

Contracting strategies in the oil and gas industry

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Oil and gas projects are currently characterised by increasing project complexity, different size and intensified international involvement. Therefore, it is difficult to meet the project objectives and challenges in terms of timely completion, costs, quality and revenue. The process and the character of contracting and awarding a project contract appropriately in early project stages are important for the future course and consequently the success of the project.

Contracts are, in essence, tools for allocation of tasks, responsibilities and risks. It is a principle of contracting that the party who controls risk should carry the risk. However, more than this is needed. A contractor will often carry a risk whether he controls it or not – but at a price. Is this the best solution? Is a shared risk a better approach?

The contracting strategy shall take into account i) the desired allocation of risks, ii) division of responsibilities, iii) interfaces, iv) market situation, v) splitting of works and services between the concerned parties, vi) time constraints. The selection of the contracting strategy is the key factor which determines the entire project realisation. Therefore an awareness and knowledge of the specific characteristics of possible approaches is essential. In the following, four basic strategies are presented: EPC, EPC with Long Lead Items, EPCM and Progressive Lump Sum (PLS).

Engineering, Procurement and Construction (EPC)

In an Engineering, Procurement and Construction (EPC) contract, a single-point contract is awarded which comprises, as the name implies, engineering, procurement and construction activities.

This contract approach includes the entire supply of materials and equipment, all design, engineering, procurement, construction and installation works as well as commissioning, start-up, training, acceptance and testing activities. Thus, all necessary tasks ready for operating and handing over a 'turnkey' system to the owner.

The EPC contractor provides the owner with a single point of responsibility, communication and coordination related to the major activities involved. He is obligated to deliver a complete facility or plant for a firm contract price and guaranteed date [1], meeting the required performance levels according to the owner's requirements. Due to a single point of responsibility and the award of an all-encompassing contract, almost all risk is allocated and transferred from owner to contractor. This fact and the possible consequences are likely to result in high contract prices which include contingencies and mark-up to hedge against risks such as, performance, cost increase, time extension and potential loss.

The owner's task is to administer the contract management in terms of his contractual relationship to the EPC contractor as well as interface management which includes the management of communication, coordination and responsibility across a common boundary between several independent entities (**Fig. 1**). However, the major administrative effort and accompanying costs rest with the EPC contractor [2].

The EPC contractor has to deal with the owner and also a large number of sub-entities during the execution of the contract. The contractor has to ensure that these entities comply with the conditions stipulated and adhere to delivery times and requirements.

Through the numerous agreements and parties, it is vital that the interfaces arising are harmonised with each other properly. Interface problems are often generated by coordination and communication problems, e.g. due to overlapping communication channels or gaps, discrepancies or lack of clarity concerning responsibilities.

In an EPC contract, the point where the responsibility of the owner ends and that of the EPC contractor starts is defined exactly. At this point (award of contract and its acceptance), almost the entire risk is allocated from owner who is no longer involved in the project execution, to a contractor who assumes full responsibility for the realisation of the project (**Fig. 2**). So, the project can largely be divided into two fields of responsibility: the phase of

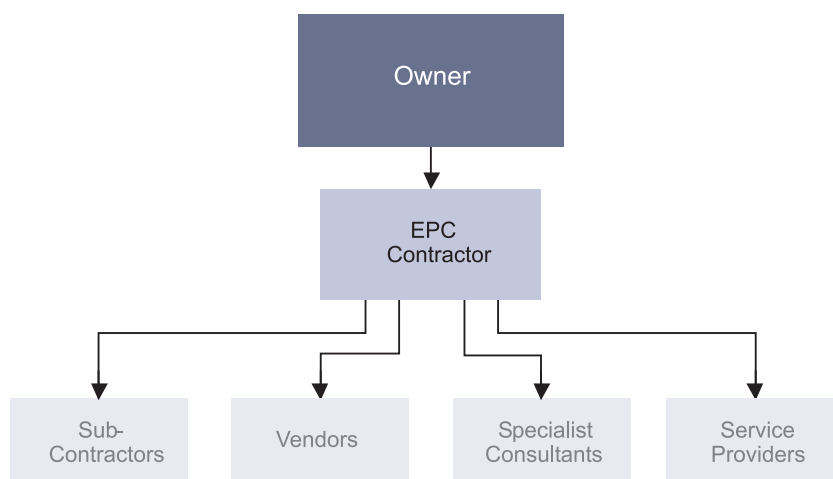


Fig. 1: EPC Contract Structure

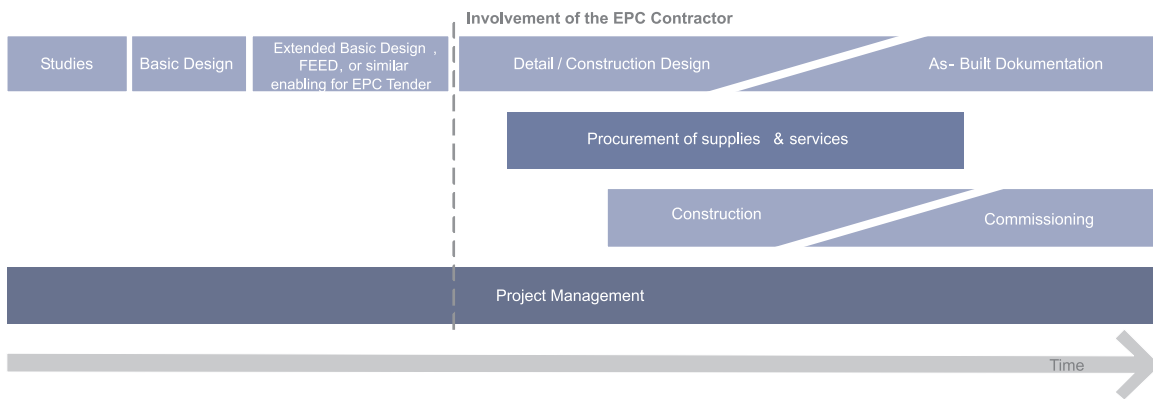


Fig. 2: EPC - Qualitative Time Schedule

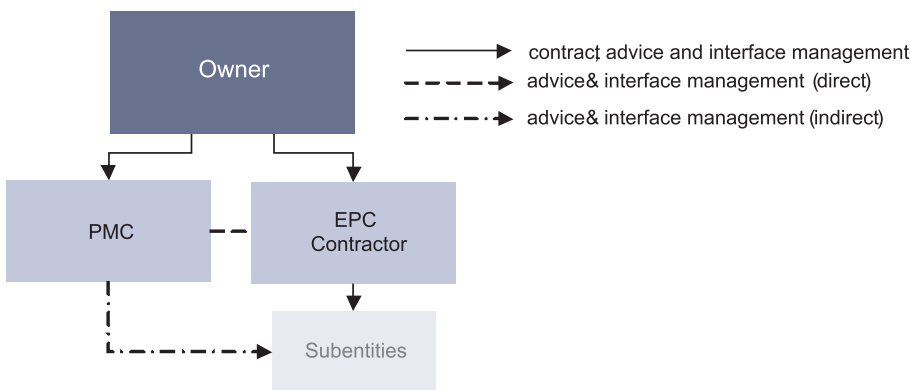


Fig. 3: PMC Contract Structure

owner's responsibility and the phase of contractor's responsibility.

Due to the fact that a single-point contract is awarded and nearly all responsibility rests with the EPC contractor, the coordination of the several activities and interfaces is reduced in its complexity.

In any EPC type contracting model the owner has to manage the project either by his own resources or by awarding these services to a Project Management Consultancy (PMC) contractor. Such services can comprise consultation, advice, and supervision and assistance of the owner in defining the scope, contract tendering, evaluating and award, scheduling and determining funding needs. PMC contractor provides resources to manage the project and delivers effective contract management to fulfil the stipulated aims and objectives [3]. The PMC is solely under a direct contractual agreement with the owner and therefore he has to maintain a professional and neutral distance from the EPC contractor (**Fig. 3**).

Key Characteristics:

- Single point of responsibility for performance of the works, communication and co-ordination remains with EPC contractor
- Guaranteed completion date, performance and firm contract price
- Clear division of obligations and liabilities
- High contract price due to mark ups; contract price may be inflated as the EPC contractor is assuming most of the risk
- Negative impact on schedule due to comparatively long tendering period of EPC contract and due to the initial engineering phase
- Full dependence upon one contractor

Engineering, Procurement and Construction with Long Lead Items (EPC with LLIs)

Within the scope of an Engineering, Procurement and Construction approach with prioritisation on long lead items, the owner procures

material and equipment with long delivery periods before the EPC contract is awarded.

Long lead items, are material or equipment that cannot be purchased or manufactured within the available or desired time frame between EPC contract award and the requirement of these items on site. Thus, once the delivery times are known, it is apparent that an EPC contractor, who is to be awarded a contract at a later stage, cannot procure these items in time. In such a case an EPC with LLIs contract approach can be chosen.

The EPC with LLIs set-up diversifies from a traditional EPC approach mainly with respect to the overall project schedule and the contractual organisation in the pre-EPC-contract phase (**Fig. 4**).

The long lead items which have been procured by the owner, before the EPC contract has been awarded, are either handed over after delivery or the contract for delivery entered into by the owner is novated to the EPC contractor. The transferred items have to be incorporated in the EPC contractor's planning and execution process.

The overall project schedule is affected by accelerated and advanced activities (in contrast to the traditional EPC approach) due to an early procurement phase.

Key Characteristics:

- Shortened overall project schedule
- Procurement cost savings in LLIs
- Procurement risk and selection of vendors lies with owner
- Risk of non-compliance of goods to the project purpose
- Higher co-ordination, communication and contract management efforts, increase of interfaces

The idea of splitting responsibilities and transferring disciplines and activities to specialised contractors is indicated by the following strategy.

Engineering, Procurement and Construction Management (EPCM)

In an Engineering, Procurement and Construction Management (EPCM) contract, an engineering company is contracted to provide engineering, procurement and construction management services.

The EPCM contractor will assist the owner to manage the entire project. Under this professional service contract, the project is largely owner managed and therefore the cost risk is borne and control is executed by the owner and less by EPCM contractor [4]. The owner has the opportunity to influence the EPCM contractors' business outcome due to direct integrated relationships.

The EPCM contractor develops the design, executes the procurement process and is the representative on behalf of the owner and manages all contracts and the construction process under its name. Furthermore the contractor assists in all negotiations to create direct contractual

relationships between the owner and the construction contractors and the major material suppliers.

The owner's task is to conclude, co-ordinate, execute and to administer the contracts. For that reason, the owner ought to have an experienced in-house team to check and to approve the EPCM contractor's managing of these complex contracts (Fig. 5). The cost risk for the project is borne by the owner, any cost overruns and savings are usually to the account of the owner. Hence, it is crucial that the terms of the contracts are properly co-ordinated with one another, protect the interests of the owner and that the risk is allocated to the appropriate party.

Key Characteristics:

- Overall control, in owner's hands
- No mark-up due to shared contract risk
- Competitive market prices for deliveries, all material, equipment and works, cost advantages remain with the owner

- Contractual, schedule, cost and technical risk rests almost entirely with the owner
- High effort, coordination and communication due to interfaces and multiple contracts
- Complex contract build-up – potential gaps in risk allocation or missing but required works and services

Progressive Lump Sum (PLS)

In a Progressive Lump Sum (PLS) contract, a contracting strategy, mostly an EPC contract, is combined with a specific approach on remuneration.

The remuneration, i.e. the contract price is generally estimated on a lump sum basis, but the entire project contract (mostly an EPC contract) itself is broken down into several sequential lump sum contracts. The entire project is separated into pre-agreed stages, which are awarded on a lump sum basis within the scope of an EPC contract. At the commencement, within project plan-

Fig. 4: EPC with LLI - Qualitative Time Schedule

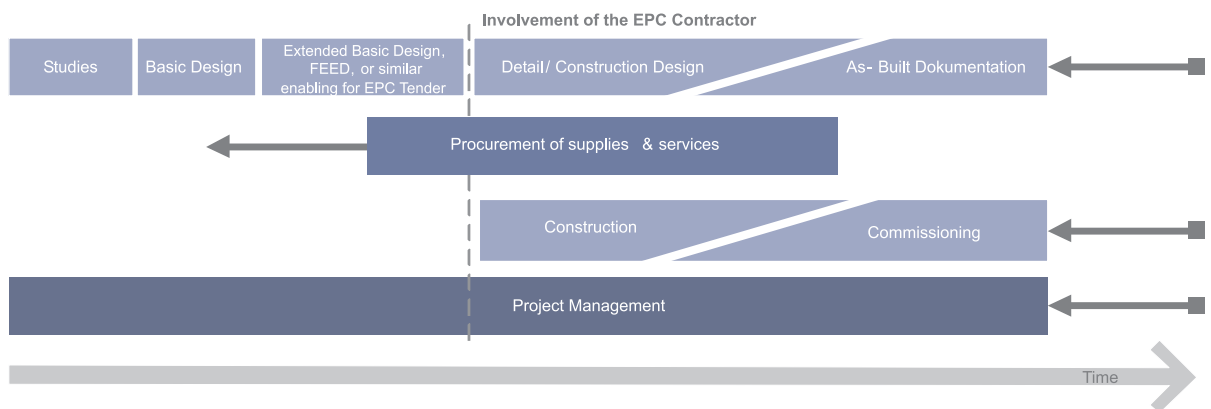
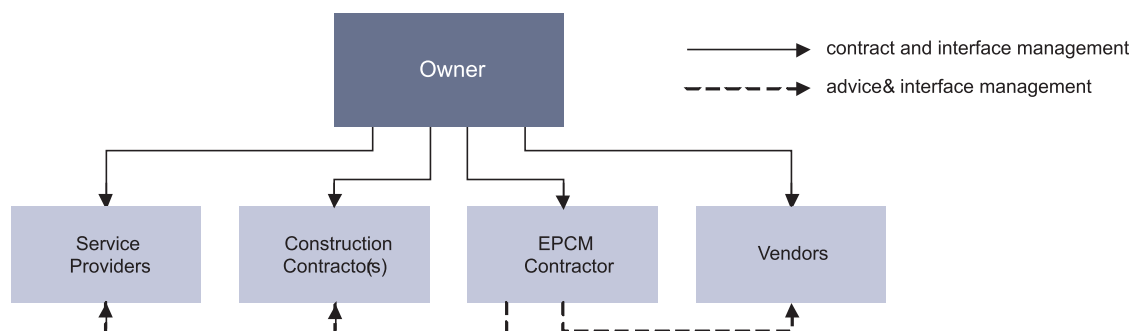


Fig. 5: EPCM Contract Structure



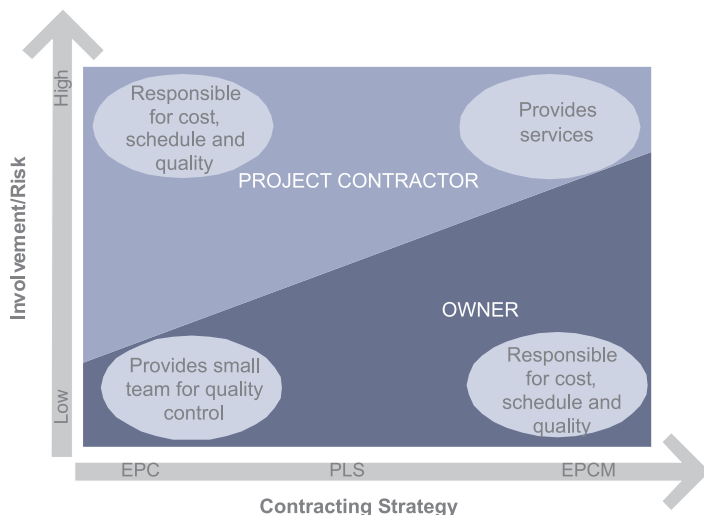


Fig. 6: Extent of Involvement and Risk Structure

- owner's existing organization and resources

Due to the complexity of oil and gas projects, the selection of an appropriate contracting strategy demands great responsibility (in respect of time, budget, out-come/success) and experience by the decision-making units (top project management and top procurement management) and therefore represents a fundamental and decisive task.

Bibliography

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ning, a cost estimate for the entire project is generated. After this, the first pre-agreed stage, e.g. (detailed design) is awarded to an EPC contractor, with the intention to award the succeeding stages to this EPC contractor as well. After completion of every pre-defined stage or milestone, the contract price for the next stage is renegotiated and re-evaluated and is adapted by means of cost estimate or proposal whose accuracy becomes incrementally more precise through the increased project process and project cost knowledge. This means that each contract is based on lump sums and on the preceding cost estimate. In this way, the overall contract price for the entire EPC project is progressively adjusted for variations and changes in scope and extent and so, the incremental contract values are much closer to the actual costs incurred. The contract price will be progressively converted from a target price into a lump sum contract.

Alternatively the contract price will be converted from an initial reimbursable price to a lump sum contract price.

Thereby, this entity contains the advantages of a traditional lump sum contract with minimal risk for claims without defining and determining the scope of the project in its initial project phases as is the case in a traditional EPC approaches.

Key Characteristics:

- Flexible approach concerning final definition of the detailed project, termination of project or change of EPC contractors
- Reduced risk for claims and additional costs, cost transparency and price security

- Progressive price and scope adjustment, reduced cost risk due to defined mark-ups
- Increased effort due to renegotiation and generic co-ordination
- Other characteristics as per normal EPC contract

Summary

The selection of the contracting strategy reflects the desired risk allocation and the objective and purpose that the project owner wants to achieve. Therefore, the specific features and factors of the project have to be analysed and compared with the characteristics of the respective strategy in order to decide which solution is the most appropriate.

The link between the parties' involvement in a project, willingness to assume risk and the selected contracting strategy is illustrated in **Figure 6**. The level of involvement and risk and a subsequent contracting strategy varies between the two extremes of 'largely with the owner' or 'largely with the contractor'.

The key factors for such a decision can be listed as follows:

- type, location and size of project
- risk allocation between owner and contractor
- division of responsibilities
- interfaces
- market situation
- splitting of works and services between the concerned parties
- project time constraints

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