

Seventh US-China Oil and Gas Industry Forum 第七届中美石油与天然气工业论坛

Management Models and Best Practices for the Execution of Large Integrated Projects

有关大型一体化项目管理模式与执行方法的探讨

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Table of Contents

探讨内容:

- ◆ **Characteristics of Large Integrated Projects**
大型一体化项目的特点
- ◆ **Management Models of Large Integrated Projects**
大型一体化项目的管理模式
- ◆ **Best Practices for Execution of Large Integrated Projects**
大型一体化项目的执行方法

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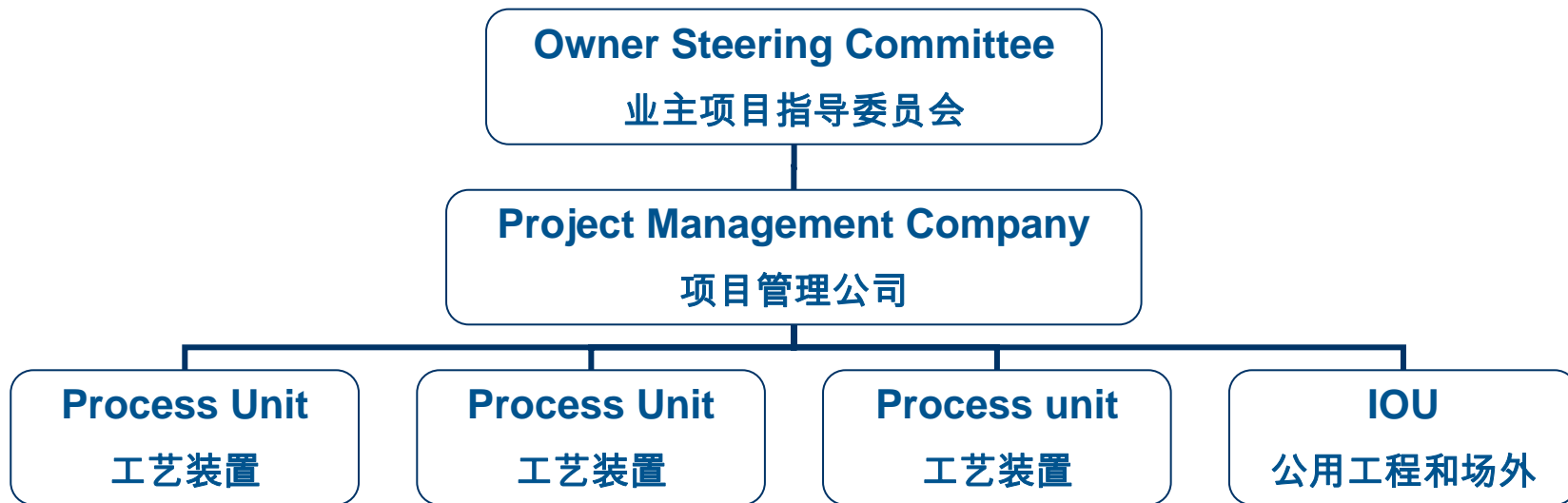
Characteristics of Large Integrated Projects

大型一体化项目的特点:

- ◆ **Multiple but integrated process units requiring significant capital investment in the \$billions**
多个但一体化的工艺装置 - 需要投入数十亿美元巨大资金的复杂性大型项目
- ◆ **Require highly proprietary technologies, large number of specialized professionals and state-of-the-art management systems and tools during project execution**
在项目执行过程中,需要高级专利技术,大量专业技术人员和最新管理系统与工具
- ◆ **Since the majority of the owners are not in the project management business, they typically need help from the qualified international contractors to bring the required resources and tools to meet the quality, schedule, cost and safety standards**
鉴于多数业主并非以项目管理为核心事业,他们因此特别需要有资格的国际承包商的协助,带来所需资源及管理工具,以达到符合质量,进度,成本和安全的需要
- ◆ **If project financing is required, the banks will typically dictate that a reputable international contractor be engaged as PMC to ensure the bank loan will be paid back in time.**
如果项目需要融资,银行将会要求有信誉的国际承包商作为项目管理公司,以确保银行贷款能如期归还

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Typical Project Execution Organization 典型的项目执行组织结构



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Management Models of Large Integrated Projects 大型一體化項目的管理模式

- ◆ For the reasons stated previously, the widely utilized execution methodology is the engagement of Project Management Contractor (PMC) who would act as the owner's extension for project execution

綜上所述,運用較為廣泛的執行方法是採用項目管理承包商(PMC),由PMC來代業主管理項目執行的工作

- ◆ In China, five models of PMC participation in large complex projects have been utilized during the past 5 to 6 years – varying degree of PMC participation no one-size-fits-all solution

在過去的5-6年中,已有5種PMC參與管理的模式應用在中國的大型綜合性項目上 - 沒有一成不變的方法,依PMC參與程度不同,模式如下:

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Management Models of Large Integrated Projects (Cont'd)

大型一体化项目的管理模式(续)

A – Full PMC execution with limited owner participation

由PMC全程主导,业主参与较少

B – PMC/Owner form an integrated team with PMC driven execution

PMC和业主组成联合管理组,由PMC主导

C – Owner/PMC form an integrated team with Owner led execution

业主和PMC组成联合管理组,由业主主导

D – Owner/PMC form an integrated team with PMC leading during FEED Stage and Owner driving at the Implementation stage

业主和PMC组成联合管理组,在初步设计阶段由PMC主导,在项目实施阶段由业主主导

E – Combine PMC and EPC services by an EPCM Contract

将项目管理承包(PMC)和设计采购施工承包(EPC)合并为设计采购施工管理承包(EPCM)

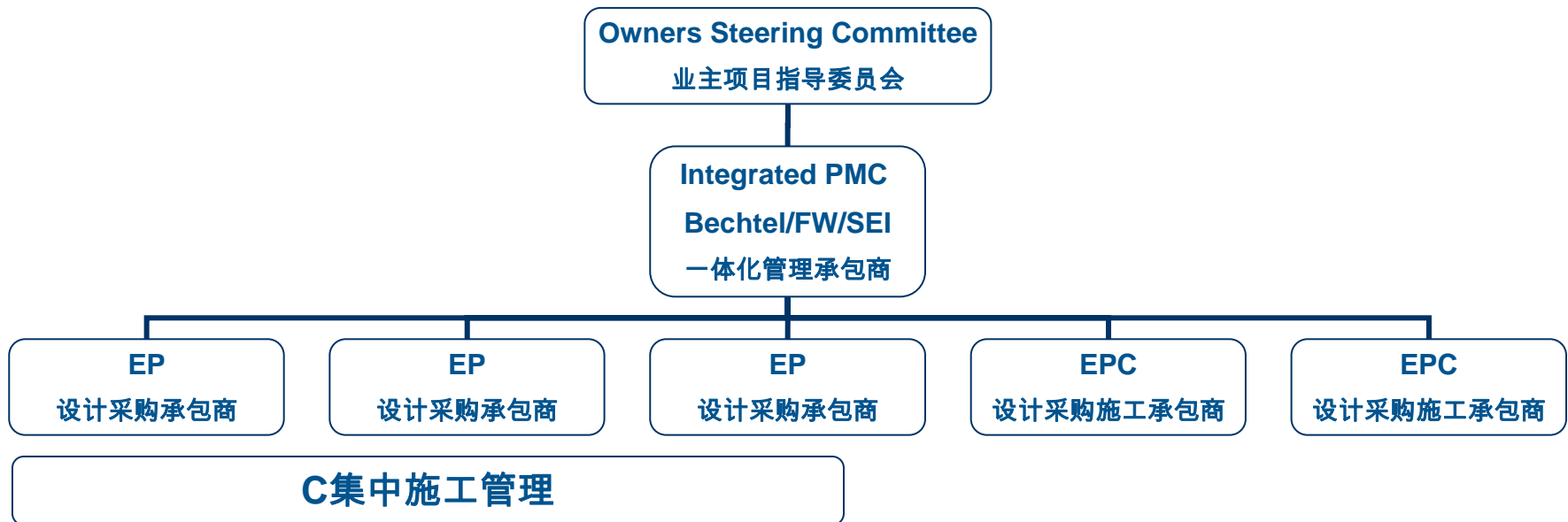
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Option A – Full PMC Execution with Limited Owner Participation

模式 A - 由PMC全程主導, 業主參與較少

◆ Example 案例:

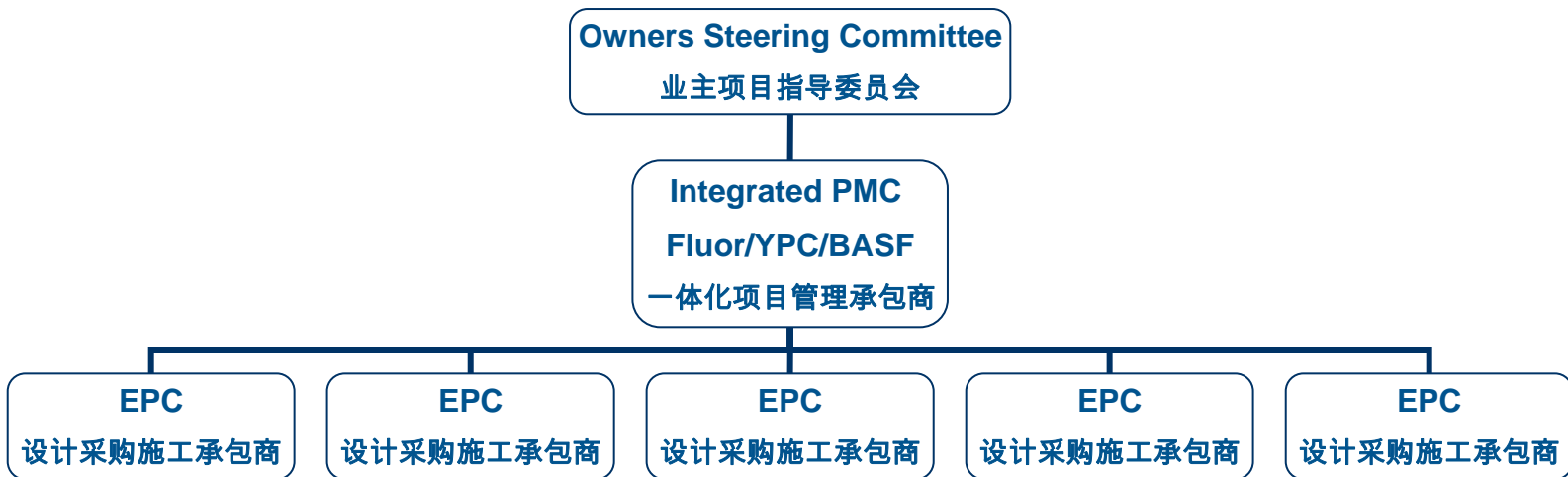
Shell/CNOOC Nanhai Petrochemical complex Project in Huizhou, Guangdong
(廣東南海石化項目)



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Option B – PMC/Owner Form an Integrated Team w/PMC Driving
模式 B - PMC和业主组成一体化管理组, 由PMC 主导

- ◆ Example 案例:
YPC/BASF IPS Project in Nanjing (南京扬子巴斯夫项目)

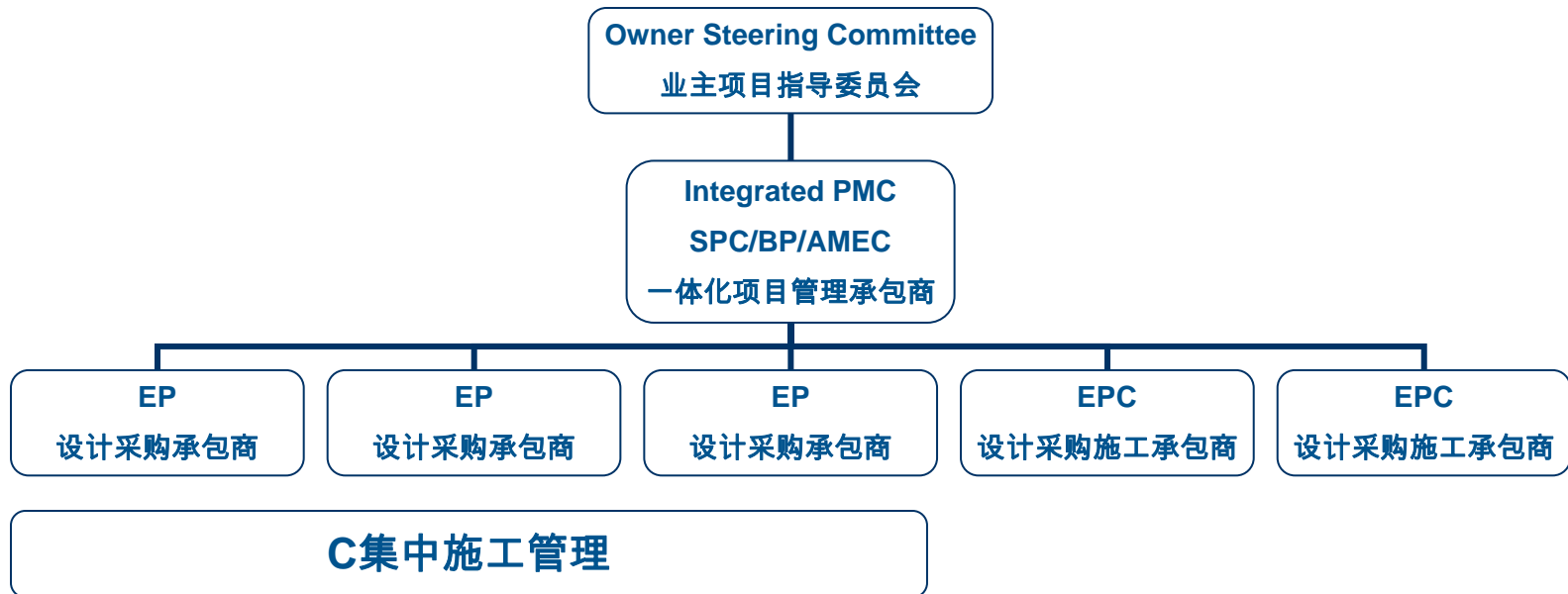


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Option C – Owner/PMC Form an Integrated Team w/Owner Led Execution
模式 C - 業主和PMC組成一體化管理組, 由業主主導

◆ Example 案例:

BP/SPC SECCO Project in Shanghai (上海賽科項目)



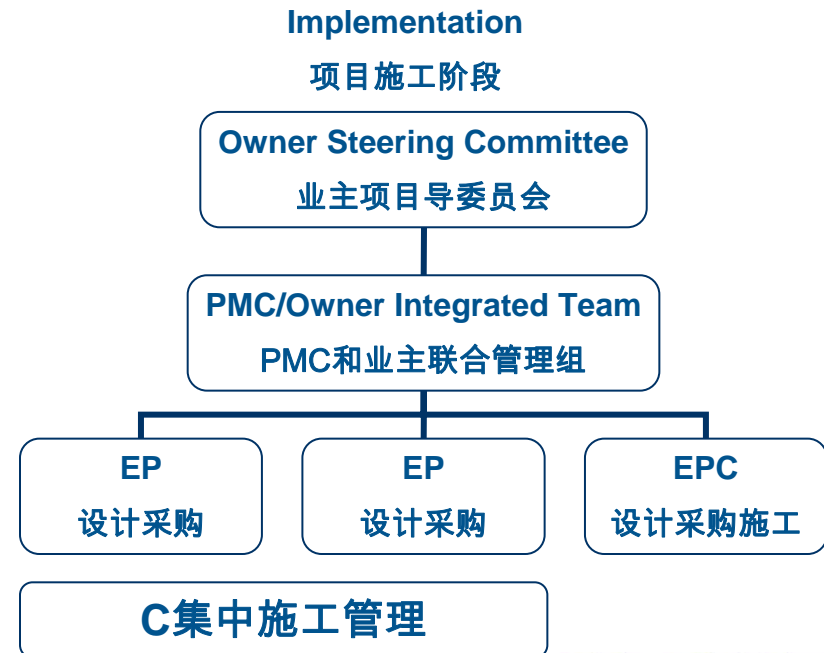
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Option D – Owner/PMC Form an Integrated Team with PMC Leading during FEED, Owner Leading during Implementation

模式 D - 业主和PMC 组成联合管理组, 在初步设计阶段由PMC主导, 在项目施工阶段由业主主导

◆ Example 案例:

ConocoPhillips/CNOOC Bohai Bay, Exxon Mobil/Aramco/Fujian Integrated Project, CNOOC Huizhou Refinery



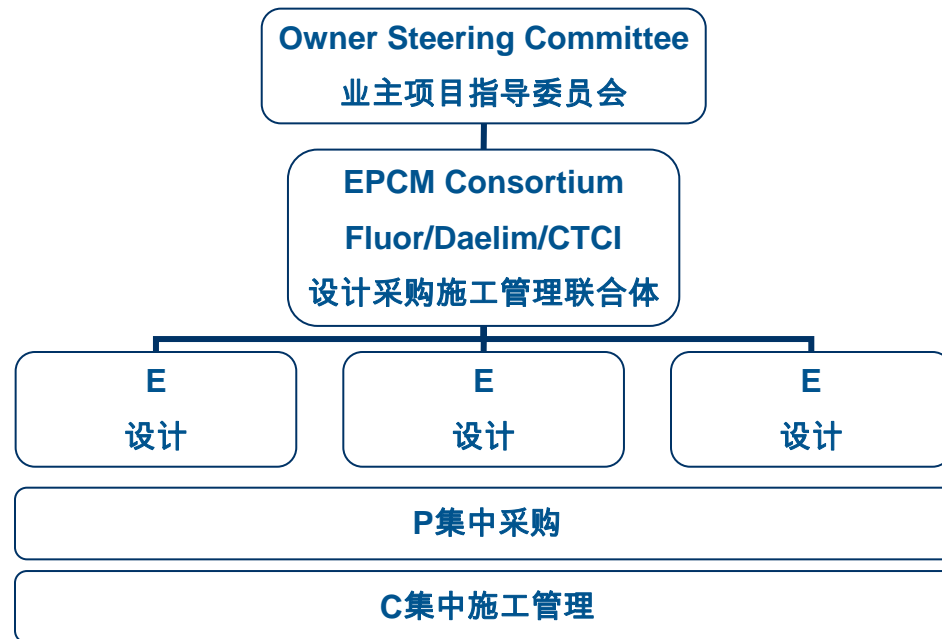
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Option E – Combine PMC and EPC Services by EPCM Contract

模式 E – 办法将项目管理承包PMC和设计采购施工承包EPC合并为设计采购施工管理承包EPCM

◆ Example 案例:

BASF/Huntsman/GaoQiao/TianYuan/HuaYi Integrated Isocyanates Project in Shanghai (上海联合异氰酸酯项目)



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Best Practices for Execution of Large Integrated Projects

大型一体化项目的较佳执行方法

- ◆ **Leverage the most qualified talents from both owner's and contractor's organizations – Takes time to form a team**
融合业主和承包商双方的优秀人才 - 精心组成项目组
- ◆ **Standardized project specifications across all units**
制定全项目统一的规格与规范
- ◆ **Standardized quality program for the entire project – Master piece program**
将整个项目的质量要求标准化 - 样板方案
- ◆ **Coherent HSE program for the entire project**
制定并执行全项目一致的环境,安全与健康的标准
- ◆ **Pre-established “Umbrella” purchase orders for volume advantages**
预先谈判好的”保护伞”式采购合同条款工资 – 利用量的优势

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第七届中国石油与天然气工业论坛

Best Practices for Execution of Large Integrated Project (Cont'd)

大型一体化项目的较佳执行方法 (续)

- ◆ **Stringent and thorough tender process to select the most qualified and aligned contractors**
用严格而有制度的招标程序挑选最符合要求的承包商
- ◆ **PMC procured long lead equipment / material to save time**
PMC采购交货期长的设备材料以节省时间
- ◆ **PMC also execute IOU to ensure critical infrastructure and utilities are on line to support process Start-up**
PMC也执行共用工程和场外设施以确保工艺装置准时开车
- ◆ **Utilize the time tested systems and tools – CMS, Matmen, ProArc, PDS, Mile Marker, Completelt, ...**
利用久经考验的管理系统和工具,如CMS, Matman, ProArc, PDS, Mile Marker, Completelt,...
- ◆ **Last but not least, hire a qualified PMC**
最后而且是最重要的一点, 就是聘用有资格的PMC来协助执行项目