

CHAPTER 3

BACKGROUND OF CONSTRUCTION INDUSTRY

All details of the case organization are applied from the company profile.

3.1 Organizational Background

The case organization is in a construction industry, which provides various services for clients in a construction field. This includes a consultant for the project that the client requires support on technical knowledge. Providing services to the target groups from the organization is not only concentrating on domestic, due to a high competitiveness in this industry, overseas market is an alternative channel to gain more market share in worldwide construction industry.

Construction industry is a business sector that requires human resource with proficient skill. Human resource is valued as the most imperative resource in organization. Due to a complexity within organization, reinforcing the interaction among team and facilitating project executions are managed by applying *Enterprise Resource Planning* (ERP), which integrates resources and facilities, as well as enhances the organizational efficiency. This leads to the achievement of global competitiveness.

Quality and safety are the most important criteria that the organization recognizes in order to maintain the reputation. Quality is the reason that the client continues to entrust the organization with the important project. With ISO9001, it ensures the client more reliability of their project. For each project, safety engineer and quality control expert will be in charged to support the highest level of management, and the safety procedures are followed.

From the organizational background, details of construction industry are explained as following:

3.2 Comprehensive Services

3.2.1 Feasibility Study and Planning

In project management, feasibility study is important to ensure that the project will be suitable managed. Significant areas that the organization now concerns are:

- Site investigation
- Scenario assessment
- Environmental impact statement/assessment (EIS/EIA)
- Cost and profitability forecast
- Modeling and system analysis

To ensure the project taking off with a good start, the organization uses the most advanced engineering technique and technology, as well as the most up-to-date commercial information.

3.2.2 Fabrication

With well-equipped fabrication technique, the organization provides client with important advantages: quality, variety, flexibility and convenience. The variety of fabrication, that the organization provides, includes:

- Process plant equipment
- Towers and drums
- Heat exchangers
- Silos
- Boilers, heater and furnaces
- Cold boxes
- Marders

The fabrication in construction industry is normally manufactured from metal. Variety of material to be fabricated includes:

- Carbon steel
- Stainless steel
- Titanium
- Nickel alloys
- Zirconium
- Aluminum

3.2.3 Commissioning and Maintenance

For project start-up and operation, the organization commissioning services provides:

- Mechanical completion tests
- Tests runs
- Start-up operation tests
- Examination for system performance and operational integrity

The start-up task force for the project composes of design engineer, project engineers and construction staff. All task force provides conformation in order that the project items receive proper attention. Continuously service is a key to maintain the client to stay with organization. After project completion, the organization provides consultation, maintenance, emergency services and plant overhaul to minimize downtime of client's plant process.

3.2.4 Environmental

Environmental, one of the most important criteria to be considered when the construction project is established, is now recognized as a part of construction industry. The organization know-how focuses on:

- Environmental impact assessment
- In-plant pollution control
- Waste minimization methodology
- Energy conservation
- Noise abatement
- Hazard and risk assessment

The expertise in environmental for this industry helps the plant achieve environmental compliance and cost effective by reducing waste.

3.3 Field of Service

The organization offers a complete range of engineering and construction solutions, which provides comprehensive service to various industries:

Petroleum Refining

- Topping
- Vacuum Distillation
- Reforming
- Desulfurization
- Amine Treatment
- Coking
- Catalytic Cracking
- Hydrocracking
- Alkylation
- Lubes and Fuels
- Asphalt
- Sulfur Recovery
- Gasification

Petroleum Refining

- Olefins
- Aromatics
- Butadiene
- Organics
- Polyolefins
- Plastics
- Elastomers
- Synthetic Fibers

Chemical Manufacturing

- Fertilizers, Phosphates, Ion Exchange Resins, Waxes
- Brewery and Winery

Power Generation and Utilities

- Coal-firing Power Plants
- Oil/Gas firing Power Plants
- Nuclear Power Plants
- Combined Cycle Power Plants
- Cogeneration Plants
- Air Separation
- Water Supply

Storage and Terminals

- Tank Yards
- LNG Terminals
- Chemical Storage

Gas Processing

- LNG
- LPG
- Chlorine

- Carbon Monoxide

Metal Mills

- Blast Furnaces
- Coke Oven By-Products
- Copper Smelting

High Tech

- Electronics
- Pharmaceuticals
- Biochemicals

Infrastructure/Civil Engineering

- Industrial Parks
- Buildings

Transportation

- Mass Rapid Transit Systems
- Highways
- Tunnels
- High Speed Rails

Environmental and Safety

- EIS/EIA
- Solid Waste Treatment and Disposal
- Hazard and Risk Assessment
- Wastewater Treatment
- Air Pollution Control
- Noise Abatement

3.4 Project Management

Each project begins with the careful formulation of a project team, assembled and led by an experienced project manager. The team then assumes responsibility for the entire project, from preparing the initial proposal right up through the completion. By participating in the project in its entirety, with a comprehensive understanding of each of the diverse issues involved, the project team is able to avoid delay or miscommunication that often plague large-scale project. Hence the client can be assured that the project will be brought to a smooth and successful completion. Project teams are often made up of individual task forces, each responsible for a specific area. Through the project manager, the task force informs the client of every development in the project, and at the same time responds to each of the client's concerns. The project manager and teammates pay particular attention to:

- Planning and monitoring progress
- Quality assurance and control
- Budget and cost control
- Supervision of engineering design
- Supervision of procurement
- Supervision of all construction work, including fabrication, installation, testing, as well as plant commissioning, operation and maintenance

At the project team and task forces carefully plan for each stage and every aspect of the project implementation, they are well prepared for any eventuality and quickly adapt to changing circumstances. Effective project management enables the organization to deliver the majority of its project both on-budget and on-schedule.

3.5 Engineering Design

The organization offers both basic and detailed engineering designs for all types and sizes of project, including:

- Process design and engineering
- Piping design
- Civil and structural design
- Instrumentation design
- Electrical design
- Mechanical and equipment design
- Computer applications

Familiar with international design codes and standards, the organization's engineers are equipped with the most advanced CAD/CAE systems and modern computer facilities. This allows them to produce cost-effective and quality design, while at the same time focusing their attention on specific project requirements and client preferences.

Since superior designs result from superior training, annual training program has been established within organization and oversea training for advanced study. Complementing the training programs, the assignment rotation and peer review programs stimulate innovation and help make engineers more rounded.

3.6 Procurement

The organization experienced procurement specialists work hand in hand with other members of the project team to procure virtually all materials, equipments and services. Using an extensive computer database, the company has the most up-to-date information at our finger tips, whether it is sourcing, market prices, tariff or import/export regulations.

Rigorous procedures are followed in every job, ensuring a fair selection process and guaranteeing that quality material and equipment are delivered at the lowest possible cost.

Years of experience have prepared the procurement department to deal with any possibility. People are innovative and pragmatic problem solvers, who have proven time after time their dexterity at achieving their objective under all circumstances. A staff of inspectors and expeditors, working closely with quality assurance and control specialists,

ensure that all procured items meet each project's specific quality and schedule requirements.

3.7 Construction

The construction group maintains high quality by adhering to strict construction procedures and employing the most up-to-date techniques. Progress and cost are carefully monitored to ensure that they conform with the schedule and budget.

Safety is the primary concern for management and worker. The organization attempts to raise safety standards, improve work methods, and achieve a safe, accident-free jobsite.

By assembling the construction teams during the early stages of project execution, the design group can include in its design a full range of value engineering while at the same time the construction group becomes familiar with the design, enabling the group to plan its efforts in advance. In the end, the organization both saves time and reduces cost.

Because of the complex logistics of most construction projects (involving the right people, getting equipment to the site at the right time and processing all the necessary documentation), a cohesive team effort is vital for success. Every construction team has the full support of technical services, project control and the corporate coordination group. Communications between the office and the jobsite are open and direct, allowing for immediate consultation or assistance.

Organization's construction teams are innovative and resourceful in resolving the difficulties encountered at various jobsites, whether working with other teams, construction teams of other firms, or subcontractors.