

# **COSTS OF PROJECT ENGINEERING**

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### **1. Introduction.**

Project Engineering may be part of the services provided by Pump Manufacturers.

The service may be provided in the course of submitting offers i.e. before an order is placed, and comprises detailed proposals for meeting individual problems of the potential Customer.

Generally, the same project engineering service is requested from a number of manufacturers.

The scope of the service varies, as does the input involved. This can be considerable. If an order is placed then the Customer must assume responsibility for the cost.

However, in some cases, Project Engineering may go up to a complete, Lump Sum, Turnkey contract.

When the Contract has been awarded, the service comprises of the organisation and execution of work, including scheduling, quality control, commissioning and training of the Operators staff. It will also involve the supply of documents, especially the Operating and maintenance Manual and also the supply of spare parts.

### **2. Nature and Scope.**

The Project Engineering Services provided by the pump manufacturer for pumping plants comprises the development of technical solutions to problems. In the course of these, the manufacturer normally makes use of pumps from his own range, but also includes bought in-components (e.g. valves, control units and motors) which form part of the installation. Project Engineering Services include preparation of drawings, calculations, costings and quality assurance plans, together with the commercial sections of the offer and the progressing of sub-contractors.

Before this documentation can be prepared, a detailed study of the commercial tender documentation is required.

The Project scope may include the requirement for partial or total financing.

Information must be obtained on the environmental conditions and may involve a number of site visits and related work with the Customer, Government, Local Authorities and Financial Institutions.

Occasionally, tests must be made and fluid analyses obtained.

Frequently, enquiries to Sub-Contractors are necessary.

A local authority may be the User of the proposed plant. The party constructing the plant will be the general contractor, who is responsible for the implementation of the project and engineering consultants are generally involved in an advisory capacity.

### **3. Breakdown by Project phase.**

The Project can be broken down into the following phases:

- Prequalification.

The pump manufacturer is usually required to submit documents and information both technical and commercial, which will demonstrate his ability to execute the project.

References from similar projects are usually required.

- Initial offer or qualification.

The pump manufacturer gives a general description of the proposed solution, possibly with some alternatives or options, and budget pricing.

- Offer on a basis of an invitation to tender.

The pump manufacturer prepares this on the basis of the invitation to tender documents and specifications.

- Offer negotiations and resulting award.

During this phase, the offer documentation is discussed between the customer and the pump manufacturer and modifications and additions are agreed by both parties. A revised offer is submitted and after proceeding with the opening of letters, the project is awarded to the pump manufacturer.

Normally, the contract is signed by both parties. Alternatively, the contract may be awarded by the customer in the form of a purchase order which would be acknowledged by the pump manufacture, thus forming a contract.

- Execution of a contract.

During this stage, additional requirements or modifications may be notified by the customer and revised costings may need to be agreed prior to commencing with changes.

The contract can be modified at any time during the project execution provided agreement is reached between both parties.

#### **4. Costs arising.**

The costs of Project Engineering begin with the first involvement with enquiry documentation and continue until the order has been accepted or in the case of Lump Sum Turnkey Projects, until plant commissioning.

They are primarily personnel costs. Although they are recorded, it is difficult to achieve an accurate picture.

Costs arising out of Project Engineering which cannot be recorded are generally estimated. An important factor here is experience gained from earlier projects. Occasionally, the entire costs of Project Engineering have to be estimated.

Costings for Project Engineering services involve at least a listing by the pump manufacturer of its own staff in preparing the project documentation and the resulting costs (including travel expenses). This list is completed by the inclusion of outside services (e.g. calculations, translations).

A typical listing would be as follows:

- Personnel costs.
- Material, equipment and supplies.
- Overheads.
- Site preparation and related supply services.
- Fees, taxes and duties.
- Bid bonds and guarantee deposits.
- Insurances.
- Provision for warranty/guarantee.
- Travel and living expenses.
- Transport and packaging expenses.

Many costs are dependent upon the scope of work and the location or Country of destination.