

Did you ever consider installing new versus relocated plants on investments?

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History

In the seventies a number of petrochemical plants were closed down due to a decreasing demand, changing market demands, increasing costs of raw materials and environmental laws.

The first relocation of a complete plant was realised in the seventies within the USA nowadays it is a fully accepted phenomena in the USA.

After the abolishment of the trade restrictions with China, the Chinese industry became interested in the technology and redundant equipment, which was on the market in the USA.

Traditionally the European plant owners did only consider installing new plants. Only the last few years they incidentally considered the relocation of plants or parts thereof, overcapacity in production and the high labour costs in Europe forced the owners to relocate their production outside of Europe. Past relocations in the Netherlands are a needle coke plant, a melamine plant, blast furnaces and urea plant. In Germany a complete refinery has been dismantled for relocation in India. A Distillation Hydrotreater was relocated from Wales to Belgium, from Norway a Total Isomerisation Plant was successfully relocated to Belgium.

Relocation

Relocation is defined as a relocation of a used plant, unit or part thereof to a location within the country or to a new location presumably in another country as an alternative to a new plant. Owners have the following reasons to look at relocations:

- Cost of investment
- Construction time

The relocation of a plant costs less time and money than the traditional installation of a grass root plant due to much less input of the engineering function (the specification, design and documentation is already in place). Furthermore the owner buys proven technology and operation.

Depending on the status of the existing plant and the requirements of the new location an advantage can be obtained by the new owner with respect to the competition due to the availability of the product. The new owner operates a sound technological plant available within a relative short period and is able to produce products of a high quality.

Why relocation

Why does an owner decide to relocate a plant? Because a plant is depreciated, more stringent environmental laws, decreasing market of the product, cheaper raw materials.

When a plant is depreciated the owner can either demolish or sell the plant. Since demolishing is becoming more expensive due to environmental regulations, selling the plant is becoming economically very interesting.

A decreasing market in Europe and at the same time an increasing market in another country can be a good reason to look at relocation of a plant especially when the raw materials can be acquired cheaply.

Trends

There are four reasons why relocations are becoming more and more interesting and forming part of the decision taking to invest:

1. Globalising of the economy.
There are different aspects to the globalising of the economies such as the speeding up of the worldwide economy integration, means of modern communication, automation and politics. The ceasing of existence of borders in the European Common Market leads to more competition in Europe and consequently owners can decide to close down capacity or relocate the capacity to another country in order to be able to compete. Another reason may be to relocate the production facilities nearer to the centre of availability of raw materials because of high costs of transport.
2. Rise of the “young” economies.
These economies are basically the economies of the developing countries, which are growing rapidly.
3. Environment.
The environmental laws in Europe are streamlined within the European Community and more stringent than those in other parts of the world and can be of influence in the decision to close down or relocate.
4. Cost increase of the base products or raw materials are increasing in Europe due to the high labour costs and transport costs.

Possibilities

In general all kind of process plants can be relocated, however the most likely relocations are in the field of:

- Petro/chemical industry
- Steel mills
- Food industry
- Paper mills
- Textile plants
- Power plants

Methods

Basically all plants are relocated on the principle of “as is where is” meaning the plant will be re-installed in the same lay out as the original lay out.

Relocations can be divided into five steps:

- Dismantling
- Packing
- Transport
- Re-installation
- Commissioning

In principle there are two ways to relocate a plant:

- **Modulised:**
When a plant can be modulised in large parts, the plant will be dismantled after modulisation of the plant resulting in a limited number of parts to be relocated.
- **Piece small:**
The plant is dismantled in small pieces since the original design of the plant does not allow modulisation of the plant.

In order to decide which way to follow, the following questions have to be investigated:

- What are the wishes of the client with respect to dismantling and re-installation?
- Complexity of the installation to be relocated
- Process technology
- Present location and new location with respect to roads, rail, waterways, etc.
- Local infrastructure such as available cranes, labour, etc.
- Costs of local labour
- Available schedule

Advantages/disadvantages

With respect to the relative costs between modulised and piece small we refer to the table below.

| | Piece small | Modulised |
|------------------------|-----------------------------|------------------------------|
| Parts | Small, large number, simple | Large, small number, complex |
| Project complexity | Complex | Less complex |
| Labour | High | Low |
| Cranes | Low | High |
| Schedule | Long | Short |
| Sensitivity to damages | High | Low |
| Transport costs | Low | High |

Management systems

The management systems should be applicable for both the dismantling as the re-installation. Basically all the standard management systems such as scheduling, progress control, document control and cost control apply to plant relocation. The difference with the installation of a new plant is the identification and traceability of parts. Imagine a piece small relocation of a plant consisting out of 25,000 pieces. The identification and consequently the tractability are of utmost importance when re-installation of the plant takes place since in most cases only a small number of staff members will be assigned to both the dismantling as to the reinstallation. To achieve this, standard work methods should be developed for work planning, dismantling, site logistics, lay-down yard activities, off-site logistics, document handling and re-installation.

Type of contracts

Relocation can be contracted out in three phases i.e. dismantling, transport, re-installation.

The most common way is to place contracts for the dismantling and transport with a contractor in the country of origin including the assistance of the key staff members with the re-installation contractor who is located near to the relocation site. Advantage of this set-up is that the know how of the dismantling is transferred to the re-installation contractor.

The re-installation can be awarded to the dismantling contractor or a local contractor.

The contracts can be awarded on a lump sum, reimbursable open book or a combination of these contract types. Lump sum contracts can also incorporate incentives for safety, fitting, schedule, etc.

Cost comparison

When considering the installation of a plant the most important question will be the comparison in costs between a totally new plant and a relocated plant. As a guide line the following may serve you.

Costs are defined as:

- Project management;
- Engineering;
- The supply of the plant commodities such as equipment, steel structures, piping materials, valves instruments, electrical cables, insulation etc, etc.
- Civil work;
- Installation of plant commodities;
- Painting;
- Pre-commissioning.

| New | Piece small | Modulised |
|------------|--------------------|------------------|
| 100% | 75% | 55% |