730	3.752	0.071	1.283	0.022	65.909	69.505	34.562	38.890	31.902	34.057	2.171
1	0.046	0.700	15.351	0.000	4.801	0.730	3.778	0.071	2.342	0.041	38.010	41.793	32.579	39.915	31.912	39.767	0.170
2	0.046	0.700	15.351	8.070	4.801	0.730	3.095	0.057	0.956	0.016	69.118	72.010	34.315	41.171	31.650	34.237	2.172
3	0.046	0.700	15.351	91.200	4.801	0.730	4.286	0.082	1.028	0.017	76.027	79.277	34.748	40.979	32.286	34.271	2.179
1	0.071	0.700	9.831	0.000	7.493	1.139	3.735	0.070	2.317	0.041	37.965	41.711	27.826	38.892	26.598	35.351	0.489
2	0.071	0.700	9.831	8.070	7.493	1.139	3.115	0.057	0.905	0.015	70.963	73.770	38.972	41.075	32.620	34.509	2.013
3	0.071	0.700	9.831	91.200	7.493	1.139	3.166	0.058	0.920	0.015	70.939	73.787	34.281	39.332	31.486	33.434	2.090
1	0.071	0.700	9.831	0.000	7.493	1.139	3.616	0.068	2.387	0.042	33.988	37.460	33.962	42.995	35.253	42.694	0.490
2	0.071	0.700	9.831	8.070	7.493	1.139	3.922	0.074	1.160	0.019	70.436	73.886	35.441	41.350	33.037	34.839	2.001
3	0.071	0.700	9.831	91.200	7.493	1.139	4.184	0.080	1.295	0.022	69.049	72.786	35.249	40.046	31.996	36.964	2.094
1	0.071	0.700	9.831	0.000	7.493	1.139	3.670	0.069	2.221	0.039	39.482	43.227	34.974	45.863	32.306	41.360	0.493
2	0.071	0.700	9.831	8.070	7.493	1.139	3.253	0.060	0.895	0.015	72.492	75.312	35.294	41.222	33.421	35.064	1.993
3	0.071	0.700	9.831	91.200	7.493	1.139	3.826	0.072	1.715	0.029	55.167	59.181	23.327	39.171	34.106	35.172	2.094
1	0.087	0.700	8.069	0.000	9.129	1.388	3.825	0.072	2.439	0.043	36.235	39.984	31.927	40.022	32.009	39.720	0.451
2	0.087	0.700	8.069	8.070	9.129	1.388	3.948	0.075	1.797	0.031	54.487	58.618	33.901	39.043	31.227	33.556	1.861
3	0.087	0.700	8.069	91.200	9.129	1.388	5.494	0.111	1.916	0.033	65.131	70.073	33.255	40.038	33.718	35.357	1.932
1	0.087	0.700	8.069	0.000	9.129	1.388	3.756	0.071	2.115	0.037	43.690	47.621	30.176	37.476	30.240	38.458	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	4.766	0.093	1.867	0.032	60.828	65.460	33.574	38.783	30.660	31.290	1.800
3	0.087	0.700	8.069	91.200	9.129	1.388	3.628	0.068	1.051	0.017	71.028	74.222	33.854	38.847	33.879	35.386	2.010
1	0.087	0.700	8.069	0.000	9.129	1.388	3.755	0.071	2.172	0.038	42.157	46.053	29.212	38.783	29.025	37.912	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	4.521	0.088	1.783	0.031	60.571	65.020	32.361	39.743	31.253	33.671	1.533
3	0.087	0.700	8.069	91.200	9.129	1.388	3.819	0.072	1.264	0.021	66.915	70.503	33.974	38.990	34.040	35.558	2.024

Experimental data 27

Type of case กล่องข้าวต้ม

Projection area of case 625 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	0.730	6.801	0.144	4.268	0.082	37.245	43.231	35.839	46.267	35.253	44.030	0.205
2	0.046	0.924	20.263	8.070	4.801	0.730	6.888	0.147	2.265	0.040	67.109	72.817	34.165	38.315	33.062	35.681	1.739
3	0.046	0.924	20.263	91.200	4.801	0.730	6.294	0.131	2.110	0.037	66.473	71.859	34.151	39.276	32.802	35.622	1.954
1	0.046	0.924	20.263	0.000	4.801	0.730	6.658	0.141	4.164	0.080	37.459	43.365	30.667	36.480	30.824	35.385	0.218
2	0.046	0.924	20.263	8.070	4.801	0.730	6.169	0.128	2.265	0.040	63.280	68.811	34.156	36.589	33.747	36.841	1.821
3	0.046	0.924	20.263	91.200	4.801	0.730	6.722	0.142	2.340	0.041	65.187	70.949	34.055	33.000	32.690	35.533	1.888
1	0.046	0.924	20.263	0.000	4.801	0.730	6.718	0.142	4.632	0.090	31.051	36.485	32.608	40.844	32.282	39.124	0.221
2	0.046	0.924	20.263	8.070	4.801	0.730	6.335	0.132	1.786	0.031	71.801	76.718	34.197	39.477	33.047	35.687	1.601
3	0.046	0.924	20.263	91.200	4.801	0.730	6.180	0.128	2.790	0.050	54.850	60.753	33.970	38.877	32.370	35.452	2.014
1	0.071	0.924	12.978	0.000	7.493	1.139	6.733	0.149	3.705	0.070	44.973	51.264	30.730	40.694	30.294	34.811	0.491
2	0.071	0.924	12.978	8.070	7.493	1.139	7.051	0.151	3.127	0.057	55.654	62.147	34.112	40.761	32.694	36.576	1.804
3	0.071	0.924	12.978	91.200	7.493	1.139	7.201	0.155	2.670	0.048	62.918	69.152	27.369	34.041	26.992	29.966	2.005
1	0.071	0.924	12.978	0.000	7.493	1.139	6.629	0.140	3.917	0.074	40.911	46.986	30.641	40.947	30.556	38.438	0.498
2	0.071	0.924	12.978	8.070	7.493	1.139	6.990	0.150	2.741	0.049	60.786	67.017	25.459	33.630	28.679	31.440	1.559
3	0.071	0.924	12.978	91.200	7.493	1.139	6.606	0.139	1.917	0.033	70.976	76.139	33.635	39.905	30.703	32.361	1.818
1	0.071	0.924	12.978	0.000	7.493	1.139	6.929	0.148	4.034	0.077	41.781	48.098	29.749	40.675	31.136	40.486	0.496
2	0.071	0.924	12.978	8.070	7.493	1.139	7.148	0.154	2.548	0.045	64.358	70.453	26.439	33.251	26.560	29.787	2.004
3	0.071	0.924	12.978	91.200	7.493	1.139	5.906	0.121	2.174	0.038	63.198	68.552	32.591	33.125	32.051	34.665	1.817
1	0.087	0.924	10.651	0.000	9.129	1.388	6.884	0.147	3.322	0.061	51.743	58.197	31.166	43.841	31.479	40.622	0.491
2	0.087	0.924	10.651	8.070	9.129	1.388	6.728	0.143	2.084	0.036	69.021	74.454	35.947	39.238	32.208	34.290	1.988
3	0.087	0.924	10.651	91.200	9.129	1.388	7.424	0.161	2.469	0.044	66.746	72.810	34.949	40.759	34.075	35.625	1.813
1	0.087	0.924	10.651	0.000	9.129	1.388	6.954	0.149	3.287	0.061	52.732	59.223	31.045	43.620	30.862	40.443	0.485
2	0.087	0.924	10.651	8.070	9.129	1.388	6.830	0.145	2.714	0.049	60.264	66.417	35.158	39.811	32.950	34.884	2.005
3	0.087	0.924	10.651	91.200	9.129	1.388	7.315	0.158	2.748	0.049	62.428	68.767	35.623	41.326	34.661	36.148	1.873
1	0.087	0.924	10.651	0.000	9.129	1.388	6.885	0.147	3.244	0.060	52.883	59.324	31.250	43.385	30.906	39.234	0.489
2	0.087	0.924	10.651	8.070	9.129	1.388	6.741	0.143	1.962	0.034	70.893	76.144	35.840	40.362	33.654	35.359	1.819
3	0.087	0.924	10.651	91.200	9.129	1.388	6.383	0.133	2.152	0.038	66.278	71.737	36.120	41.691	35.104	36.529	1.912

Experimental data 28

Type of case กล่องข้าวต้ม

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Scree Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	1.141	3.167	0.058	1.969	0.034	37.828	41.078	28.371	37.973	27.819	35.098	0.145
2	0.046	0.444	9.737	8.070	4.801	1.141	2.636	0.047	1.198	0.020	54.554	57.474	32.921	36.791	30.911	32.680	1.989
3	0.046	0.444	9.737	91.200	4.801	1.141	2.332	0.041	0.959	0.016	58.861	61.418	30.812	37.570	29.042	31.110	1.937
1	0.046	0.444	9.737	0.000	4.801	1.141	2.819	0.051	1.814	0.031	35.651	38.516	32.993	46.164	31.046	39.625	0.152
2	0.046	0.444	9.737	8.070	4.801	1.141	2.759	0.050	1.165	0.019	57.763	60.753	32.242	38.628	29.942	31.369	1.971
3	0.046	0.444	9.737	91.200	4.801	1.141	3.411	0.083	0.978	0.016	71.324	74.336	31.063	37.613	29.184	31.118	1.935
1	0.046	0.444	9.737	0.000	4.801	1.141	2.772	0.050	1.636	0.028	40.981	43.958	33.611	46.290	31.236	40.032	0.158
2	0.046	0.444	9.737	8.070	4.801	1.141	2.784	0.050	1.260	0.021	54.729	57.790	33.479	40.726	29.103	31.198	1.937
3	0.046	0.444	9.737	91.200	4.801	1.141	3.488	0.065	1.235	0.021	64.604	68.037	33.809	37.470	28.847	30.799	2.026
1	0.071	0.444	6.236	0.000	7.493	1.781	2.761	0.050	1.632	0.028	40.891	43.855	34.096	46.500	31.640	40.972	0.357
2	0.071	0.444	6.236	8.070	7.493	1.781	3.311	0.061	1.167	0.020	64.750	68.027	34.132	40.749	29.055	34.043	2.022
3	0.071	0.444	6.236	91.200	7.493	1.781	2.459	0.044	0.967	0.016	60.660	63.302	31.839	38.265	29.706	34.609	2.007
1	0.071	0.444	6.236	0.000	7.493	1.781	2.693	0.048	1.548	0.026	42.518	45.450	34.788	46.619	32.048	41.619	0.361
2	0.071	0.444	6.236	8.070	7.493	1.781	3.025	0.055	1.232	0.021	59.266	62.472	31.403	38.017	29.307	34.251	2.018
3	0.071	0.444	6.236	91.200	7.493	1.781	3.016	0.055	0.770	0.013	74.475	76.994	29.675	38.194	31.833	34.457	2.005
1	0.071	0.444	6.236	0.000	7.493	1.781	2.686	0.048	1.674	0.029	37.677	40.488	34.582	45.332	31.615	40.627	0.342
2	0.071	0.444	6.236	8.070	7.493	1.781	2.631	0.047	0.942	0.016	64.209	66.911	31.405	37.915	29.342	34.229	2.024
3	0.071	0.444	6.236	91.200	7.493	1.781	3.959	0.075	0.998	0.017	74.791	77.939	29.697	38.259	31.862	34.620	2.010
1	0.087	0.444	5.118	0.000	9.129	2.169	3.025	0.055	1.642	0.028	45.719	49.015	33.612	44.181	30.647	40.171	0.337
2	0.087	0.444	5.118	8.070	9.129	2.169	3.245	0.060	1.284	0.022	60.436	63.810	34.699	38.425	29.789	31.893	1.953
3	0.087	0.444	5.118	91.200	9.129	2.169	3.460	0.064	1.031	0.017	70.201	73.319	34.952	38.637	30.068	32.154	2.030
1	0.087	0.444	5.118	0.000	9.129	2.169	2.773	0.050	1.747	0.030	37.000	39.870	33.810	44.903	31.606	40.687	0.334
2	0.087	0.444	5.118	8.070	9.129	2.169	2.768	0.050	0.943	0.016	65.924	68.685	34.915	38.495	29.956	31.952	1.933
3	0.087	0.444	5.118	91.200	9.129	2.169	3.483	0.065	0.982	0.016	71.815	74.850	35.069	39.248	30.167	34.666	1.843
1	0.087	0.444	5.118	0.000	9.129	2.169	2.559	0.046	1.578	0.027	38.335	41.047	30.679	41.714	29.330	37.946	0.332
2	0.087	0.444	5.118	8.070	9.129	2.169	4.521	0.088	1.537	0.026	66.006	70.185	35.001	38.639	30.074	32.285	1.940
3	0.087	0.444	5.118	91.200	9.129	2.169	5.149	0.103	1.226	0.021	76.197	79.947	34.854	38.833	30.182	35.126	1.986

Experimental data 29

Type of case ทดสอบความเข้มข้น

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	1.141	3.730	0.070	2.412	0.043	35.335	38.965	29.710	39.439	24.319	32.391	0.174
2	0.046	0.700	15.351	8.070	4.801	1.141	5.557	0.113	2.533	0.045	54.427	59.873	34.972	41.513	30.318	35.259	1.792
3	0.046	0.700	15.351	91.200	4.801	1.141	6.807	0.145	2.234	0.039	67.175	72.827	33.280	37.132	25.173	29.452	1.382
1	0.046	0.700	15.351	0.000	4.801	1.141	3.823	0.072	2.772	0.050	27.491	30.724	30.731	40.564	25.965	33.407	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	5.900	0.121	2.286	0.040	61.259	66.718	35.669	41.887	30.486	36.428	1.856
3	0.046	0.700	15.351	91.200	4.801	1.141	7.082	0.152	2.184	0.038	69.169	74.798	32.332	37.879	29.764	34.040	1.937
1	0.046	0.700	15.351	0.000	4.801	1.141	3.784	0.071	2.359	0.042	37.659	41.433	28.810	40.923	26.210	36.512	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	5.497	0.111	1.980	0.034	63.979	68.997	35.814	42.192	31.049	35.169	1.902
3	0.046	0.700	15.351	91.200	4.801	1.141	7.287	0.158	2.442	0.043	66.493	72.498	31.418	38.333	26.538	31.257	1.942
1	0.071	0.700	9.831	0.000	7.493	1.781	3.699	0.069	2.333	0.041	36.929	40.603	27.401	38.903	23.238	31.068	0.478
2	0.071	0.700	9.831	8.070	7.493	1.781	3.961	0.075	1.233	0.021	68.882	72.463	31.756	38.561	27.133	32.354	1.818
3	0.071	0.700	9.831	91.200	7.493	1.781	5.202	0.104	1.635	0.028	68.571	73.063	34.880	41.497	32.055	35.339	2.210
1	0.071	0.700	9.831	0.000	7.493	1.781	3.738	0.070	2.263	0.040	39.460	43.261	39.232	47.567	32.052	38.454	0.477
2	0.071	0.700	9.831	8.070	7.493	1.781	4.348	0.084	1.633	0.028	62.436	66.667	32.986	39.475	29.997	33.054	1.912
3	0.071	0.700	9.831	91.200	7.493	1.781	4.059	0.077	1.110	0.019	72.666	76.053	39.212	45.975	37.765	40.950	2.204
1	0.071	0.700	9.831	0.000	7.493	1.781	3.646	0.068	2.160	0.038	40.757	44.520	29.607	39.180	23.853	30.242	0.480
2	0.071	0.700	9.831	8.070	7.493	1.781	4.176	0.080	1.409	0.024	66.264	70.166	34.278	40.579	31.060	33.989	1.904
3	0.071	0.700	9.831	91.200	7.493	1.781	3.758	0.071	1.232	0.021	87.210	70.732	39.512	45.522	35.949	39.100	2.218
1	0.087	0.700	8.069	0.000	9.129	2.169	3.895	0.074	2.256	0.040	42.080	46.094	28.519	37.270	23.830	30.821	0.469
2	0.087	0.700	8.069	8.070	9.129	2.169	4.027	0.077	1.461	0.025	63.705	67.621	35.946	42.528	38.725	39.395	1.935
3	0.087	0.700	8.069	91.200	9.129	2.169	4.761	0.093	1.575	0.027	66.917	71.217	35.609	40.266	32.271	38.166	1.942
1	0.087	0.700	8.069	0.000	9.129	2.169	3.947	0.075	2.384	0.042	39.600	43.584	28.636	37.946	23.665	30.969	0.452
2	0.087	0.700	8.069	8.070	9.129	2.169	3.801	0.072	1.016	0.017	73.265	76.427	40.474	48.300	38.824	39.242	1.934
3	0.087	0.700	8.069	91.200	9.129	2.169	4.115	0.079	1.056	0.018	74.349	77.637	35.680	40.506	38.193	38.464	1.928
1	0.087	0.700	8.069	0.000	9.129	2.169	3.921	0.074	2.323	0.041	40.755	44.754	28.740	38.513	23.915	31.050	0.467
2	0.087	0.700	8.069	8.070	9.129	2.169	3.693	0.069	1.584	0.027	57.105	60.964	40.912	46.604	37.324	39.544	1.920
3	0.087	0.700	8.069	91.200	9.129	2.169	3.240	0.060	1.478	0.025	54.375	57.871	36.378	41.950	36.523	38.823	1.940

Experimental data 30

Type of case กล่องกระดาษแข็ง

Projection area of case 406.17 cm²

Cycle time control open 60 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (m/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	1.141	7.703	0.169	4.681	0.091	39.231	45.921	30.512	42.859	27.411	35.186	0.193
2	0.046	0.924	20.263	8.070	4.801	1.141	6.647	0.140	3.075	0.056	53.744	60.004	35.610	39.361	34.603	36.967	1.938
3	0.046	0.924	20.263	91.200	4.801	1.141	8.547	0.193	2.810	0.051	67.127	73.792	33.273	38.599	33.556	36.979	1.951
1	0.046	0.924	20.263	0.000	4.801	1.141	7.296	0.158	4.084	0.078	44.024	50.672	31.473	42.834	27.887	35.343	0.202
2	0.046	0.924	20.263	8.070	4.801	1.141	6.480	0.136	2.445	0.043	62.261	68.066	35.247	39.500	34.886	37.262	1.946
3	0.046	0.924	20.263	91.200	4.801	1.141	7.286	0.158	2.810	0.051	61.435	67.819	32.695	37.878	32.489	35.951	1.950
1	0.046	0.924	20.263	0.000	4.801	1.141	7.123	0.153	4.198	0.080	41.064	47.479	31.977	42.915	27.717	36.484	0.221
2	0.046	0.924	20.263	8.070	4.801	1.141	7.392	0.160	2.594	0.046	64.906	71.109	35.734	40.495	37.524	39.808	1.963
3	0.046	0.924	20.263	91.200	4.801	1.141	6.956	0.149	1.957	0.034	71.860	77.127	32.730	37.887	32.687	35.743	1.924
1	0.071	0.924	12.978	0.000	7.493	1.781	7.144	0.154	4.118	0.079	42.357	48.843	31.544	42.926	27.734	35.603	0.483
2	0.071	0.924	12.978	8.070	7.493	1.781	7.514	0.164	1.901	0.033	74.706	79.914	33.629	38.434	34.323	38.201	1.934
3	0.071	0.924	12.978	91.200	7.493	1.781	7.990	0.177	2.168	0.038	72.869	78.563	35.080	41.668	35.224	37.695	1.962
1	0.071	0.924	12.978	0.000	7.493	1.781	7.059	0.151	4.143	0.079	41.309	47.693	28.851	40.137	25.117	33.806	0.482
2	0.071	0.924	12.978	8.070	7.493	1.781	6.980	0.149	2.518	0.045	63.935	69.956	34.823	38.855	34.012	36.626	1.935
3	0.071	0.924	12.978	91.200	7.493	1.781	7.412	0.161	1.758	0.030	76.288	81.224	35.323	42.460	36.331	37.883	1.958
1	0.071	0.924	12.978	0.000	7.493	1.781	7.131	0.153	3.419	0.063	52.054	58.675	31.764	43.013	27.806	34.745	0.486
2	0.071	0.924	12.978	8.070	7.493	1.781	7.733	0.170	2.794	0.050	63.872	70.365	35.455	40.888	34.109	37.185	1.923
3	0.071	0.924	12.978	91.200	7.493	1.781	6.569	0.138	2.048	0.036	68.829	74.184	35.692	43.075	36.890	38.260	2.004
1	0.087	0.924	10.651	0.000	9.129	2.169	7.082	0.152	3.806	0.072	46.258	52.820	31.584	43.034	27.936	34.870	0.469
2	0.087	0.924	10.651	8.070	9.129	2.169	6.997	0.150	2.440	0.043	65.128	71.069	34.805	43.328	34.061	37.452	1.991
3	0.087	0.924	10.651	91.200	9.129	2.169	6.341	0.132	2.238	0.039	64.708	70.258	34.335	43.127	35.127	37.409	2.024
1	0.087	0.924	10.651	0.000	9.129	2.169	6.974	0.149	3.837	0.072	44.981	51.440	31.213	42.940	28.206	35.731	0.463
2	0.087	0.924	10.651	8.070	9.129	2.169	6.594	0.139	2.453	0.044	62.800	68.647	35.053	42.922	34.657	36.980	1.991
3	0.087	0.924	10.651	91.200	9.129	2.169	6.698	0.142	1.752	0.030	73.843	78.735	34.274	42.937	35.656	37.049	2.045
1	0.087	0.924	10.651	0.000	9.129	2.169	7.128	0.153	3.954	0.075	44.529	51.079	30.926	40.218	25.083	32.921	0.468
2	0.087	0.924	10.651	8.070	9.129	2.169	7.322	0.159	1.871	0.032	74.449	79.594	34.413	42.531	35.053	36.650	1.965
3	0.087	0.924	10.651	91.200	9.129	2.169	6.642	0.140	1.887	0.033	71.589	76.708	34.915	42.110	34.043	35.964	2.020

Experimental data 31

Type of case การดูดฝุ่น

Projection area of case 625 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่น EVA

Source of dust ถังฝุ่น Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity in duct (m/s)	Wetted Scree Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	0.730	2.561	0.046	1.770	0.030	30.886	33.337	32.219	42.609	30.327	38.982	0.155
2	0.046	0.444	9.737	8.070	4.801	0.730	2.748	0.049	1.176	0.020	57.204	60.194	26.072	34.175	24.862	31.217	1.386
3	0.046	0.444	9.737	91.200	4.801	0.730	2.863	0.052	1.214	0.020	57.598	60.690	28.362	38.456	27.333	35.805	1.393
1	0.046	0.444	9.737	0.000	4.801	0.730	2.731	0.049	1.909	0.033	30.099	32.655	32.770	42.129	31.167	38.332	0.158
2	0.046	0.444	9.737	8.070	4.801	0.730	2.292	0.040	1.077	0.018	53.024	55.614	26.423	35.662	25.122	32.544	1.397
3	0.046	0.444	9.737	91.200	4.801	0.730	2.893	0.048	0.882	0.015	67.240	69.883	29.413	38.619	28.478	37.188	1.403
1	0.046	0.444	9.737	0.000	4.801	0.730	2.053	0.036	1.505	0.026	26.693	28.535	34.952	43.646	30.780	36.700	0.159
2	0.046	0.444	9.737	8.070	4.801	0.730	2.445	0.043	1.196	0.020	51.092	53.845	27.263	37.140	26.096	34.237	1.390
3	0.046	0.444	9.737	91.200	4.801	0.730	3.363	0.062	0.972	0.016	71.089	74.080	36.057	44.255	38.228	42.893	1.855
1	0.071	0.444	6.236	0.000	7.493	1.139	2.323	0.041	1.373	0.023	40.895	43.439	33.373	47.234	33.218	44.269	0.342
2	0.071	0.444	6.236	8.070	7.493	1.139	3.156	0.058	0.972	0.016	69.193	72.130	35.325	42.610	33.654	40.854	1.392
3	0.071	0.444	6.236	91.200	7.493	1.139	3.339	0.062	0.953	0.016	71.461	74.410	34.182	44.962	33.871	40.714	1.845
1	0.071	0.444	6.236	0.000	7.493	1.139	2.478	0.044	1.494	0.025	39.709	42.378	33.236	47.052	33.511	44.070	0.365
2	0.071	0.444	6.236	8.070	7.493	1.139	2.887	0.052	0.895	0.015	68.985	71.714	38.493	45.288	37.681	44.189	1.633
3	0.071	0.444	6.236	91.200	7.493	1.139	3.065	0.056	0.925	0.015	69.804	72.635	33.755	45.070	33.353	40.907	2.030
1	0.071	0.444	6.236	0.000	7.493	1.139	2.432	0.043	1.480	0.025	39.145	41.757	33.272	43.962	33.942	42.850	0.368
2	0.071	0.444	6.236	8.070	7.493	1.139	3.004	0.055	0.899	0.015	70.093	72.861	35.308	44.951	35.019	41.033	2.085
3	0.071	0.444	6.236	91.200	7.493	1.139	2.495	0.044	0.886	0.011	72.514	74.750	33.648	43.988	33.152	42.318	1.889
1	0.087	0.444	5.118	0.000	9.129	1.388	2.935	0.053	1.392	0.024	52.572	55.798	38.574	42.522	38.157	41.585	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	2.649	0.047	0.959	0.016	63.814	66.545	33.129	41.370	33.639	39.055	1.809
3	0.087	0.444	5.118	91.200	9.129	1.388	2.442	0.043	0.813	0.013	66.714	69.158	34.924	41.880	36.757	39.833	1.816
1	0.087	0.444	5.118	0.000	9.129	1.388	2.908	0.053	1.324	0.022	54.470	57.653	35.702	44.659	33.518	40.804	0.378
2	0.087	0.444	5.118	8.070	9.129	1.388	2.233	0.039	0.931	0.015	58.326	60.795	33.698	41.487	33.158	38.282	1.815
3	0.087	0.444	5.118	91.200	9.129	1.388	3.856	0.073	1.579	0.027	59.063	63.012	35.028	42.039	36.605	40.127	2.059
1	0.087	0.444	5.118	0.000	9.129	1.388	2.876	0.052	1.475	0.025	48.713	51.889	35.747	42.553	35.718	41.714	0.375
2	0.087	0.444	5.118	8.070	9.129	1.388	2.659	0.048	1.018	0.017	61.702	64.506	34.668	41.721	36.460	39.785	1.933
3	0.087	0.444	5.118	91.200	9.129	1.388	2.701	0.049	0.828	0.014	69.347	71.904	35.078	42.119	36.681	40.218	1.882

Experimental data 32

Type of case การกระจายฝุ่น

Projection area of case 625 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (m3/s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	0.730	3.595	0.067	2.280	0.040	36.579	40.151	31.465	41.180	31.421	39.097	0.160
2	0.046	0.700	15.351	8.070	4.801	0.730	2.200	0.039	1.068	0.018	51.439	53.942	35.082	41.204	36.733	39.823	1.921
3	0.046	0.700	15.351	91.200	4.801	0.730	3.069	0.056	0.989	0.016	67.781	70.718	36.981	40.529	35.310	37.566	1.900
1	0.046	0.700	15.351	0.000	4.801	0.730	3.745	0.070	2.738	0.049	26.889	30.023	31.692	40.425	31.434	38.349	0.162
2	0.046	0.700	15.351	8.070	4.801	0.730	3.254	0.060	1.330	0.022	59.120	62.539	36.175	41.325	36.872	40.033	1.809
3	0.046	0.700	15.351	91.200	4.801	0.730	2.566	0.046	0.764	0.013	70.228	72.633	35.355	40.593	37.061	37.712	1.980
1	0.046	0.700	15.351	0.000	4.801	0.730	3.778	0.071	2.342	0.041	38.010	41.793	32.579	39.915	32.912	39.787	0.170
2	0.046	0.700	15.351	8.070	4.801	0.730	2.652	0.048	1.118	0.019	57.857	60.743	35.285	41.506	36.954	40.206	1.973
3	0.046	0.700	15.351	91.200	4.801	0.730	2.497	0.044	0.741	0.012	70.340	72.682	35.402	40.645	37.075	37.885	2.129
1	0.071	0.700	9.831	0.000	7.493	1.139	3.735	0.070	2.317	0.041	37.965	41.711	27.826	38.692	26.596	36.351	0.489
2	0.071	0.700	9.831	8.070	7.493	1.139	3.424	0.063	0.936	0.016	72.663	75.598	35.406	43.781	37.178	40.004	2.043
3	0.071	0.700	9.831	91.200	7.493	1.139	2.143	0.038	0.666	0.011	68.928	71.025	35.471	40.751	36.579	38.985	2.016
1	0.071	0.700	9.831	0.000	7.493	1.139	3.616	0.068	2.387	0.042	33.988	37.460	33.962	42.995	35.253	42.694	0.490
2	0.071	0.700	9.831	8.070	7.493	1.139	3.164	0.058	1.266	0.021	59.987	63.302	35.409	43.751	37.175	39.911	1.962
3	0.071	0.700	9.831	91.200	7.493	1.139	2.849	0.052	0.808	0.013	71.642	74.204	35.230	40.768	36.595	39.892	1.798
1	0.071	0.700	9.831	0.000	7.493	1.139	3.670	0.069	2.221	0.039	39.482	43.227	34.974	45.883	32.306	41.360	0.493
2	0.071	0.700	9.831	8.070	7.493	1.139	2.977	0.054	0.989	0.016	66.776	69.683	35.435	43.741	36.217	39.887	1.850
3	0.071	0.700	9.831	91.200	7.493	1.139	2.985	0.054	0.769	0.013	74.239	76.750	35.226	40.782	36.579	40.031	2.018
1	0.087	0.700	8.069	0.000	9.129	1.388	3.825	0.072	2.439	0.043	36.235	39.984	31.927	40.022	32.009	39.720	0.451
2	0.087	0.700	8.069	8.070	9.129	1.388	3.105	0.057	1.282	0.022	58.703	61.997	32.441	40.774	37.722	39.975	1.928
3	0.087	0.700	8.069	91.200	9.129	1.388	4.940	0.098	1.343	0.023	72.824	76.784	35.086	41.548	36.433	40.484	2.033
1	0.087	0.700	8.069	0.000	9.129	1.388	3.756	0.071	2.115	0.037	43.690	47.621	30.176	37.476	30.340	36.454	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	2.562	0.046	0.818	0.013	68.079	70.574	32.429	40.709	36.628	38.908	1.832
3	0.087	0.700	8.069	91.200	9.129	1.388	2.676	0.048	0.718	0.012	73.179	75.521	35.027	41.589	36.336	40.473	2.057
1	0.087	0.700	8.069	0.000	9.129	1.388	3.755	0.071	2.172	0.038	42.157	46.053	29.212	38.783	29.025	37.912	0.467
2	0.087	0.700	8.069	8.070	9.129	1.388	3.745	0.070	1.161	0.019	69.010	72.419	35.123	40.705	36.494	40.005	1.986
3	0.087	0.700	8.069	91.200	9.129	1.388	2.451	0.044	0.678	0.011	72.354	74.562	35.026	41.584	36.326	40.462	1.909

Experimental data 33

Type of case การดูดฝุ่น

Projection area of case 625 cm²

Cycle time control open 120 sec

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc. (g/m ³)	Water Flowrate (m ³ /s)	Velocity in duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	0.730	6.801	0.144	4.268	0.082	37.245	43.231	35.839	46.267	35.253	44.030	0.205
2	0.046	0.924	20.263	8.070	4.801	0.730	6.700	0.142	2.843	0.051	57.565	63.753	35.026	41.506	36.447	40.488	2.165
3	0.046	0.924	20.263	91.200	4.801	0.730	6.496	0.136	1.982	0.034	69.488	74.735	34.944	43.555	36.159	40.437	1.985
1	0.046	0.924	20.263	0.000	4.801	0.730	6.658	0.141	4.164	0.080	37.459	43.365	30.667	36.460	30.824	35.385	0.218
2	0.046	0.924	20.263	8.070	4.801	0.730	7.083	0.152	2.511	0.045	64.548	70.589	36.013	41.465	36.335	40.388	1.999
3	0.046	0.924	20.263	91.200	4.801	0.730	8.358	0.206	2.367	0.042	73.576	79.642	35.194	43.568	36.117	40.518	2.068
1	0.046	0.924	20.263	0.000	4.801	0.730	6.718	0.142	4.632	0.090	31.051	36.485	32.608	40.844	32.282	39.124	0.221
2	0.046	0.924	20.263	8.070	4.801	0.730	6.821	0.145	2.923	0.053	57.155	63.441	34.971	41.534	36.182	40.562	2.101
3	0.046	0.924	20.263	91.200	4.801	0.730	7.135	0.153	2.095	0.037	70.642	76.145	35.233	43.565	36.096	40.695	2.049
1	0.071	0.924	12.978	0.000	7.493	1.139	6.733	0.143	3.705	0.070	44.973	51.264	30.730	40.594	30.294	33.811	0.491
2	0.071	0.924	12.978	8.070	7.493	1.139	7.432	0.182	3.188	0.058	57.377	64.064	35.854	41.075	37.054	40.025	1.873
3	0.071	0.924	12.978	91.200	7.493	1.139	7.184	0.155	1.791	0.031	75.068	80.060	40.340	45.412	35.454	37.028	1.840
1	0.071	0.924	12.978	0.000	7.493	1.139	6.629	0.140	3.917	0.074	40.911	46.986	30.641	40.947	30.556	38.438	0.498
2	0.071	0.924	12.978	8.070	7.493	1.139	6.720	0.142	2.384	0.042	64.522	70.333	35.381	40.478	37.025	39.122	2.258
3	0.071	0.924	12.978	91.200	7.493	1.139	7.654	0.168	1.995	0.035	73.940	79.322	40.238	45.461	35.469	37.036	2.089
1	0.071	0.924	12.978	0.000	7.493	1.139	6.929	0.148	4.034	0.077	41.781	48.098	29.749	40.675	31.136	40.466	0.496
2	0.071	0.924	12.978	8.070	7.493	1.139	8.600	0.195	2.265	0.040	73.662	79.547	35.417	40.647	37.012	39.279	2.332
3	0.071	0.924	12.978	91.200	7.493	1.139	6.573	0.138	1.789	0.031	72.781	77.728	40.381	45.451	35.526	39.911	1.912
1	0.087	0.924	10.651	0.000	9.129	1.388	6.884	0.147	3.322	0.061	51.743	58.197	31.166	43.841	31.479	40.622	0.491
2	0.087	0.924	10.651	8.070	9.129	1.388	6.410	0.134	2.448	0.043	61.804	67.588	39.201	43.425	35.571	39.953	2.165
3	0.087	0.924	10.651	91.200	9.129	1.388	6.503	0.137	1.828	0.032	71.885	76.891	35.732	41.436	35.168	39.182	2.082
1	0.087	0.924	10.651	0.000	9.129	1.388	6.954	0.149	3.287	0.061	52.732	59.223	31.045	43.620	30.662	40.443	0.485
2	0.087	0.924	10.651	8.070	9.129	1.388	7.847	0.173	2.511	0.045	68.004	74.191	35.620	41.436	40.006	39.250	2.130
3	0.087	0.924	10.651	91.200	9.129	1.388	6.302	0.131	1.761	0.030	72.062	76.932	35.766	40.436	35.945	39.133	2.094
1	0.087	0.924	10.651	0.000	9.129	1.388	6.885	0.147	3.244	0.060	52.883	59.324	31.250	43.385	30.906	39.234	0.489
2	0.087	0.924	10.651	8.070	9.129	1.388	6.842	0.146	1.937	0.034	71.691	76.912	35.689	41.414	37.978	39.128	1.943
3	0.087	0.924	10.651	91.200	9.129	1.388	7.561	0.165	1.882	0.033	75.107	80.283	35.826	40.455	35.922	39.037	1.935

Experimental data 34

Type of case การกำจัดฝุ่น

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc.(g/m3)	Water Flowrate (ml/s)	Velocity In duct (m/s)	Wetted Scree Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.444	9.737	0.000	4.801	1.141	3.167	0.058	1.969	0.034	37.828	41.078	28.371	37.973	27.819	35.098	0.145
2	0.046	0.444	9.737	8.070	4.801	1.141	2.774	0.050	1.200	0.020	56.736	59.759	24.677	28.414	23.358	27.490	1.638
3	0.046	0.444	9.737	91.200	4.801	1.141	2.681	0.048	0.756	0.012	71.817	74.236	33.780	38.821	33.353	35.727	1.818
1	0.046	0.444	9.737	0.000	4.801	1.141	2.819	0.051	1.814	0.031	35.651	38.516	32.993	46.164	31.046	38.625	0.152
2	0.046	0.444	9.737	8.070	4.801	1.141	2.927	0.053	1.156	0.019	60.511	63.596	21.128	30.772	24.360	28.741	1.579
3	0.046	0.444	9.737	91.200	4.801	1.141	2.744	0.049	0.842	0.018	65.888	68.418	22.196	31.434	24.646	27.410	1.888
1	0.046	0.444	9.737	0.000	4.801	1.141	2.772	0.050	1.636	0.028	40.981	43.958	33.611	46.290	31.236	40.032	0.158
2	0.046	0.444	9.737	8.070	4.801	1.141	2.567	0.046	0.944	0.016	63.240	65.914	21.145	31.209	24.505	29.179	1.600
3	0.046	0.444	9.737	91.200	4.801	1.141	2.603	0.047	0.646	0.011	75.179	77.352	28.391	39.540	31.082	35.080	1.896
1	0.071	0.444	6.236	0.000	7.493	1.781	2.761	0.050	1.832	0.028	40.891	43.855	34.036	46.500	31.640	40.972	0.357
2	0.071	0.444	6.236	8.070	7.493	1.781	2.775	0.050	1.016	0.017	63.396	66.255	28.321	40.019	30.958	35.710	1.961
3	0.071	0.444	6.236	91.200	7.493	1.781	2.240	0.039	0.685	0.011	69.431	71.593	30.626	39.567	31.319	36.697	1.666
1	0.071	0.444	6.236	0.000	7.493	1.781	2.693	0.048	1.548	0.026	42.518	45.450	34.788	46.619	32.046	41.619	0.361
2	0.071	0.444	6.236	8.070	7.493	1.781	2.974	0.054	1.065	0.018	64.196	67.204	29.437	39.891	31.014	36.007	1.720
3	0.071	0.444	6.236	91.200	7.493	1.781	3.070	0.056	0.783	0.013	74.510	77.065	31.169	39.953	32.070	37.592	1.674
1	0.071	0.444	6.236	0.000	7.493	1.781	2.686	0.048	1.674	0.029	37.677	40.488	34.582	45.332	31.815	40.627	0.342
2	0.071	0.444	6.236	8.070	7.493	1.781	2.857	0.048	0.910	0.015	65.743	68.414	30.535	40.347	31.268	36.523	1.755
3	0.071	0.444	6.236	91.200	7.493	1.781	2.717	0.049	0.776	0.013	71.435	73.903	31.652	40.392	32.555	38.210	1.674
1	0.087	0.444	5.118	0.000	9.129	2.169	3.025	0.055	1.642	0.028	45.719	49.015	33.612	44.181	30.647	40.171	0.337
2	0.087	0.444	5.118	8.070	9.129	2.169	2.748	0.049	1.079	0.018	60.755	63.668	32.492	40.722	34.661	37.377	1.641
3	0.087	0.444	5.118	91.200	9.129	2.169	2.663	0.048	0.641	0.010	75.933	78.105	34.296	42.006	35.991	39.222	1.527
1	0.087	0.444	5.118	0.000	9.129	2.169	2.773	0.050	1.747	0.030	37.000	39.870	33.810	44.903	31.806	40.687	0.334
2	0.087	0.444	5.118	8.070	9.129	2.169	3.062	0.056	0.893	0.015	70.851	73.623	32.784	40.899	35.060	37.843	1.560
3	0.087	0.444	5.118	91.200	9.129	2.169	2.718	0.049	0.676	0.011	75.134	77.395	36.571	43.438	38.816	42.517	1.947
1	0.087	0.444	5.118	0.000	9.129	2.169	2.559	0.046	1.578	0.027	38.335	41.047	30.679	41.714	29.930	37.946	0.332
2	0.087	0.444	5.118	8.070	9.129	2.169	2.745	0.049	0.763	0.013	72.204	74.654	33.319	41.517	35.607	38.715	1.800
3	0.087	0.444	5.118	91.200	9.129	2.169	2.538	0.045	0.722	0.012	71.577	73.894	34.916	43.507	36.823	41.575	2.035

Experimental data 35

Type of case การกระจายฝุ่น

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m ³ /sec)	Feed Rate (g/sec)	Dust conc.(g/m ³)	Water Flowrate (ml/s)	Velocity In duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m ³)	%	(g/m ³)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.700	15.351	0.000	4.801	1.141	3.730	0.070	2.412	0.043	35.335	38.965	29.710	39.439	24.319	32.391	0.174
2	0.046	0.700	15.351	8.070	4.801	1.141	3.919	0.074	1.547	0.026	60.532	64.488	31.724	40.347	34.740	37.728	1.556
3	0.046	0.700	15.351	91.200	4.801	1.141	4.405	0.085	1.193	0.020	72.926	76.527	31.882	40.766	34.863	38.278	2.058
1	0.046	0.700	15.351	0.000	4.801	1.141	3.823	0.072	2.772	0.050	27.491	30.724	30.731	40.564	25.665	33.407	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	4.154	0.079	1.507	0.026	63.725	67.742	31.979	40.669	35.116	38.366	2.038
3	0.046	0.700	15.351	91.200	4.801	1.141	3.474	0.065	0.888	0.015	74.446	77.291	32.116	40.886	35.120	38.463	2.002
1	0.046	0.700	15.351	0.000	4.801	1.141	3.784	0.071	2.359	0.042	37.659	41.433	28.810	40.923	26.210	36.512	0.187
2	0.046	0.700	15.351	8.070	4.801	1.141	4.231	0.081	1.331	0.022	68.548	72.352	32.023	40.781	35.105	38.299	2.223
3	0.046	0.700	15.351	91.200	4.801	1.141	4.652	0.091	1.130	0.019	75.720	79.224	32.312	40.871	35.347	38.594	2.003
1	0.071	0.700	9.831	0.000	7.493	1.781	3.699	0.069	2.333	0.041	36.929	40.603	27.401	38.903	23.236	31.063	0.478
2	0.071	0.700	9.831	8.070	7.493	1.781	4.174	0.080	1.463	0.025	64.961	68.932	28.238	31.182	27.766	29.085	2.131
3	0.071	0.700	9.831	91.200	7.493	1.781	5.399	0.109	1.379	0.023	74.465	78.547	26.591	36.027	29.132	32.906	1.950
1	0.071	0.700	9.831	0.000	7.493	1.781	3.738	0.070	2.263	0.040	39.460	43.261	39.232	47.567	32.052	38.454	0.477
2	0.071	0.700	9.831	8.070	7.493	1.781	5.175	0.103	1.982	0.034	61.713	66.619	23.599	32.259	26.980	31.172	1.881
3	0.071	0.700	9.831	91.200	7.493	1.781	3.303	0.061	0.933	0.015	71.746	74.651	27.804	38.081	31.548	36.697	1.931
1	0.071	0.700	9.831	0.000	7.493	1.781	3.646	0.068	2.160	0.038	40.757	44.520	29.607	39.180	23.853	30.242	0.480
2	0.071	0.700	9.831	8.070	7.493	1.781	6.006	0.124	2.219	0.039	63.049	68.482	24.091	33.978	27.741	31.024	2.080
3	0.071	0.700	9.831	91.200	7.493	1.781	4.499	0.087	1.458	0.025	67.585	71.649	29.141	39.468	33.912	37.970	1.568
1	0.087	0.700	8.069	0.000	9.129	2.169	3.895	0.074	2.256	0.040	42.080	46.094	28.519	37.270	23.830	30.821	0.469
2	0.087	0.700	8.069	8.070	9.129	2.169	3.883	0.073	1.475	0.025	62.019	65.889	29.898	40.557	34.718	39.008	1.871
3	0.087	0.700	8.069	91.200	9.129	2.169	3.109	0.057	1.076	0.018	65.408	68.486	33.040	42.889	36.397	39.065	2.030
1	0.087	0.700	8.069	0.000	9.129	2.169	3.947	0.075	2.384	0.042	39.600	43.584	28.636	37.946	23.665	30.669	0.452
2	0.087	0.700	8.069	8.070	9.129	2.169	5.014	0.099	1.820	0.031	63.703	68.385	30.406	41.330	35.041	39.661	2.026
3	0.087	0.700	8.069	91.200	9.129	2.169	3.773	0.071	1.173	0.020	68.904	72.340	33.148	41.327	36.253	39.400	2.192
1	0.087	0.700	8.069	0.000	9.129	2.169	3.921	0.074	2.323	0.041	40.755	44.754	28.740	38.513	23.915	31.050	0.467
2	0.087	0.700	8.069	8.070	9.129	2.169	4.157	0.080	1.588	0.027	61.797	65.903	32.555	42.334	35.934	40.457	1.908
3	0.087	0.700	8.069	91.200	9.129	2.169	4.453	0.086	1.154	0.019	74.094	77.625	33.430	41.537	36.238	39.696	2.016

Experimental data 36

Type of case การกระจายฝุ่น

Projection area of case 406.17 cm²

Cycle time control open 120 sec.

Type of dust ฝุ่น EVA

Source of dust โรงงาน Cobra

Close 60 sec.

Exp.	Air Flowrate (m3/sec)	Feed Rate (g/sec)	Dust conc. (g/m3)	Water Flowrate (m3/s)	Velocity In duct (m/s)	Wetted Screen Sup. Velocity (m/s)	Opacity Reading				Efficiency (%)		Temperature				Diff. Pressure (mm)
							Inlet		Outlet		Opacity [-]	Conc. [-]	Inlet		Outlet		
							%	(g/m3)	%	(g/m3)			Tw (C)	Td (C)	Tw (C)	Td (C)	
1	0.046	0.924	20.263	0.000	4.801	1.141	7.703	0.169	4.681	0.091	39.231	45.921	30.512	42.859	27.411	35.186	0.193
2	0.046	0.924	20.263	8.070	4.801	1.141	7.086	0.152	2.692	0.048	62.011	68.231	33.663	41.678	36.391	39.904	1.713
3	0.046	0.924	20.263	91.200	4.801	1.141	6.206	0.129	1.605	0.027	74.136	78.720	34.977	43.945	36.648	40.347	1.722
1	0.046	0.924	20.263	0.000	4.801	1.141	7.296	0.158	4.084	0.078	44.024	50.672	31.473	42.834	27.687	35.343	0.202
2	0.046	0.924	20.263	8.070	4.801	1.141	8.808	0.201	2.531	0.054	66.388	73.270	33.733	41.692	36.322	39.686	1.631
3	0.046	0.924	20.263	91.200	4.801	1.141	6.400	0.134	1.762	0.030	72.461	77.344	35.031	44.190	36.769	40.481	1.425
1	0.046	0.924	20.263	0.000	4.801	1.141	7.123	0.153	4.198	0.080	41.064	47.479	31.977	42.915	27.717	36.484	0.221
2	0.046	0.924	20.263	8.070	4.801	1.141	8.047	0.179	2.423	0.043	69.885	75.977	34.751	43.756	36.369	40.131	1.748
3	0.046	0.924	20.263	91.200	4.801	1.141	6.468	0.136	1.572	0.027	75.697	80.235	35.201	44.286	36.864	40.634	1.963
1	0.071	0.924	12.978	0.000	7.493	1.781	7.144	0.154	4.118	0.079	42.357	48.843	31.544	42.826	27.734	35.803	0.483
2	0.071	0.924	12.978	8.070	7.493	1.781	7.892	0.175	2.915	0.053	63.069	69.719	37.262	43.362	37.572	39.245	1.810
3	0.071	0.924	12.978	91.200	7.493	1.781	5.815	0.119	1.581	0.027	72.814	77.317	32.691	40.287	34.135	38.397	1.836
1	0.071	0.924	12.978	0.000	7.493	1.781	7.059	0.151	4.143	0.079	41.309	47.693	28.651	40.137	25.117	33.806	0.482
2	0.071	0.924	12.978	8.070	7.493	1.781	8.386	0.189	2.937	0.053	64.979	71.761	33.643	42.096	35.112	38.985	1.843
3	0.071	0.924	12.978	91.200	7.493	1.781	4.158	0.080	1.096	0.018	73.645	77.021	33.022	40.686	34.358	38.736	1.973
1	0.071	0.924	12.978	0.000	7.493	1.781	7.131	0.153	3.419	0.063	52.054	58.675	31.764	43.013	27.806	34.745	0.486
2	0.071	0.924	12.978	8.070	7.493	1.781	7.024	0.150	2.154	0.038	69.330	74.908	32.795	42.116	34.313	39.120	1.807
3	0.071	0.924	12.978	91.200	7.493	1.781	7.822	0.173	2.109	0.037	73.032	78.620	33.382	41.235	34.669	39.081	1.713
1	0.087	0.924	10.651	0.000	9.129	2.169	7.082	0.152	3.806	0.072	46.258	52.820	31.584	43.034	27.936	34.870	0.469
2	0.087	0.924	10.651	8.070	9.129	2.169	8.888	0.204	3.367	0.062	62.119	69.422	33.587	42.205	34.805	39.267	1.403
3	0.087	0.924	10.651	91.200	9.129	2.169	8.098	0.180	2.192	0.038	72.937	78.677	34.198	40.125	35.563	38.379	1.983
1	0.087	0.924	10.651	0.000	9.129	2.169	6.974	0.149	3.837	0.072	44.981	51.440	31.213	42.940	28.205	35.731	0.463
2	0.087	0.924	10.651	8.070	9.129	2.169	8.568	0.194	2.853	0.052	66.702	73.422	33.812	41.490	35.052	39.044	1.747
3	0.087	0.924	10.651	91.200	9.129	2.169	8.086	0.180	1.995	0.035	75.330	80.728	34.242	40.905	35.498	38.920	1.900
1	0.087	0.924	10.651	0.000	9.129	2.169	7.128	0.153	3.954	0.075	44.529	51.079	30.926	40.218	25.083	32.921	0.468
2	0.087	0.924	10.651	8.070	9.129	2.169	9.492	0.222	2.868	0.052	69.788	76.632	33.921	41.149	35.259	38.997	1.912
3	0.087	0.924	10.651	91.200	9.129	2.169	5.957	0.123	1.578	0.027	73.519	78.031	34.387	41.352	36.617	39.260	1.903

ประวัติผู้เขียนวิทยานิพนธ์

นายสุภวัฒน์ นาควิมล เกิดเมื่อวันที่ 20 ตุลาคม พ.ศ. 2521 จังหวัดกาญจนบุรี จบการศึกษาระดับมัธยมศึกษาจากโรงเรียนสารสิทธิ์พิทยาลัย จังหวัดราชบุรี ในปี พ.ศ. 2539 และเข้าศึกษาต่อระดับปริญญาบัณฑิตที่ สาขาวิชาเคมีเทคนิค คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย และจบการศึกษาในปี พ.ศ. 2543 ในปีเดียวกันเข้าศึกษาต่อระดับปริญญามหาบัณฑิต สาขาวิชา วิศวกรรมเคมี คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

