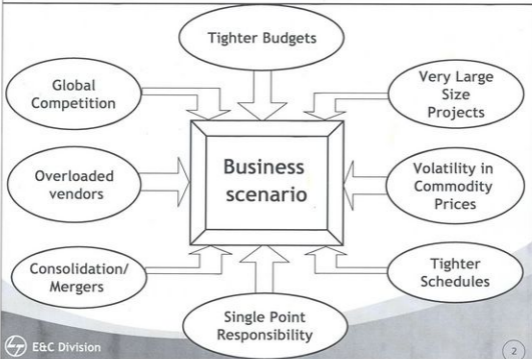




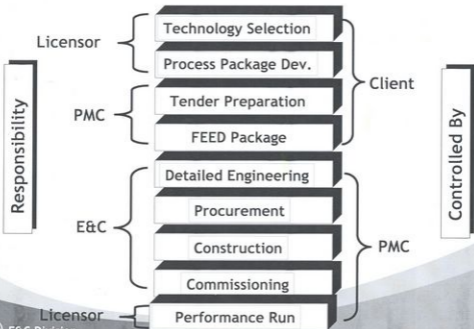
**EPC CONTRACTORS
IN HYDROCARBON SECTOR**
Challenges & Opportunities

E&C DIVISION

CHANGING TRENDS

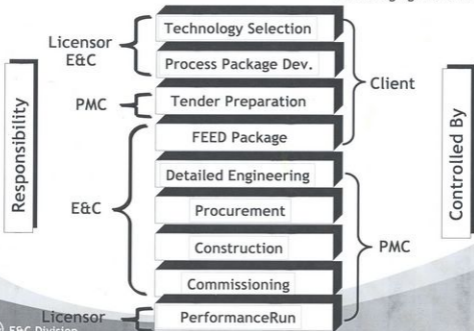


Project Phases



Project Phases

The Changing Scenario



CHALLENGES FOR THE E&C INDUSTRY

Fewer, larger, more demanding clients

- ❑ High expectations relating to VALUE (cost, safety, quality, schedule)
- ❑ Not willing to pay more than rock-bottom prices
- ❑ Budgets not in sync with prevailing market conditions
- ❑ Try to transfer higher risks/liabilities to contractors

CHALLENGES FOR THE E&C INDUSTRY

Contractors required to balance typical issues:

- ❑ Costs: Bidding costs on a large job can reach Rs. 2-3 Crs.
- ❑ Pricing: Challenge to match unrealistic Budgets
- ❑ Risk: Cost overruns can be high on mega projects
- ❑ Workload: Need to manage fluctuations in workload
- ❑ Resources: Worldwide shortage of engineering resources



CHALLENGES FOR THE E&C INDUSTRY

Timing of project awards is becoming more unpredictable than ever

- ❑ Finalization of contracts delayed by lengthy negotiations / budget issues
- ❑ Increasingly difficult to get commitments from Vendors :
Overload situation and Seller's Market
- ❑ Challenge for estimation in view of Volatility in Raw Material prices

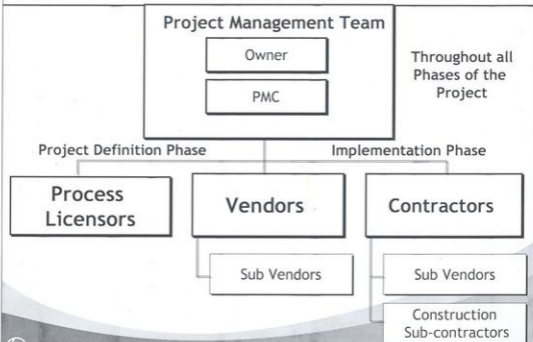


Modes of execution

- ❑ Conventional
- ❑ LSTK & Multi LSTK
- ❑ Cost Conversion to LSTK



Conventional Mode

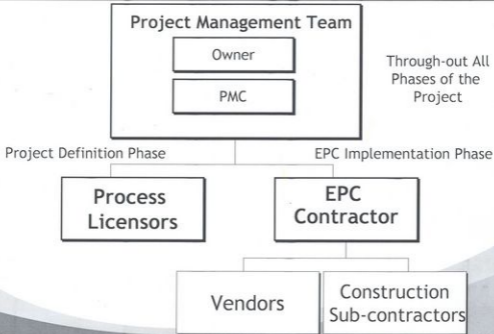


Conventional Approach

Global Shift

LSTK /
Multi
LSTK
approach

LSTK Mode



Single Point
Responsibility

Use of
Optimised
Designs

Optimum
Completion Time

Committed
Cost

Faster Control
on Changes

Better
Coordination
& Logistics

Reduced
Organizational
Resources

Comprehensive
Guarantees

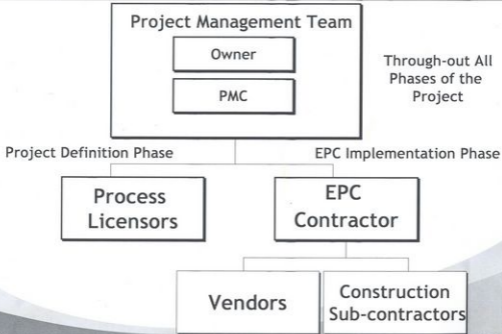
**The LSTK Concept
(Advantages to the Owner)**



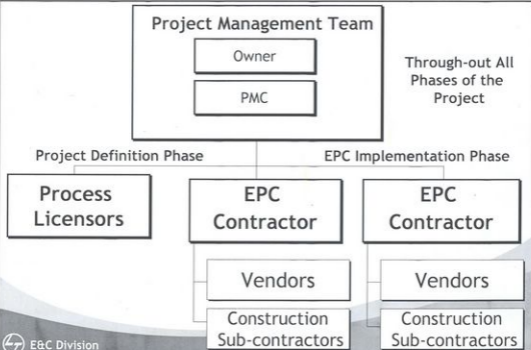
LSTK approach for mega projects
...single LSTK / multiple LSTK



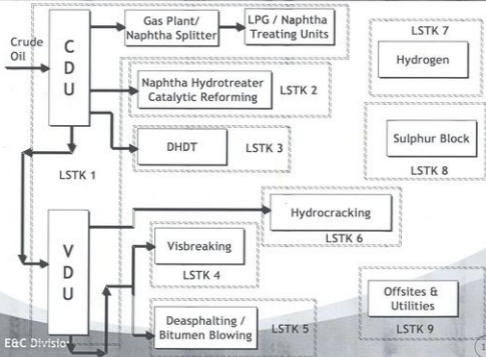
Single LSTK Mode



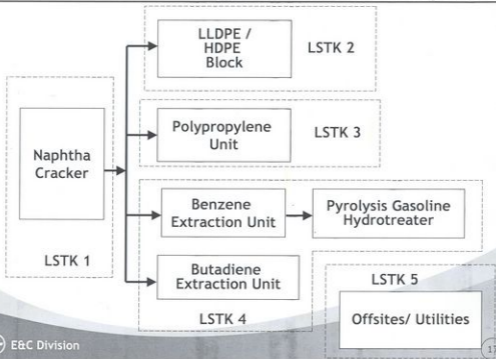
Multi-LSTK Mode



Process Blocks in a Typical Refinery

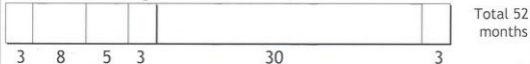


Process Blocks in a Typical Cracker Complex



Comparison of Project Execution Schedule

Single LSTK Mode of Execution



Multi- LSTK Mode of Execution



PMC Contractor Selection

FEED Engineering

EPC Bidding

Bid Evaluation

EPC up to Mech. Completion

Commissioning

Comparative Evaluation of Single LSTK v/s Multi - LSTK Mode

| <i>Parameter</i> | <i>Single LSTK</i> | <i>Multi-LSTK</i> |
|--|---|---|
| <ul style="list-style-type: none"> Project Schedule | Same | Same / less |
| <ul style="list-style-type: none"> Project Cost | Fixed | Fixed & lowest - Cost competitive bids - Lower contingencies |
| <ul style="list-style-type: none"> Performance Guarantees & Quality | By single EPC contractor | Each contractor responsible for his scope of work |
| <ul style="list-style-type: none"> Risk Sharing | By single EPC contractor, hence higher exposure to risk | Each contractor responsible for his scope of work. Limited exposure to risk |

Comparative Evaluation of Single LSTK v/s Multi - LSTK Mode

| <i>Parameter</i> | <i>Single LSTK</i> | <i>Multi-LSTK</i> |
|---|--|--|
| <ul style="list-style-type: none">Choice to Client in Contractor Selection | Less as limited number of reliable & capable contractors | Wide as medium size EPC contractors can also participate |
| <ul style="list-style-type: none">Advantage of Contractor's Expertise with Specific Package | Good | Better |
| <ul style="list-style-type: none">EPC Bidding Process | Longer due to very high value / complexity | Shorter due to smaller values / packages |
| <ul style="list-style-type: none">Flexibility for Financing | Less than multi-LSTK | Higher than single-LSTK |

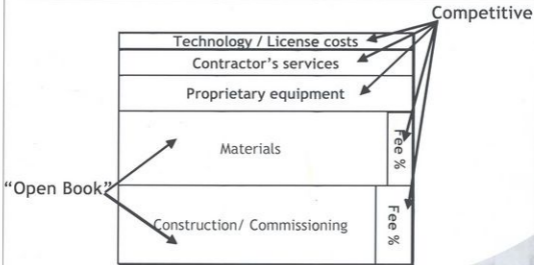
Comparative Evaluation of Single LSTK v/s Multi - LSTK Mode

| <i>Parameter</i> | <i>Single LSTK</i> | <i>Multi-LSTK</i> |
|---|--|--|
| <ul style="list-style-type: none"> Owner's Influence on Project Execution | Less | More |
| <ul style="list-style-type: none"> Owner's Project Management Resource Requirement | Can be Limited PMC responsible for overall project mgmt. | Can be Limited Greater role for PMC |
| <ul style="list-style-type: none"> Country Benefits | Limited role for Indian contractors More FOREX exposure Limited experience | Larger role for Indian contractors Less FOREX exposure More experience |



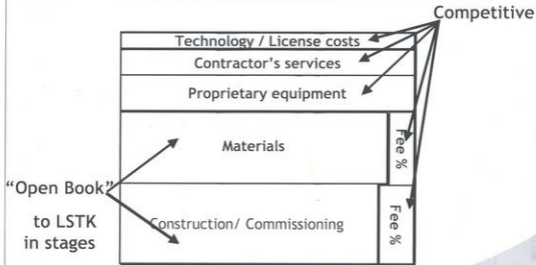
**Cost Conversion to LSTK
...Emerging concept**

Cost Conversion to LSTK



- ❑ Enables reduction of Risks
- ❑ Promotes participation by EPC Contractors

Cost Conversion to LSTK



- ❑ Enables reduction of Risks
- ❑ Promotes participation by EPC Contractors

LSTK Contract Conditions

Major concerns of EPC Contractors

- ❑ Time schedule & LSTK Budgets: Realistic based on Complexity of Project and Changes in Market Scenario
- ❑ Overlapping Clauses/ Lack of Clarity on Scope
- ❑ Completion Milestone scope to be defined clearly viz Mechanical Completion, Pre Commissioning etc.
- ❑ Dispute resolution mechanism
- ❑ Claim settlement mechanism for additional Time and Cost (to be implemented during tenure of Contract)
- ❑ Defect liability requirements

Changes in Market Scenario

- ❑ Increased global demands for Manufacturing Capacity and Commodities
- ❑ Change in Risk Tolerance
- ❑ Strong Global economic growth
- ❑ Volatility in Commodity prices : unprecedented increase in last few months

Above to be given due consideration while fixing delivery/ budget for the EPCC package

Major concerns of EPC Contractors

- ❑ Statutory variations/ new cess : to be reimbursed by Client
- ❑ FEx variation : Allow to bid in min. 3 Foreign currencies
- ❑ Price Escalation : Commodity Price Variation provision
- ❑ Cash flows : payment terms & %age payments against various milestones to enable cash neutral during execution tenure
- ❑ Interest free Advances
- ❑ Time frame for payments and interest on Delayed payments beyond 30 days of invoice submission
- ❑ Timely taking over of Mandatory spares : Protocol/ Procedure to be signed off during Kick-off meeting



Major concerns of EPC Contractors

- ❑ Delay in handing over the site
- ❑ Underground Obstructions
- ❑ Multiple checks on Engineering by Owner/ PMC even with concept of LSTK
- ❑ Responsible for FEED verification for Licensed Packages.
- ❑ Overdesign requirements/ Additional requirements not provided for in Budgets (viz spares, additional specs etc)
- ❑ Additional material brought to site to expedite completion: not allowed to be taken out after final reconciliation
- ❑ Stand-by allowance/ Compensation in case of delay of Free issue material/ Interface/ Client obligation
- ❑ Insurance Deductibles too high

THE WAY FORWARD

What is it Client can do..?

- ❑ Work out correct estimates
- ❑ Allocate realistic schedule
- ❑ Give Clear technical definition of the project
- ❑ Avoid excessive transfer of risks
- ❑ Equitable Terms and Conditions
- ❑ Approve quality sources from Korea, China, CIS
- ❑ Design Centre Concept for drawing approvals
- ❑ Compensate for bidding costs on large projects in case LSTK route aborted in between.



THE WAY FORWARD

What is it EPC Contractor can do..?

- ❑ Bring in best of Engineering, Quality and Safety practices
- ❑ Relevant Experience of different industries, locations and uncertainties
- ❑ Faster control over ' changes ' - less procedures
- ❑ Better co-ordination and logistic support for material movements
- ❑ State of the art Project Management systems and processes to complete the Projects within schedule and cost.

Towards a better relationship between
Clients and Contractors



Smooth Execution of all Projects
with complete commitment of ...





Thank You !