

## CONTRACT MAKE UP

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### Contents

1. Introduction
  2. Turnkey Contract
  3. Multiple Contract
- Glossary  
Bibliography and Suggestions for further study

### Summary

Preparation of a tender document is a highly skilful and technical job. To execute the project work, the user must prequalify contractors/consultants for various project jobs after carefully assessing their capability in their respective fields of work.

The execution of the project can be on a turnkey or multiple contract basis. The source of financing can have a significant influence of the type of contract. In turnkey contracts, the user's responsibility is limited to preparation of overall technical specifications of the plant with respect to product output, product quality, product cost etc. without going into details of each sub-system of the plant. The user must also provide to the contractor the data and economic parameters so that the supplier can optimize the design of plant with respect to economics. The supplier has to carry out the entire project activity starting from the plant design to the commissioning stage. After commissioning, the supplier demonstrates to the user the guaranteed operational performance of the plant for the period specified in the contract. Finally, the supplier, hands over the entire plant to the user for regular operation.

In multiple contract projects the overall responsibility of the success of the entire plant is with the user. Each contractor is responsible only for the part of the plant supplied by him. The coordination between various subcontractors is also the user's responsibility. A strong project coordination and project monitoring team from the user's side is absolutely essential for successful execution of the project work on a multiple contract basis.

### 1. Introduction

For successful and timely completion of a large desalination project, a team of experts with experience in project management is a prime requirement. Such a team will comprise the client, various consultants (design, management, finances) and contractors/sub-contractors. The authorities and responsibilities of each member of the expert team must be clearly defined and written down to avoid unnecessary overlapping and disputes during execution of the project.

The project design and execution work will include the following:

- Preparation of tender document with complete technical details, equipment specifications, drawings, performance guarantees and penalties for delayed commissioning or any shortcomings in the operational performance;
- Pre-qualification of contractors;
- The purchaser must prepare an up-to-date list of prospective suppliers for the complete plant/sub-systems of the plant. Details should be obtained from all prospective suppliers to assess their technical competence, financial status and previous experience of executing this type of work;
- Invite quotations for supply of plant/plant components, evaluation of offers on technical grounds, followed by competitiveness, on cost basis;
- Award of contract to contractors/material suppliers/and fabricators;
- Appointment of consultants/quality control agencies to act on behalf of the purchaser. These agencies will ensure proper quality control from raw material procurement to the commissioning stage of the plant;
- Updating of bar charts, pert networks, cash flow status, cost escalation etc.;
- Compilation of periodical (monthly, quarterly, yearly) progress reports regarding preparation of technical documents, fabrication drawings, material procurement, inventory details, fabrication and erection status, inspection and certification of commissioning of plant;
- Supervision of operation during test runs and to certify plant performance as per guarantee clauses;
- Finally, handing over the plant to the client for regular operation.

The user has two options available to him for executing the desalination project, mainly depending on local conditions:

1. Turnkey Contract
2. Multiple Contract

The factors which might influence the decision-making process are listed below:

- Source of finance;
- Local availability of engineering and other technical expertise and manpower for the detailed engineering design, fabrication and installation of the plant equipment;
- Availability of engineering materials from indigenous sources;
- Employment potential of the project and need for local participation;
- Need for development of engineering infrastructure for indigenous manufacture of large-scale desalination plants in future.

Large-scale desalination plants are capital intensive and the user will need to make arrangements for requisite finances. Wherever the user has adequate finances of his own, he may set up the plant on turnkey or multiple contract basis depending on the factors listed above. When the plant is to be set up on the basis of financial aids, conditional loans etc. from various sources, the user's choice is greatly limited by conditions attached to such loans. For instance, if the plant is to be financed by a

particular country conditional that it is to be imported from them, then this puts a limit not only on the choice of process and equipment but also the mode of contracting.

In some countries desalination is the major source of potable and industrial water for future needs. These countries will naturally concentrate their efforts on developing their own infrastructure to set up large-scale desalination plants. Some of them already have R&D centres for desalination. Technical manpower is also available to some extent to carry out design and execution work for some of the subsystems of the desalination plants. In such a situation, multiple contracting is more favorable as this will help to enhance the experience of setting up large plants in future apart from providing a lot of job opportunities for local people.

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