



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	Abdullah Almutrafi	اسم الطالب
Students I.D	2021201797	الرقم الجامعي

Section
Course

Master
(PMG506)

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Code
Thursday

Date

18 / 03 / 2021.

Advanced project Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-~~820~~ في تمام الساعة 9 مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الإنجليزية.
- يتم تسليم المشروع في صيغة ملف . pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion ، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
- يجب الالتزام بـ Theme موحد كما يلي:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر 1.5 line spacing

• عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: ~~Eng. Amaal Aburumman~~ Eng. Dr. Akram M. S. Ali

Project:

You are required to document your role in administering a project. The project may be set in a business, social, sporting, or family environment but must be of a significant size and scale. If you do not have an actual project to write about you may complete the project hypothetically.

This report will be between three to six pages in length. This is a significant research project.

Your report must address ~~each~~ **ONE** of the following issues:

1. Identify and describe the purpose, scope, and objectives of the project. **Display this information using an appropriate tool.**
2. Describe how the team is given an outline of the project.
3. Describe the strategies that are going to be set up to maintain communication with the team members.
4. Describe the tools that are going to be used to monitor the goals, time frames or milestones.
5. Identify project milestones and activities. **Display this information using an appropriate tool.**
6. Create a budget and link the costs to the key milestones for a project.
7. Describe how you are going to divide tasks and resources amongst a project team. **Display this information using an appropriate tool.**
8. Briefly describe how the progress will be monitored.
9. How are current project records maintained? Who has responsibility for this? provide some recommendations on how this process could be improved.
10. Describe the current procedure for finalizing projects. Create your own procedure and identify how you will evaluate the success of the project.
11. Legislation that may affect the project including health and safety, and anti-discrimination legislation.

Best of luck...

SHARQ EG SEEC PROJECT

INTRODUCTION

I was assigned as Project Manager for Sharq EG SEEC Project.

SHARQ has a strategic objective to reduce their overall energy intensity and to increase efficient ethylene utilization. At present, EG-1 and 2 are running with MSC (Medium selectivity catalyst) and the intent is to transform both of these plants from their present state to the plants capable of running with HSC (High selectivity catalyst) or other future generations EO catalyst.

Inherently, with HSC, the steam import from U&O will increase. Due to fuel gas limitations, the net steam consumption reduction is necessary to get full benefits of HSC. The following strategy has been opted for Gate 0 and subsequent gates;

- 1- EG-1 (Shell design): Only CO₂ recovery sections modifications will be carried out
- 2- EG-2 (Shell design): CO₂ recovery section modifications along with Energy Intensity (EI) reduction modifications will be carried out
- 3- EG-4 (SD design): Only Energy Intensity (EI) reduction modifications will be carried out

The steam saved at EG-4 will assist to cope with additional steam requirement at EG-1 with HSC.

Shell has executed energy study in two phases i.e. phase 1 and phase 2. The latter phase was explicitly studied for EG-2, but Shell stated that the information can also be used for EG-1. The case 1 in phase 2 report is primarily focused for EG-2 related modifications while case 2 is focused for EG-1 related modifications. EG-2 will undergo energy related changes with the target EI of 17.45 MMBTU/T (2nd Q in benchmark).

SD has executed a comprehensive study about EG-4. During the study, the year 2016 data was analyzed and the EI was calculated which was around 13,707 GJ/KT EOE. After a rigorous gap and opportunity analysis, SD reported that the EI can be further reduced to 12,523 GJ/KT EOE based on two years catalyst cycle.

PURPOSE

The Project Scope has been detailed and updated with the information obtained from the Technology Licensors (Shell (EG-1/2 and SD (EG-4)) study reports (attached in section 5.0). An outline of the modified/new equipment, LLE's, Utilities requirements, impact on effluent streams, preliminary sized equipment list, etc has also been provided. The project scope would furnish the information required for class I cost estimation which is a pre-requisite for a detailed business case.

Shell plants (EG-1 and 2)

The CO₂ recovery section of EG-1 will be revamped in order to get <1 mol% CO₂ (0.67 mol%) at reactor inlet. Further details are mentioned in process technology part.

To achieve low CO₂ for HSC and 2nd quartile SEEC for EG2, Shell concluded the same modifications in CO₂ recovery section like EG-1 but for energy, capital projects for identified HP steam saving along with several enabling projects for reducing consumption of low pressure

process steam (PS4K) are required. Purpose of the enabling projects is to prevent the let-down of HP-steam to lower pressure steam headers which would offset the targeted HP steam savings. The identified capital projects for reducing HP steam import for EG2 are given below:

1. Replace 3 existing concentrators with 4 new concentrators
2. Enlarge the feed/product heat exchanger
3. Lower the water/EO ratio in the glycol reaction section

The identified enabling projects are;

1. Close the absorbent loop, i.e. remove cooling with potential emission to Atmosphere
2. Replace trays in EO recovery section
3. Debottleneck the glycols purification section

SD plants (EG-4)

The overall project scope comprises of the measures required to reduce the Energy Intensity of the plant to 12,523 GJ/KT EOE. The project would improve the Sharq's overall SEEC performance as well as the energy footprint of SABIC 2025 sustainability.

The study yielded quick wins along with the capex related opportunities. The quick wins consist of the following modifications;

1. Reducing the Water/EO ratio from 25:1 to 22:1
2. Allowing the N₂/Ar concentration in cycle gas to increase from 5.4% to 12% by reducing cycle gas purge will reduce the amount of methane consumed.

The capex related opportunities consist of the following modifications;

1. Reabsorber Bottoms Heater: Reduce MP steam in 1st Effect Evaporator Reboiler.
2. Pre-Effect Evaporator: This scheme will reduce MP steam in the 1st Effect Evaporator Reboiler and produce more extraction steam
3. Evaporator Reflux heater: Reroute Cycle Water Bleed from the Stripping Column Bottoms, add Cycle Water Bleed Exchanger and Cycle Water Bleed cooler. This scheme will help in reducing MP steam consumption in Pre-Effect Evaporator Reboiler by preheating the evaporator reflux.
4. Drying Column Feed heater: This scheme will help in reducing MP steam consumption in Drying Column Reboiler.
5. Drying Column packing replacement: Replace the trays above the feed with structured packing to reduce the reflux and lower steam to the reboiler.
6. Continuous Process Water Pumps: This will reduce the power needed to pump process water to downstream users.

PROJECT EXECUTION STRATEGY

Execution Strategy will follow the normal route and it will be as follows:

PDP with 2 licensors "LS":

- A) PDP scope for EG 1&2 with Shell.
- B) PDP scope for EG 4 with SD.

Blanket Agreement to appoint 1 contractor for Basic Design Package for (BDP) EG 1, 2 & 4 "Reimbursable". (Note: BDP will start during the PDP)

Open Bidding to appoint 1 EPC contractor for EG 1, 2 & 4 "LSTK". (Note: EG 4 shall be completed with or ahead of EG 1)

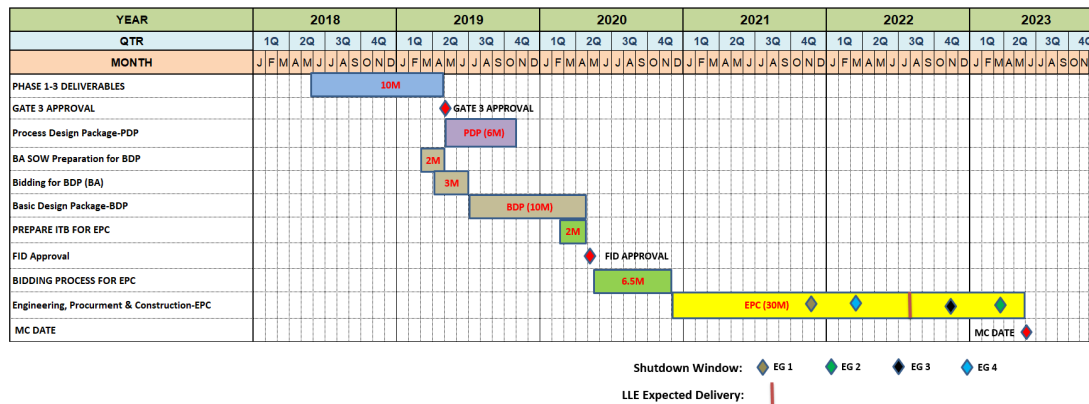
Advantage	Disadvantage
➤ Start the BDP during the PDP will enhance the schedule. ➤ Basic Design contractor engagement during the PDP will add value in: • The integration of both PDPs. • Supporting any of the licensors who don't have capability to deliver some of PDP deliverables.	➤ Starting the BDP before the completion of the PDP and (+/- 20) cost estimation.

Tentative total duration from the beginning of PDP till MC date 50 months

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Sharq EG SEEC Project Schedule (with Original Shutdown Window)



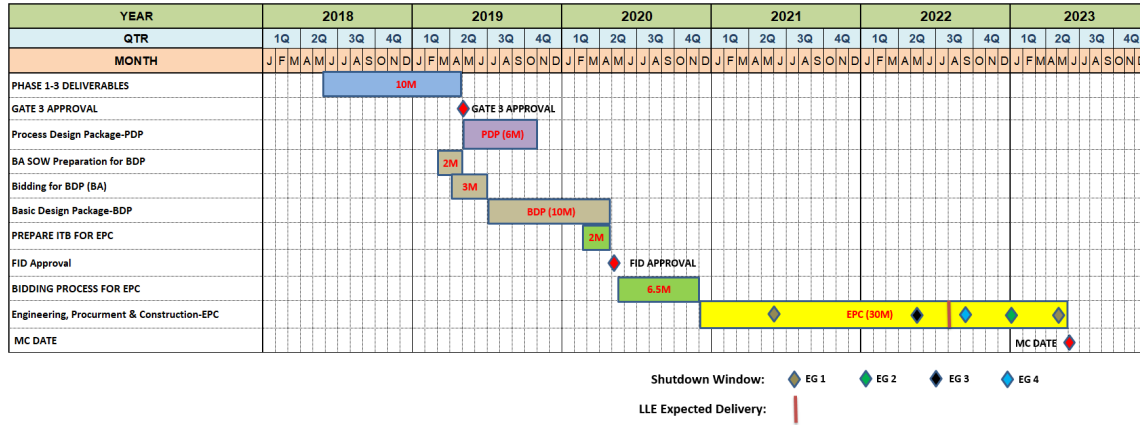
Considering the original shutdown window for this project is not feasible due to:

- The long lead items for EG 4 will be delivered on 2022 Q3.
- EG 4 shall be completed before EG 1.
- The next shutdown for the EG 4 & EG 1 will be 2024, which is too late for the project.

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Sharq EG SEEC Project Schedule (with Proposed Shutdown Window)



Project stage	PDP	BDP	EPC
# of team from SABIC	1 team	1 team	1 team
# of contractor	1 BDP contractor to engage from the PDP phase		1 EPC contractor
# of licensor	2 licensors	2 licensors	2 licensors