

Chapter 3

General study on the contracting company

3.1 General Aspect

In this thesis, the contracting company to be case study is an electrical installation contractor providing complete instrumentation and electrical installation packages in the hydrocarbon and differentiated industries. The company can undertake installation and erection & commissioning of complete electrical systems and project management for all types of industrial plants including petrochemical, oil and gas, steel plant, cement plant, pulp & paper, power generation, ventilation & refrigeration, and diversified industries.

Services of the company include :

- general contracting for composite plants
(BOP, Balance of Plant : Engineering, Procurement and Construction Services (EPC))
- building : electrical installation, lighting and safety systems
- detail engineering for balance of plants
- supply of installation materials
- electrical and instrumentation installation
- commissioning & start up

Business of the company emphasizes on :

- professional project and site management
- high quality and safety standards
- subcontractors management
- labour management
- dedicated supply management
- engineering capabilities for Balance of Plant

The overall current organization of the company is as follows :

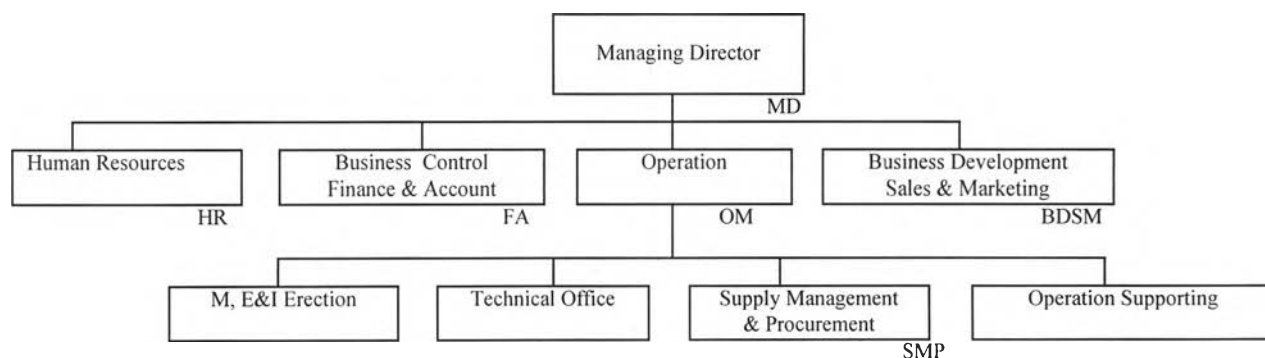


Figure 3-1 : Company Organization

The company organization is designed base on functional responsibility. The chain of command in each function leads to a functional head, who in turn reports to the top manager. One benefit of the organization is the ability to develop and reinforce expertise in specialized functions.

Within **Operation function**, the internal organization is designed in which separate but related units by departmentalizing by activities handling. Project and Site Management is one part of Operation function. It is a part of site operation of M, E&I Erection (Mechanical, Electrical & Instrumentation).

General Organization for Site Operation

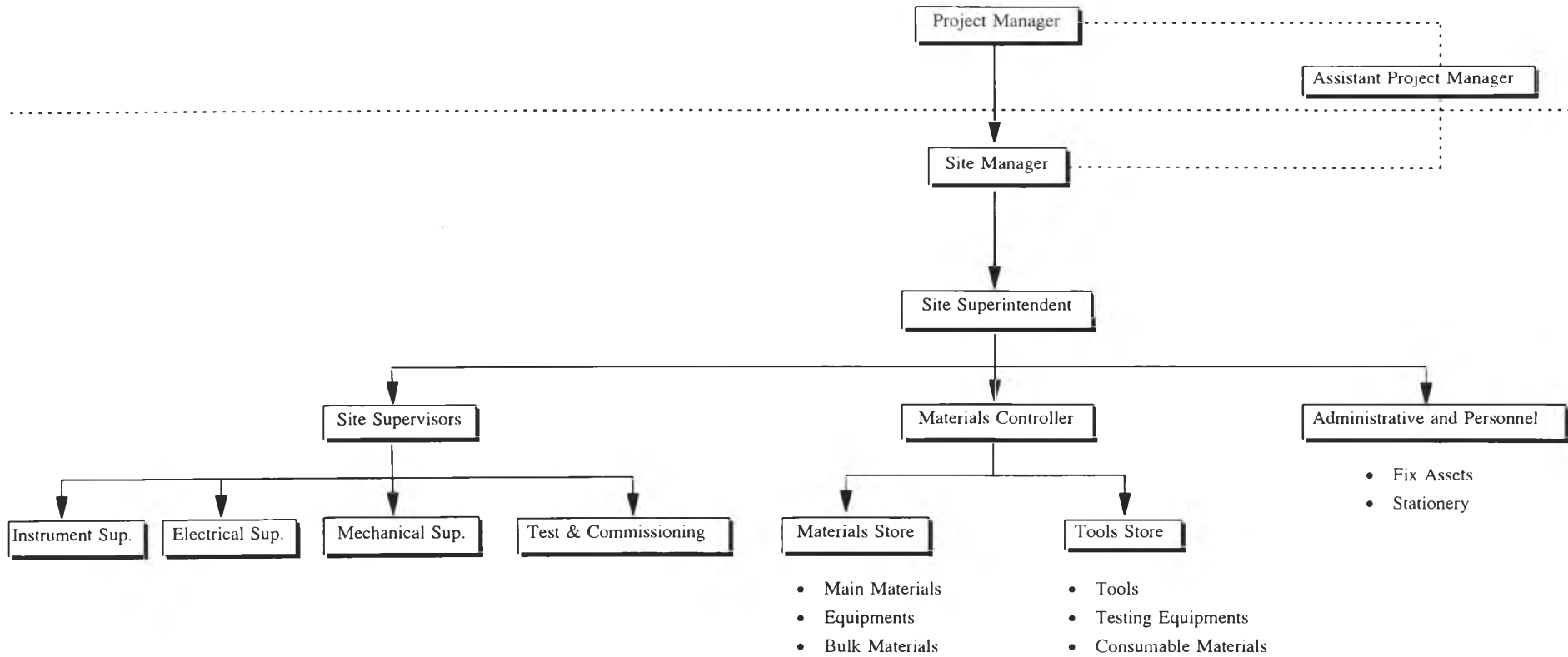


Figure 3-2 : General Organization for Site Operation

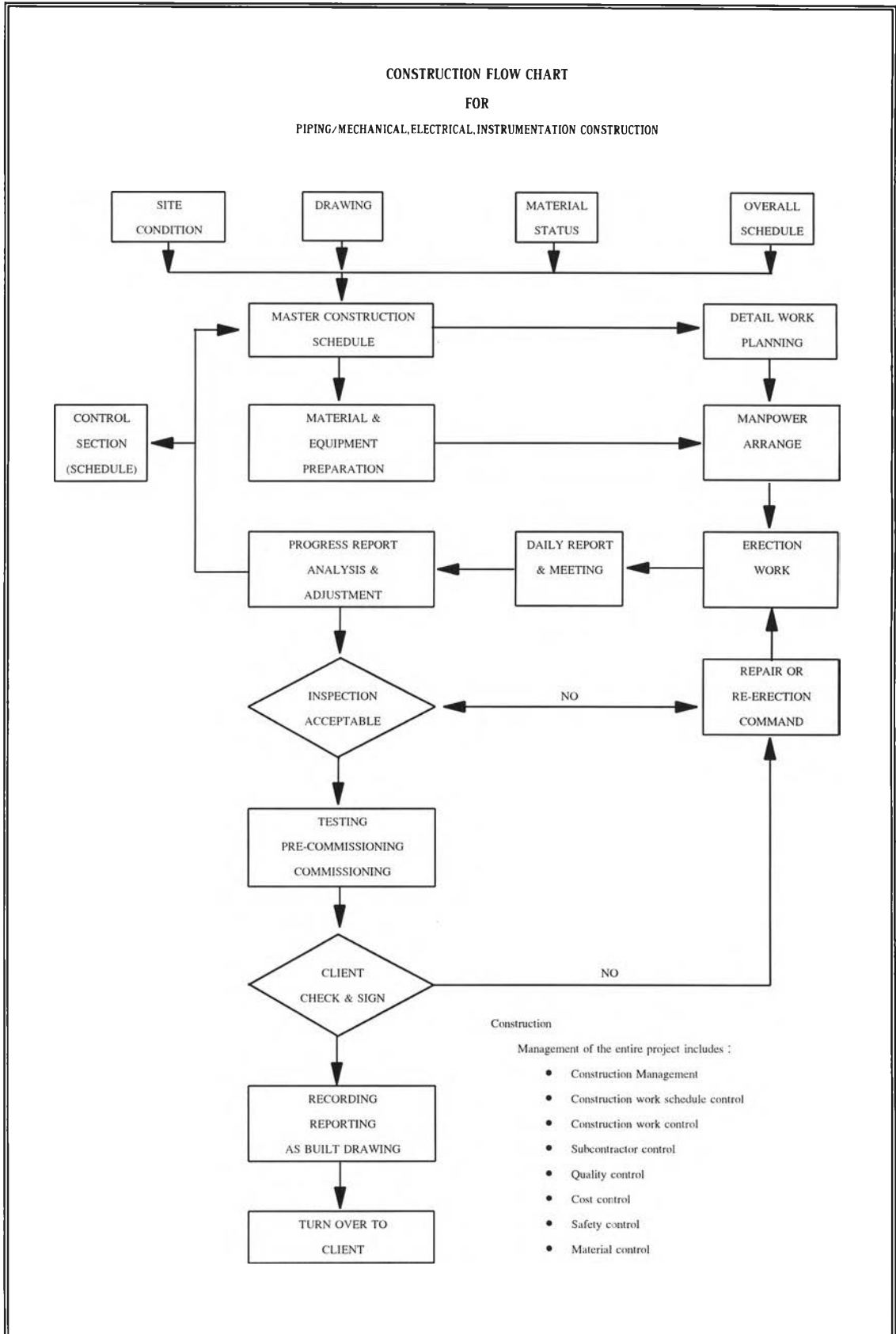


Figure 3-3 : Construction Flow Chart

3.2 The tools/equipments renting system

The company has developed the tools/equipments renting system in order to share the available tools/equipments in the company for various sites, to minimize cost of new purchasing and reduce a number of surplus tools/equipments whenever the project completed.

The company organized **Supply Management and Procurement Division (SMP)** to handle this system. SMP is responsible for arrangement the available tools/equipments to site as per requisition and debit the rental cost charge to site operation cost. SMP has been established as the cost centre, cost of tools/equipments buying, repairing and maintenance, calibration or certificate achievement, will debit to SMP cost. However, the rental cost charge to site will be the transferring cost of SMP.

The major responsibility of SMP in the renting system is as follows :

- Review the requisition by Site and check on the available stock
 - Arrange the tools/equipments to Site if available and process on the purchasing or outside renting if not available
 - Register and prepare the account of the tools/equipments
 - Administer of the tools/equipments or control in any transaction, issuing-returning
 - Inspect or verify the condition/status of the tools/equipments as per period or requisition
 - Coordinate in repairing, preventive maintenance or certificate acquiring
 - Prepare report for tools/equipments rental charge and continue the accounting process
- etc.

Fixed assets in Renting system are

1. Cranes
2. Forklifts
3. Trucks
4. Welding machines
5. Compressors
6. Generators

7. Office equipments with accessories
8. Office furniture (above 5,000 Baht)
9. Test equipments
10. Construction tools (above 10,000 Baht)

The formula used to calculate the monthly rental charge to the project is as following

$$\text{Monthly rate} \quad : \quad \frac{\{[(\text{Total purchased price}) + \text{Financial Cost}] + \text{R\&M}\} + \text{insurance}}{\text{Depreciation} \times 12 \text{ Months}}$$

where

Depreciation : 7 years for 1-2
5 years for 3-4-5-6-7-8-9-10

Financial costs : 12% for all

Repair & Maintenance (R&M) : 8% new and used under warranty for one year
10% out of warranty
for 1-2-3-4-5-6 (no R&M associated for 7-8-9-10**)

Insurance : 1.5% for all

* Purchase price includes Custom Duties where applicable, VAT excluded

** Repairs and maintenance are to projects charge for items excluded R&M

3.3 Problem Area

Problem	Cause	Result	Needed
<ul style="list-style-type: none"> ➤ Tools / Equipments <ul style="list-style-type: none"> ◊ Renting System <ul style="list-style-type: none"> ○ Complicated renting system 	<ul style="list-style-type: none"> ○ unclear procedures of renting system ○ inappropriate calculation of rental charge 	<ul style="list-style-type: none"> ○ lack of cooperation and action on following up ○ conflict between Site and Tools/ Equipments Controller (SMP) <ul style="list-style-type: none"> - Why the daily rental / charge debits to site operation cost but site still absorbs cost of repairing, maintenance or spare parts changed for deteriorated parts replacement. - Some tools / equipments purchased by site but still be duplicated on daily rental charge with no cost (of purchasing) transferring. ○ unreasonable rental charge to site 	<ul style="list-style-type: none"> ○ appropriate procedure of tools / equipments renting system ○ appropriate calculated formula of rental charge
<ul style="list-style-type: none"> ○ Inadequate tools/equipments providing to serve site work 	<ul style="list-style-type: none"> ○ retain tools/equipments at site without sharing or no return to central warehouse ○ many damaged tools/equipments <ul style="list-style-type: none"> * not use tools /equipments carefully and irresponsible repairing ○ inefficient tools/equipments planning or urgent requisition by customers/clients 	<ul style="list-style-type: none"> ○ no tools/equipments at requested site on-time requirement ○ field work stoppage <ul style="list-style-type: none"> * thus, site preferred to absorb cost of rental charge rather than shortage tools /equipments. ○ increase site cost of new purchasing and surplus tools/equipments in company ○ conflict on various site cooperation ○ high stock records of tools/equipments asset lists <ul style="list-style-type: none"> * thus, the new purchasing is not approved. ○ many urgent requisitions from various site at the same time without prior planning 	<ul style="list-style-type: none"> ○ appropriate procedure of tools / equipments handling ○ database for up-to-date actual status record

Problem	Cause	Result	Needed
		<ul style="list-style-type: none"> o no available tools/equipments on time because of long distance of various sites location in transporting 	<ul style="list-style-type: none"> o efficient tools/equipments plan
	<ul style="list-style-type: none"> o not enough quantity of some renting tools / equipments to serve site work, particularly for the specific tools/equipments used in specific tasks <ul style="list-style-type: none"> - expensive - made by order upon requisition 	<ul style="list-style-type: none"> o much complaint from site in shortage renting tools/equipments providing and disable to purchase the new ones because of complicated purchasing requisition procedure of company 	<ul style="list-style-type: none"> o efficient tools/equipments plan
	<ul style="list-style-type: none"> o delay in new tools/equipments purchasing process by requirement on <ul style="list-style-type: none"> - management approval - specification clarifying - quotation proposal preparing by suppliers - price and budget comparing, negotiating and selecting - time delivery 	<ul style="list-style-type: none"> o no tools/equipments available on time 	<ul style="list-style-type: none"> o appropriate purchasing plan
	<ul style="list-style-type: none"> o inefficient warehousing management at central warehouse 	<ul style="list-style-type: none"> o out of date or incorrect tools / equipments status record 	<ul style="list-style-type: none"> o appropriate procedure of tools/equipments handling at central warehouse o database for up-to-date actual status record
<ul style="list-style-type: none"> o Inaccuracy of data record 	<ul style="list-style-type: none"> o delay and inaccuracy of data transferring or communication from various sites and central warehouse o inefficiency in data record, incorrect (or out of date) database of tools/equipments management system o inadequate linkage among database at various sites because of independent and disconnected individual site operation 	<ul style="list-style-type: none"> o disable to monitor current status of tools/equipments correctly o delay or out of date or incorrect information transferring 	<ul style="list-style-type: none"> o database for up-to-date actual status record

Problem	Cause	Result	Needed
<ul style="list-style-type: none"> ◇ Field Operation ○ Inefficiency of tools/equipments control at site 	<ul style="list-style-type: none"> ○ no guideline procedure for site operation and transaction record ○ inefficient tools/equipments status recording method (receiving /returning) and regardless in following up ○ inefficient tools/equipments using plan done by working team ○ not follow site instruction (issuing/returning) <ul style="list-style-type: none"> - no use issue voucher, return voucher - inefficiency of store management 	<ul style="list-style-type: none"> ○ tools/equipments loss ○ uncontrolled tools/equipments transaction ○ unable to monitor actual status of tools / equipments ○ disable to fully utilize or pool sharing tools/equipments ○ inadequate tools/equipments providing ○ increase cost of new purchasing in order to serve field work and surplus of tools / equipments after project workload down 	<ul style="list-style-type: none"> ○ appropriate procedure of tools / equipments handling ○ database for up-to-date actual status record ○ appropriate tools/equipments plan ○ appropriate procedure of tools / equipments receiving, issuing, returning

Problem	Cause	Result	Needed
➤ Materials			
◊ Materials supplied by client			
○ Inefficiency of materials control	○ no guideline procedure for site operation and transaction record	○ unbalance in materials reconciliation between issuing / returning record and installation report ○ loss in financial result by - cannot bill according to the actual work done - must be compensated for large amounts of unbalance materials	○ appropriate procedure of materials receiving, issuing, returning
	○ inefficient recording method (reporting, rechecking or updating) and regardless in following up	○ poor information transferring whenever workforce turnover ○ incorrect information recording or inefficient database ○ disable perceive on the problem occurrence earlier	○ database for up-to-date actual status record
	○ no working frame between field work and material controller *not follow site instruction of materials issuing/returning, reporting - not use issue voucher, return voucher - incorrect site installation report	○ poor coordination between field work and material controller - field working teams disregard in incurred cost from failure material control, project financial performance or any payment claim due from/to the client, only need to finish the job to satisfy to the client, they do not follow the instruction of material control. - material controller does not know correctly in actual work done by field work and refer the report from site only, so cannot monitor the corrective report or record earlier.	
		○ workforce conflict	

Problem	Cause	Result	Needed
<ul style="list-style-type: none"> ◇ Materials supplied by Project (Site) <ul style="list-style-type: none"> ○ Mistake in quantity and specification of ordered materials 	<ul style="list-style-type: none"> ○ unclear scope of supply ○ mistake in materials take off ○ complicated typical drawing and specification requirement ○ inefficiency of materials plan <ul style="list-style-type: none"> * incorrect plan due to insufficient working experience, complicated project work, not combined with master project schedule (site working plan) * not make properly 	<ul style="list-style-type: none"> ○ misspecification of ordered materials <ul style="list-style-type: none"> - project delay due to lead time of new order replacement - rework and operation cost increase ○ surplus materials after project completion (overstocking) or high inventory ○ shortage materials on time need for installation (understocking) 	
<ul style="list-style-type: none"> ○ Unavailable required materials in market place 	<ul style="list-style-type: none"> ○ unknown source of supply (no previous record or no database) ○ no available stock of suppliers ○ made by order only 	<ul style="list-style-type: none"> ○ no materials on time requirement 	<ul style="list-style-type: none"> ○ database of source of supply
<ul style="list-style-type: none"> ○ Inefficiency of materials control 	<ul style="list-style-type: none"> ○ no guideline procedure for site operation and transaction record ○ inefficient recording method (receiving, issuing/returning, balancing and reporting) ○ not follow site instruction <ul style="list-style-type: none"> - no use issue voucher, return voucher - inefficiency of store management 	<ul style="list-style-type: none"> ○ materials loss and uncontrollable loss in financial result ○ duplication of purchase order 	<ul style="list-style-type: none"> ○ appropriate procedure of materials receiving, issuing, returning ○ database for up-to-date actual status record
<ul style="list-style-type: none"> ○ Suppliers not receive payment within time commitment 	<ul style="list-style-type: none"> ○ unclear procedure of billing and not cooperate with FA (Financial and Accounting Department) 	<ul style="list-style-type: none"> ○ complaint by supplier ○ problem in next lot shipment or next order 	<ul style="list-style-type: none"> ○ appropriate procedure of materials purchasing or making payment

Problem	Cause	Result	Needed
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|---------------------|--|---|------------------------------|
| o High price buying | o inefficient purchase order plan (related to material plan) <ul style="list-style-type: none"> - no price record for comparing - urgent order requisition - small lot purchase order | o increase operation cost <ul style="list-style-type: none"> - reduce bargaining power of purchasing - loss advantage from high volume discount o over budget | o appropriate materials plan |
|---------------------|--|---|------------------------------|

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Problem	Cause	Result	Needed
◇ Warehousing/Stores ○ Inefficiency of inventory control	○ out of date recording	○ unknown current inventory status ○ high inventory without utilization or sharing	○ database for up-to-date actual status record
