

OIL & GAS MAJOR PROJECTS

OUR OFFER

- **CONTRACTING** FOR THE EXECUTION OF PROJECTS ON **EP/EPC** BASIS.
- **QUALIFIED AND COMPETITIVE SERVICES FROM BASIC DESIGN & FEED TO DETAIL ENGINEERING AND SITE SERVICES**, FOR OIL & GAS PLANTS (ON-SHORE/OFF-SHORE UPSTREAM FACILITIES, REFINING), PIPELINES, PETROCHEMICAL & CHEMICAL PLANTS, POWER PLANTS (INCLUDING RENEWABLE ENERGIES), PLANT OFF-SITES & UTILITY GENERATION UNITS;



ISO 9001

Quality Management System.

QUALITY CERTIFICATES

ISO 14001

Environmental Management.

ISO 45001

Occupational Health and Safety.

OUR APPROACH

OUR PROJECT MANAGERS INTEGRATE ALL THE RESOURCES INTO A COHERENT AND EFFECTIVE FRAMEWORK, ALWAYS OPERATING AS CUSTOMER'S PARTNER, WITH A PROACTIVE AND PROBLEM-SOLVING ATTITUDE.

CONTRACTING ACTIVITY

ENDECO possess the experience and technical expertise to execute contracts on **EP/EPC** basis in Oil&Gas sectors including the following:

- **Process Know How**
- **Basic and Detailed Engineering**
- **Procurement**
- **Construction and Erection**

ENGINEERING SERVICES ACTIVITY

ENDECO possess the organization and the skilled experienced staff to provide the following Services:

- Feasibility Studies
- Basic Engineering Design
- Front End Engineering and Design (FEED)
- Detail Engineering
- Project Management Consulting
- Cost Estimate
- Risk Analysis and HSE Reports
- Procurement Services
- Expediting and Inspections
- Construction Management & Site Supervision
- Commissioning & Assistance to Plant Start-up
- Operative Maintenance & Training Services

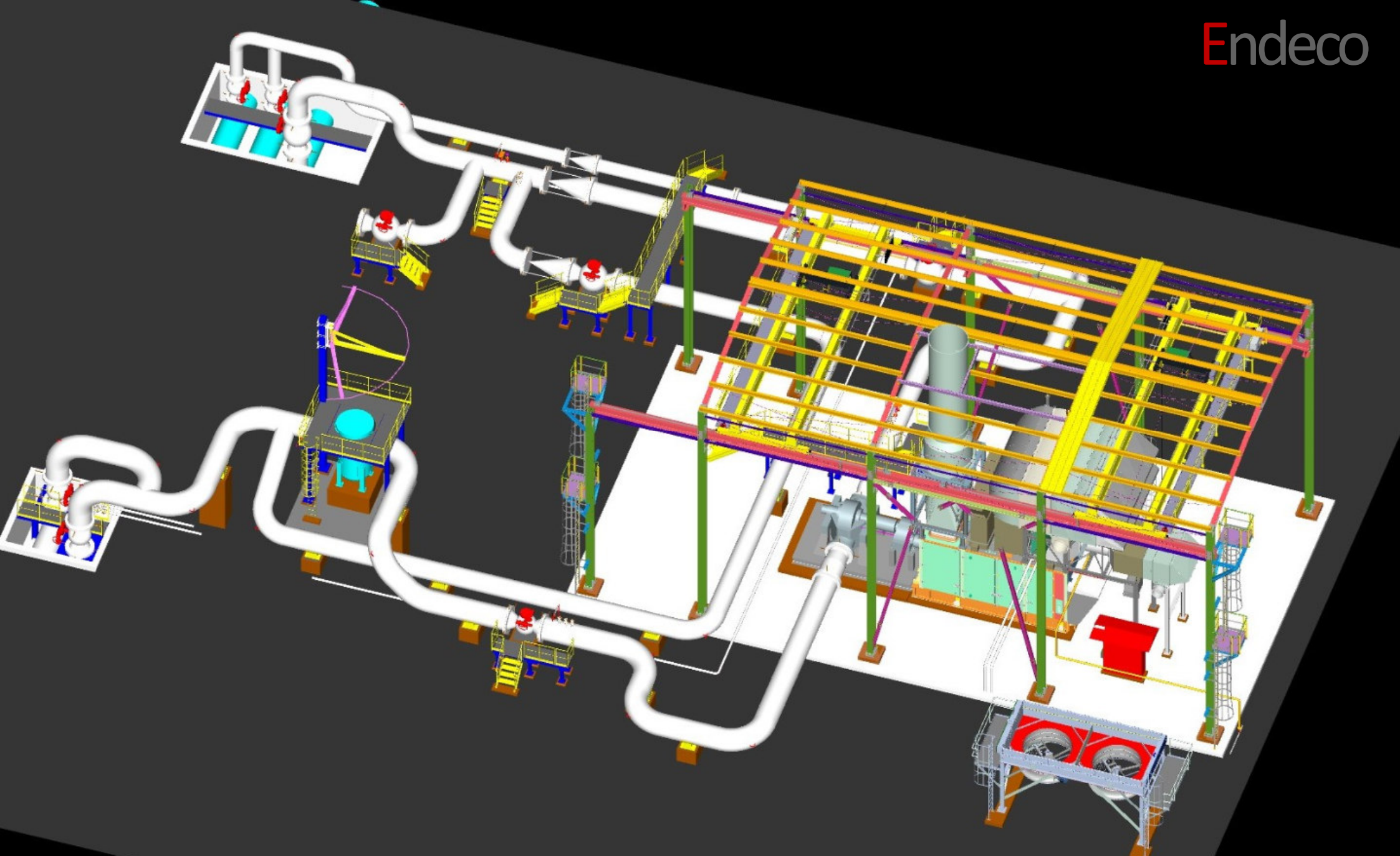
Project: **Turbo Pump Units For Zubair 2**
Depot

Iraq – Under Execution

Capacity No.2 Crude Oil Pumps, each with: Flow Rate 8.000 m³/h – Diff. Head 293 m

Scope of work: Engineering & Turn-Key Supply of Pumping Station BOP including :

- Process Equipment (valves & instrument)
- Building and Cranes
- Fire detection and Fire Fighting System
- Supervision and Automation (DCS)
- MV e LV Power System

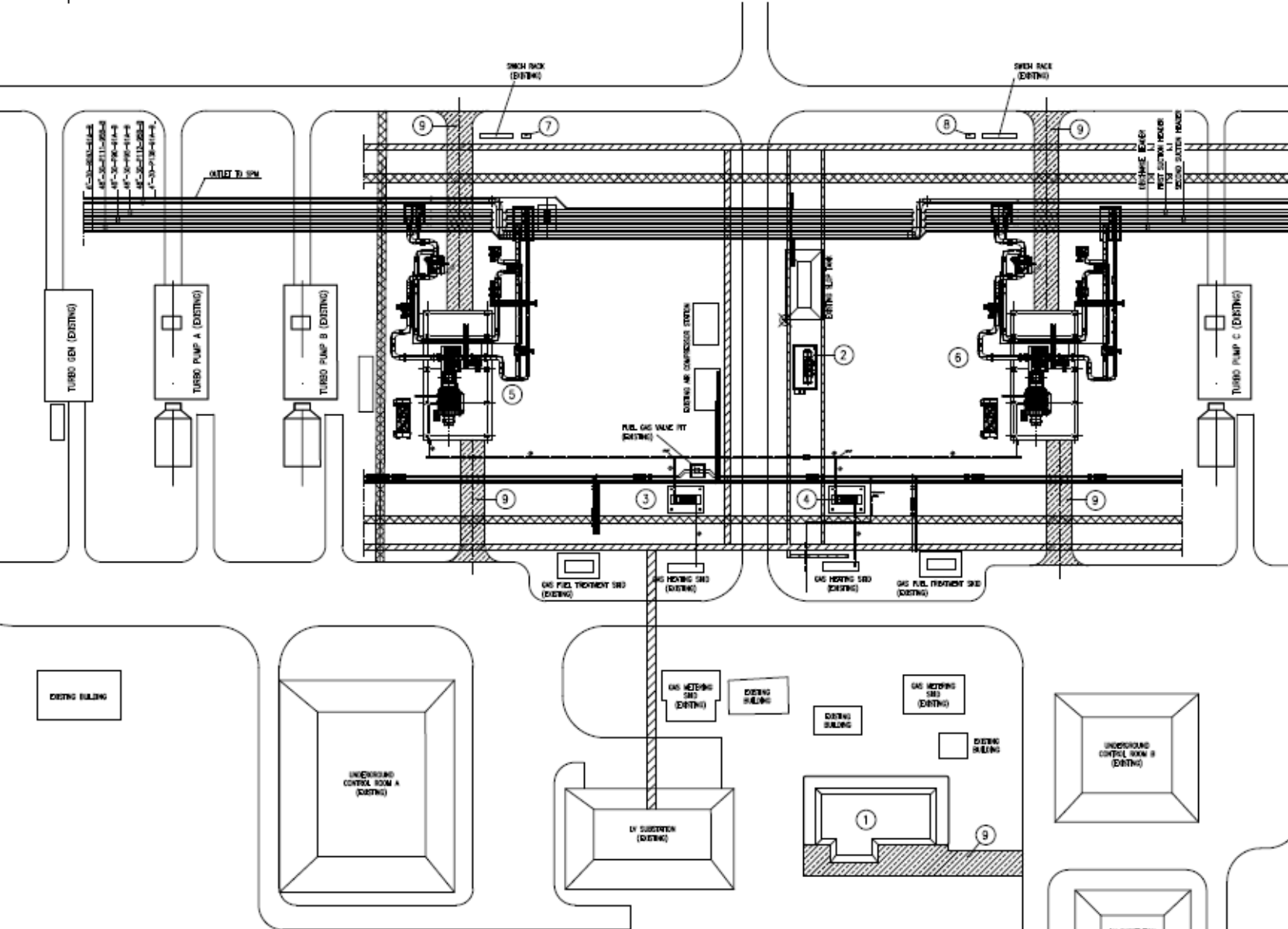


ZUBAIR 2 Turbo Pump Station

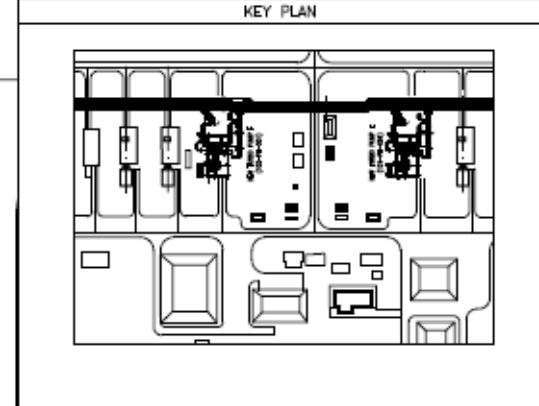
Bassora Iraq



REFERENCE DRAWINGS	
ELECTRICAL CABLES RUN PUMP STATION "A"	30-EI-A-42326
ELECTRICAL CABLES RUN PUMP STATION "B"	30-EI-A-42372
INSTRUMENT & ELECTRICAL CABLES RUN GENERAL LAYOUT PUMP STATION "B"	30-GE-A-52972
SITE PIPING ERECTION	30-OC-A-52922



GENERAL NOTES	
LEGEND:	
①	NEW SERVICE BUILDING
②	NEW SLOP TANK (311.TH.001)
③	NEW FUEL GAS SKID UNIT F (202-XY-001)
④	NEW FUEL GAS SKID UNIT E (201-XY-001)
⑤	NEW TURBO PUMP "F"
⑥	NEW TURBO PUMP "E"
⑦	NEW SWITCH RACK F (802-S2-001)
⑧	NEW SWITCH RACK E (802-S2-001)
⑨	NEW ROAD
▨	EXISTING ELECTRICAL CABLES
▩	EXISTING INSTRUMENT CABLES
⊗	BENCHMARK POINT
	Zone UTM 38N
	Coordinate 735159.3 E
	3347039 N
	47.0771 E

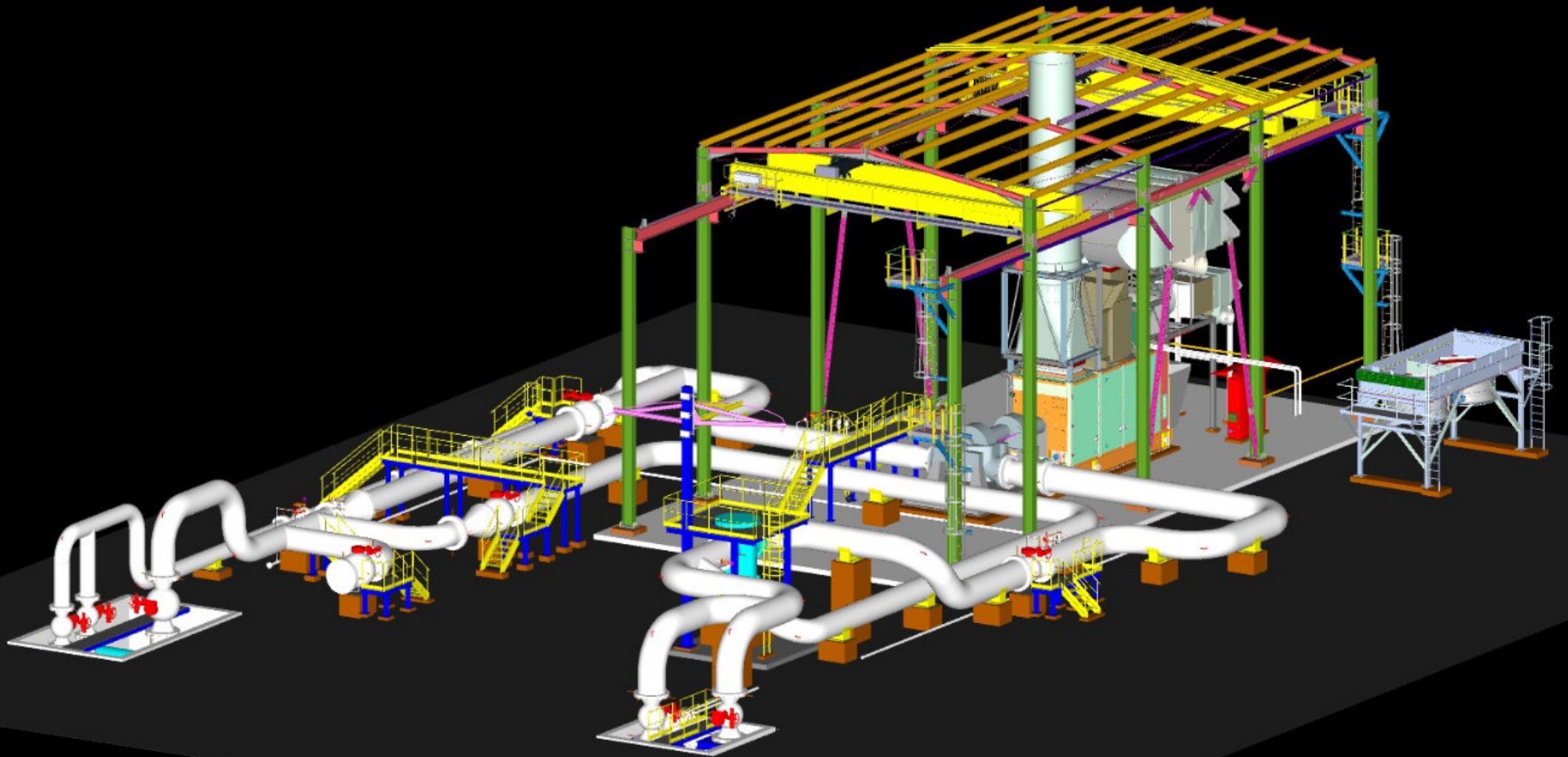


NO.	REVISION	DATE	BY	CHKD	APPROVED	DATE
001	ISSUED FOR TENDER DESIGN		WC	AD	WF	03/15/2018
002	GENERAL REVISIONS ACCORDING TO BEE COMMENTS		WC	AD	WF	04/07/2018
003	UNDER REVIEW REVISION - ISSUED FOR APPROVAL		WC	AD	WF	03/01/2018
004	ISSUED FOR APPROVAL		WC	AD	WF	18/01/2018

Contractor: **Endeco**
 Draw No: **E0718-400-GE-0008**

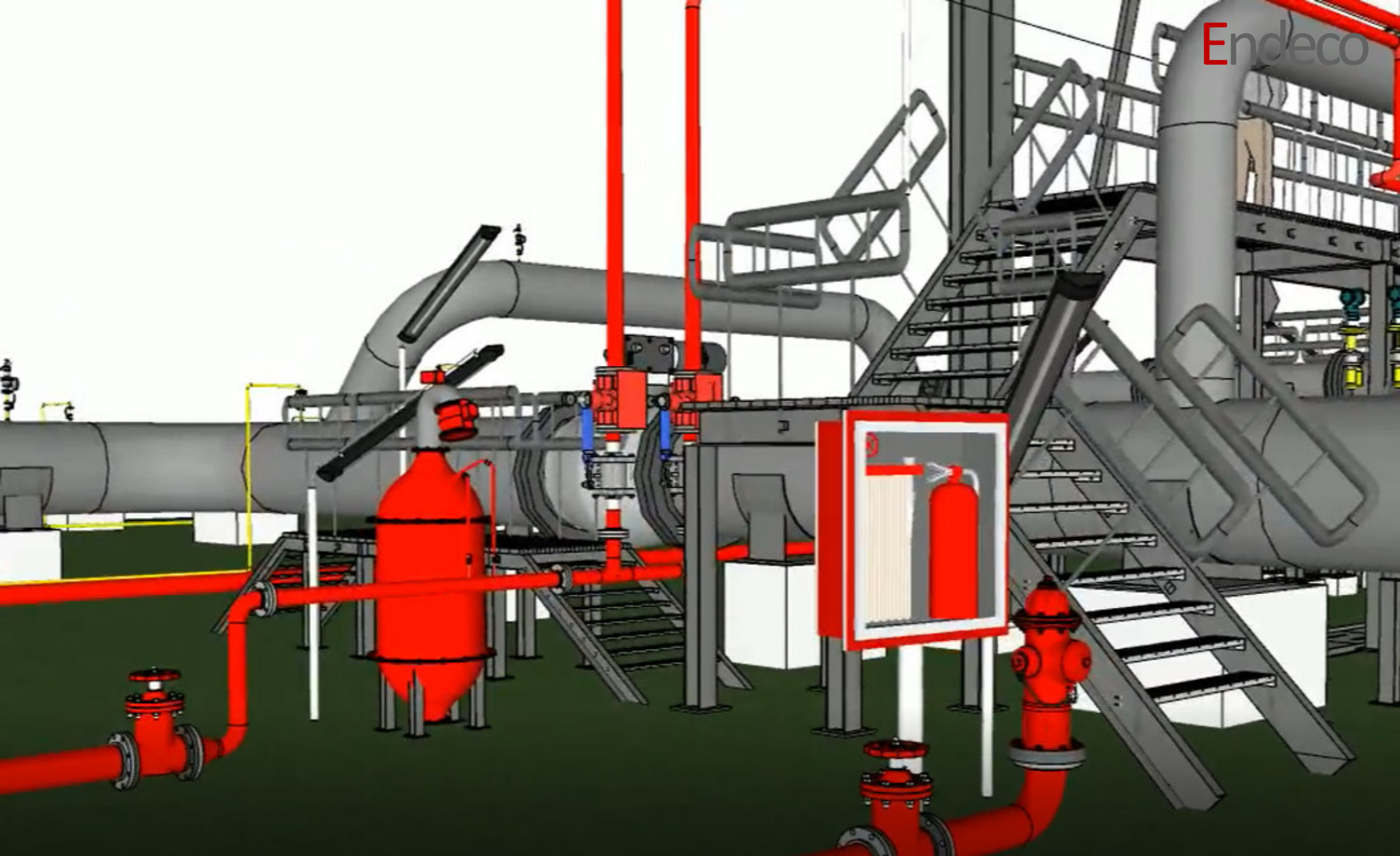
ZUBAIR 2 Turbo Pump Station

Bassora Iraq



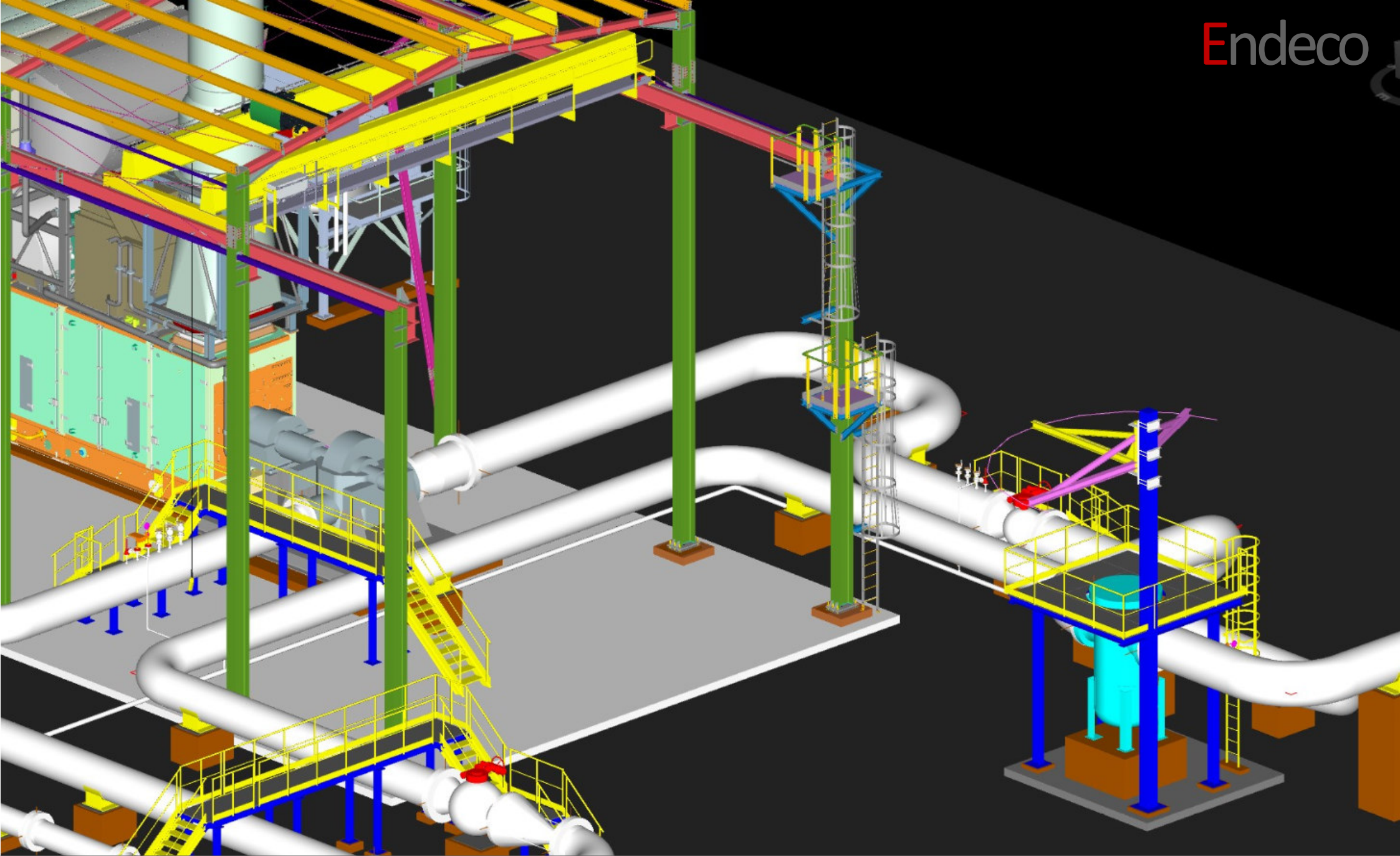
ZUBAIR 2 Turbo Pump Station

Bassora Iraq



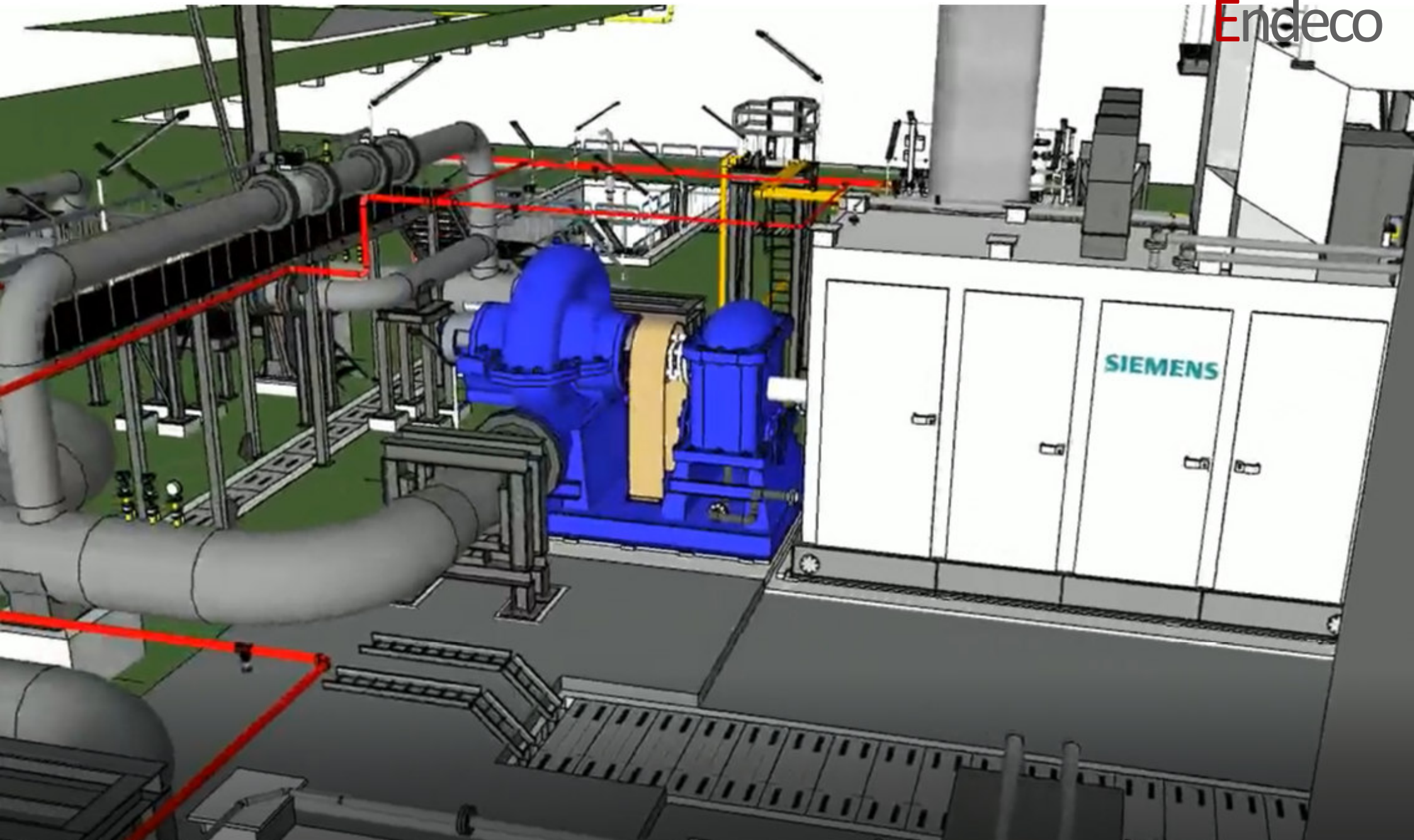
ZUBAIR 2 Turbo Pump Station

Bassora Iraq



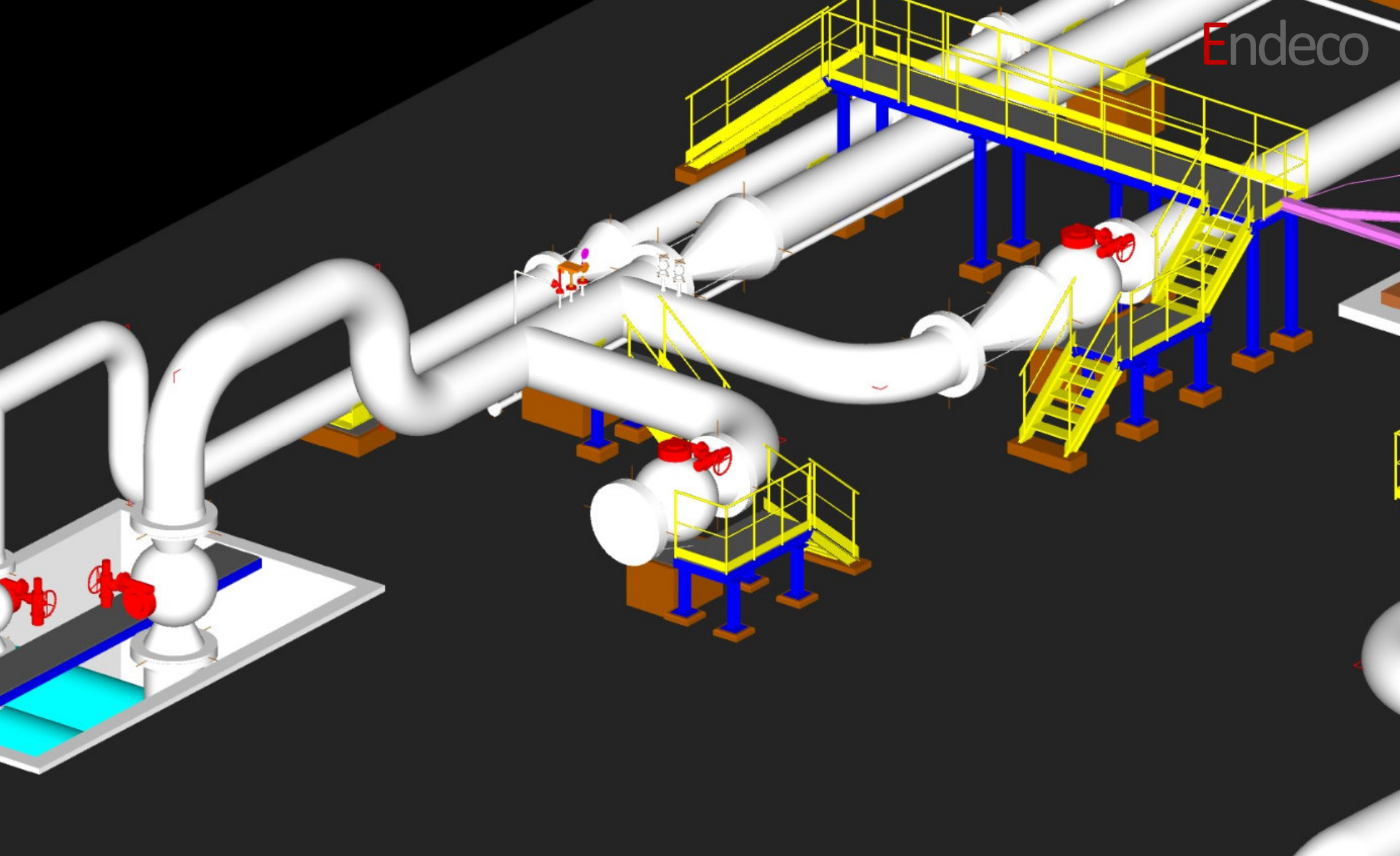
ZUBAIR 2 Turbo Pump Station

Bassora Iraq



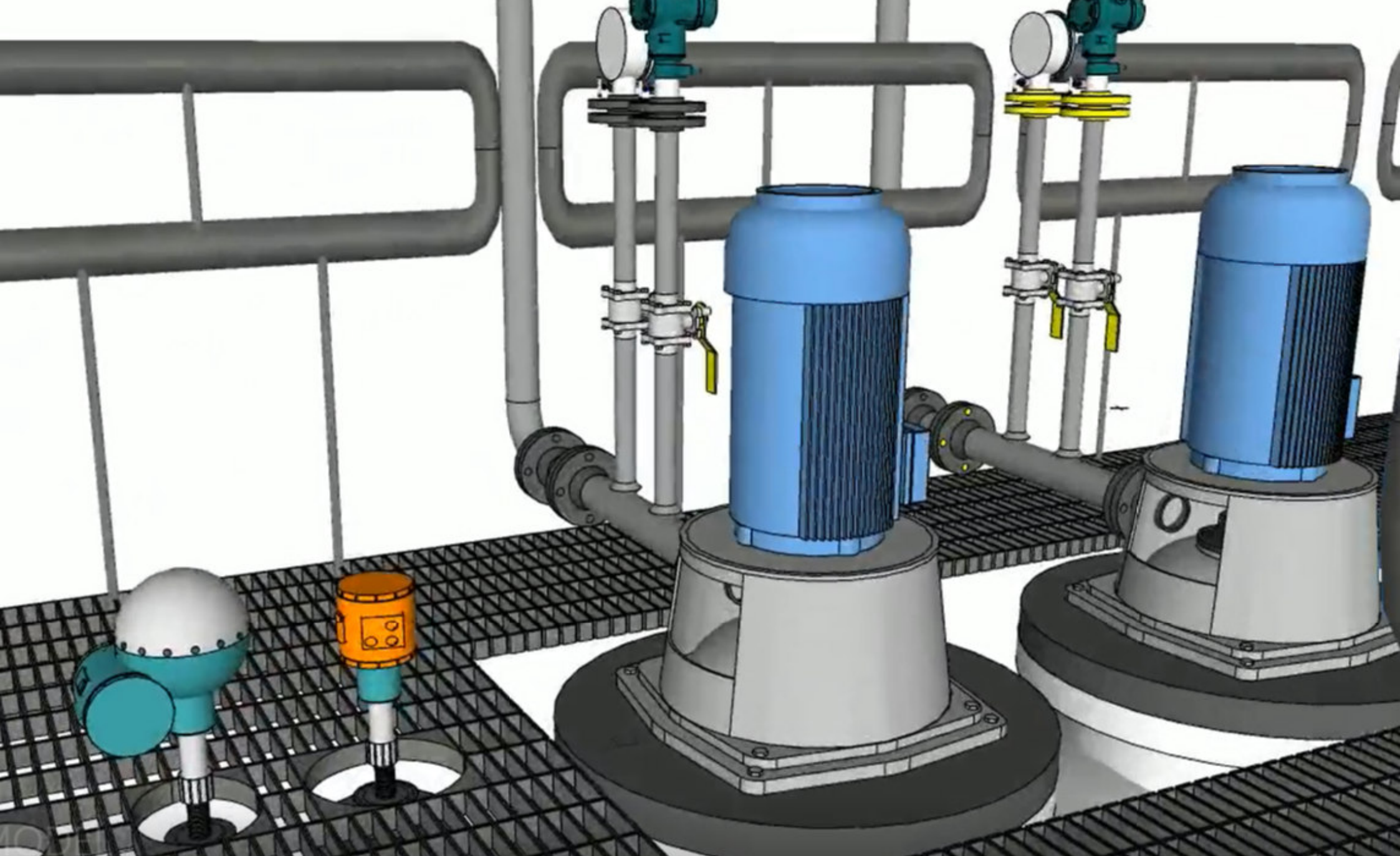
ZUBAIR 2 Turbo Pump Station

Bassora Iraq



ZUBAIR 2 Turbo Pump Station

Bassora Iraq



ZUBAIR 2 Turbo Pump Station

Bassora Iraq

Project: **Tuba Depot Turbogas Crude Oil
Pumping Station**

Bassora Iraq

Capacity : 9.293 m³/h – Diff. Head 202+202m

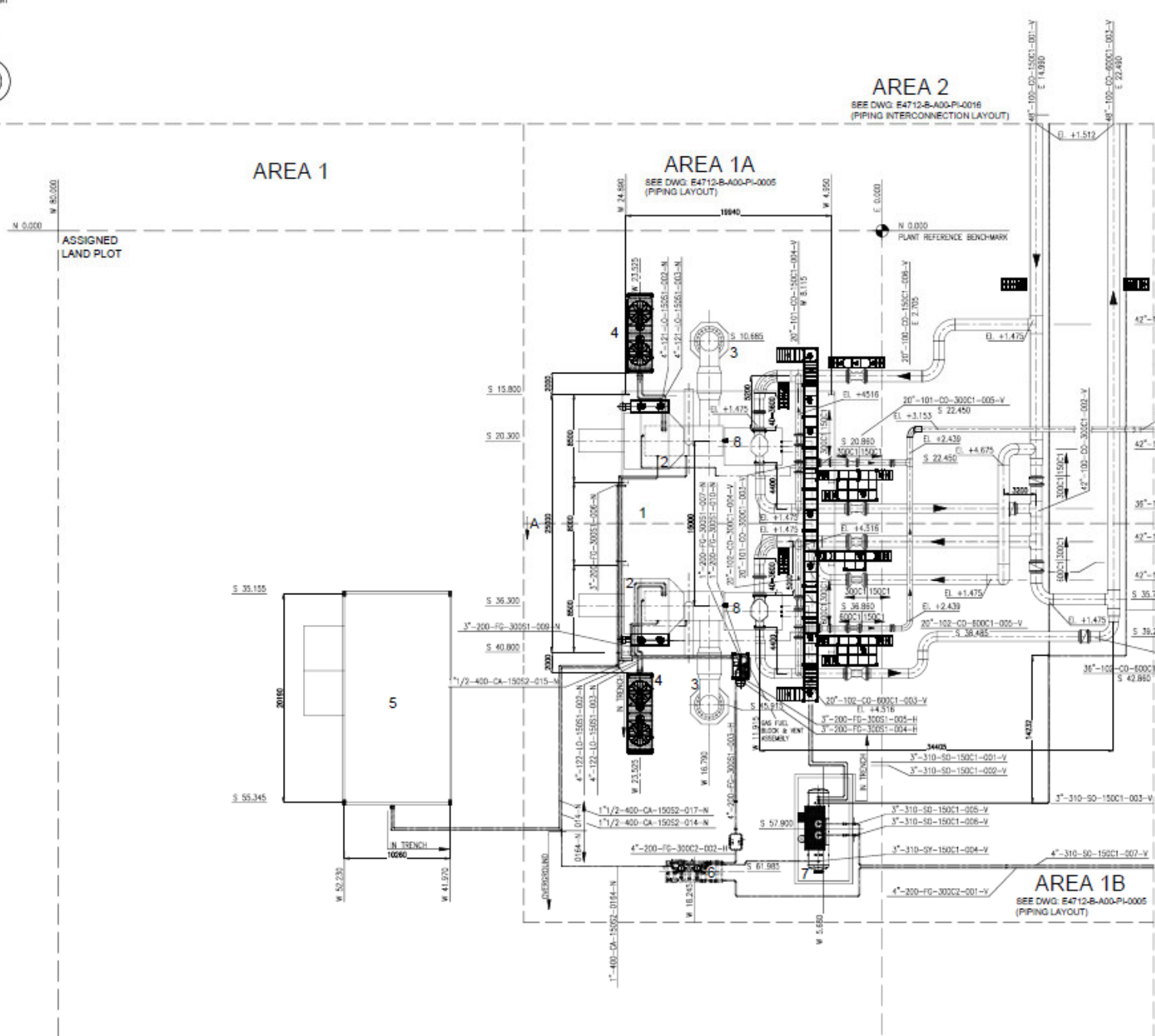
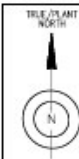
Scope of work: Engineering & Turn-Key Supply of
Complete Pumping Station including :

- Turbo Pumps Units
- Process Equipment
- Building and Cranes
- Fire detection and Fire Fighting System
- Supervision and Automation (DCS)
- MV e LV Power System

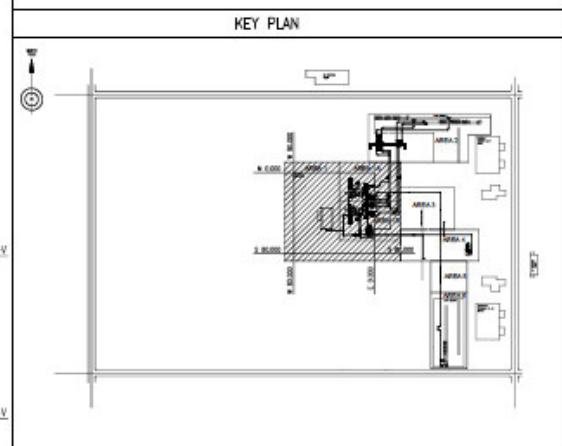


Tuba Turbogas Oil Pumping Station

Bassora-Iraq



REFERENCE DRAWINGS	
PLOT PLAN AND KEY PLAN	E4712-B-A00-GE-0009
INTERCONNECTING PIPING LAYOUT	E4712-B-A00-PI-0016
PIPING LAYOUT	E4712-B-A00-PI-0015



LEGEND	
ITEM	DESCRIPTION
1	TURBOPUMP SHED
2	GAS TURBINE PACKAGE
3	STACK
4	OIL COOLER
5	SERVICE BUILDING
6	FUEL GAS SYSTEM
7	SLOP TANK
8	CENTRIFUGAL PUMP

GENERAL NOTES

- 1) PLANT BENCHMARK \blacklozenge IS REFERRED TO THE UTM ZONE 38R COORDINATES N3365744 E740039
- 2) COORDINATES ARE IN METERS AND REFERRED TO PLANT BENCHMARK
- 3) ALL ELEVATIONS ARE IN METERS AND ARE REFERRED FROM TURBOPUMP SHED FLOOR TO CENTER OF PIPE

CASTLE	APPROVED	APPROVED WITH COMMENTS	NOT APPROVED	DATE		
SOC						
CSE	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	14/02/2014
C05	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	12/12/2013
C04	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	22/11/2013
C03	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	22/10/2013
C02	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	07/09/2013
C01	APPROVED FOR CONSTRUCTION (AFC)		REA	OTA	WPI	27/06/2013
P03	ISSUED FOR CONTRACTOR / END USER REVIEW (IFR)		REA	OTA	WPI	20/04/2013
P01	ISSUED FOR INTERDISCIPLINARY CHECK (ISC)		DPL	OTA	WPI	16/01/2013
REV	DESCRIPTION	DRAWN	CHECKED	APPROVED	SPEC	

Tuba Turbogas Oil Pumping Station

Bassora-Iraq



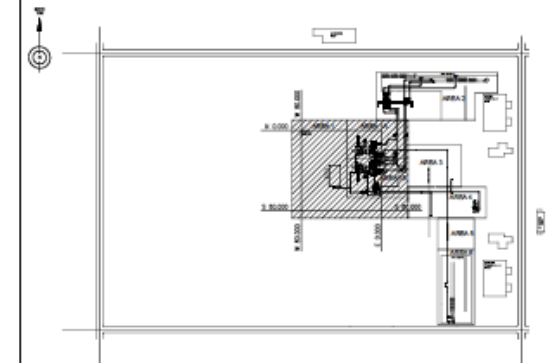
Tuba Turbogas Oil Pumping Station

Bassora-Iraq

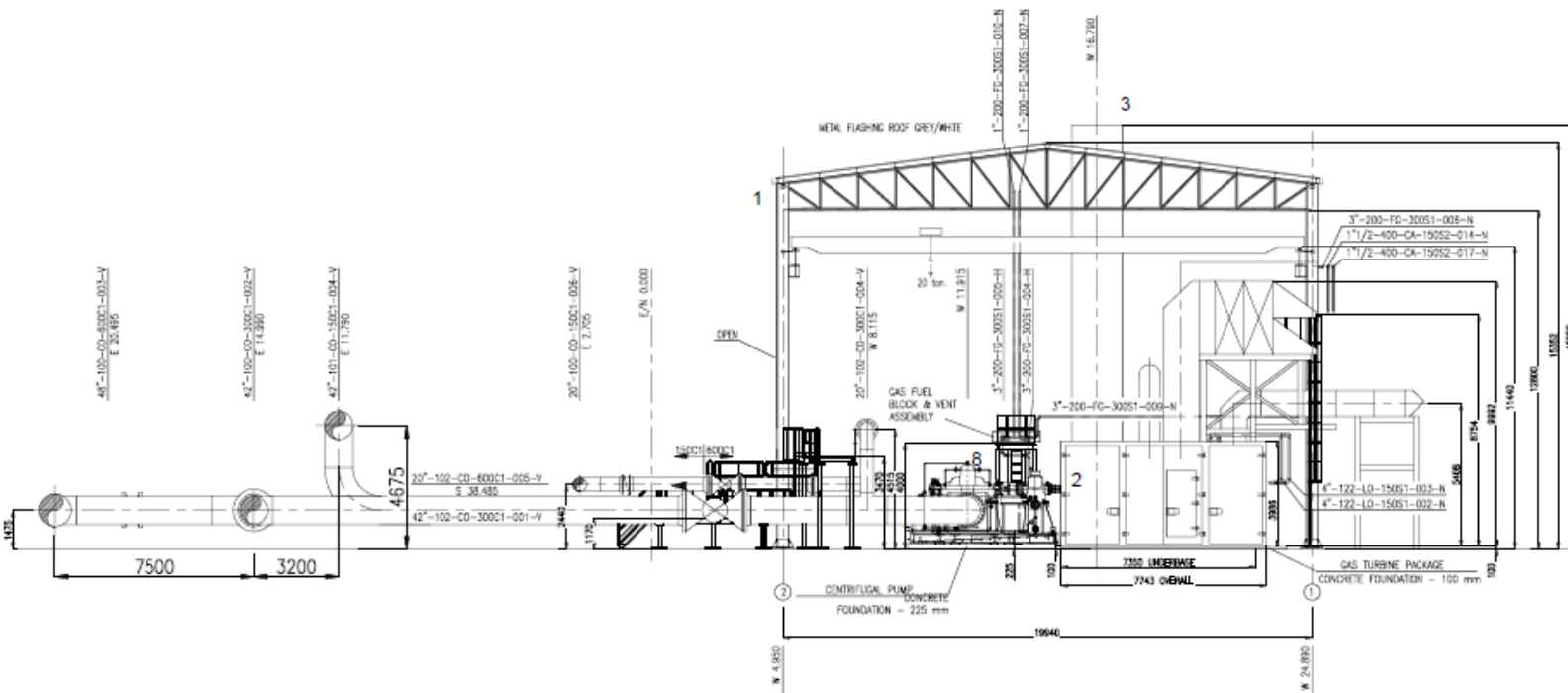
REFERENCE DRAWINGS

PLOT PLAN AND KEY PLAN	E4712-B-A00-GE-0009
INTERCONNECTING PIPING LAYOUT	E4712-B-A00-PI-0016
PIPING LAYOUT	E4712-B-A00-PI-0015

KEY PLAN



SECTION A-A



LEGEND

ITEM	DESCRIPTION
1	TURBOPUMP SHED
2	GAS TURBINE PACKAGE
3	STACK
8	CENTRIFUGAL PUMP

GENERAL NOTES

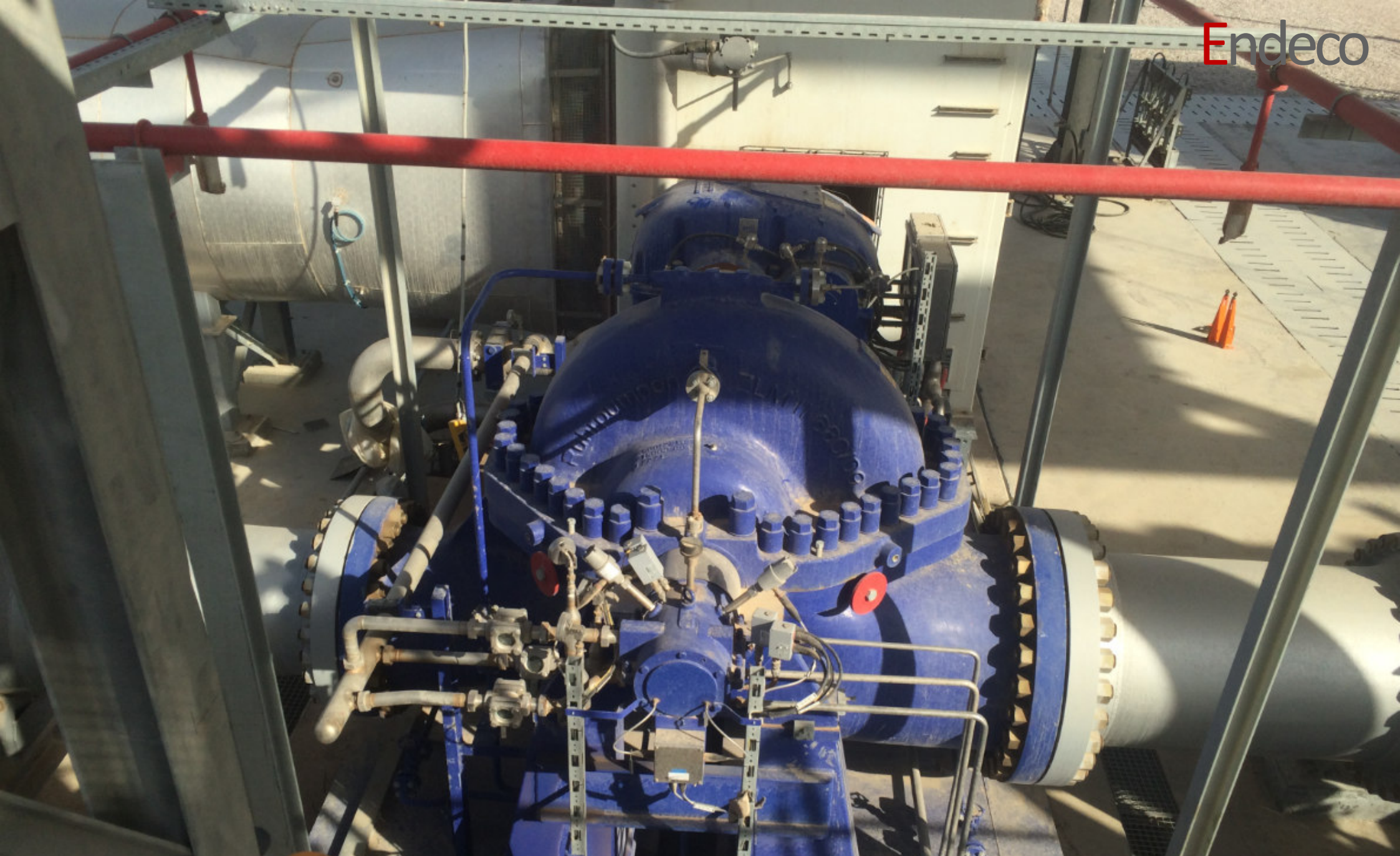
- 1) PLANT BENCHMARK \blacktriangleright IS REFERRED TO THE UTM ZONE 38R COORDINATES N3365744 E740039
- 2) COORDINATES ARE IN METERS AND REFERRED TO PLANT BENCHMARK

	APPROVED	APPROVED WITH COMMENTS	NOT APPROVED	DATE
CASTLE				
SOC				

REV.	DESCRIPTION	ISSA	GD	WPI	DATE
C08	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	14/02/2014
C05	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	12/12/2013
C04	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	22/11/2013
C03	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	22/10/2013
C02	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	07/09/2013
C01	APPROVED FOR CONSTRUCTION (APC)	ISSA	GD	WPI	27/06/2013
P02	ISSUED FOR CONTRACTOR / END USER REVIEW (EPR)	ISSA	GD	WPI	20/04/2013
P01	ISSUED FOR INTERDISCIPLINARY CHECK (IDC)	DPL	GD	WPI	10/01/2013

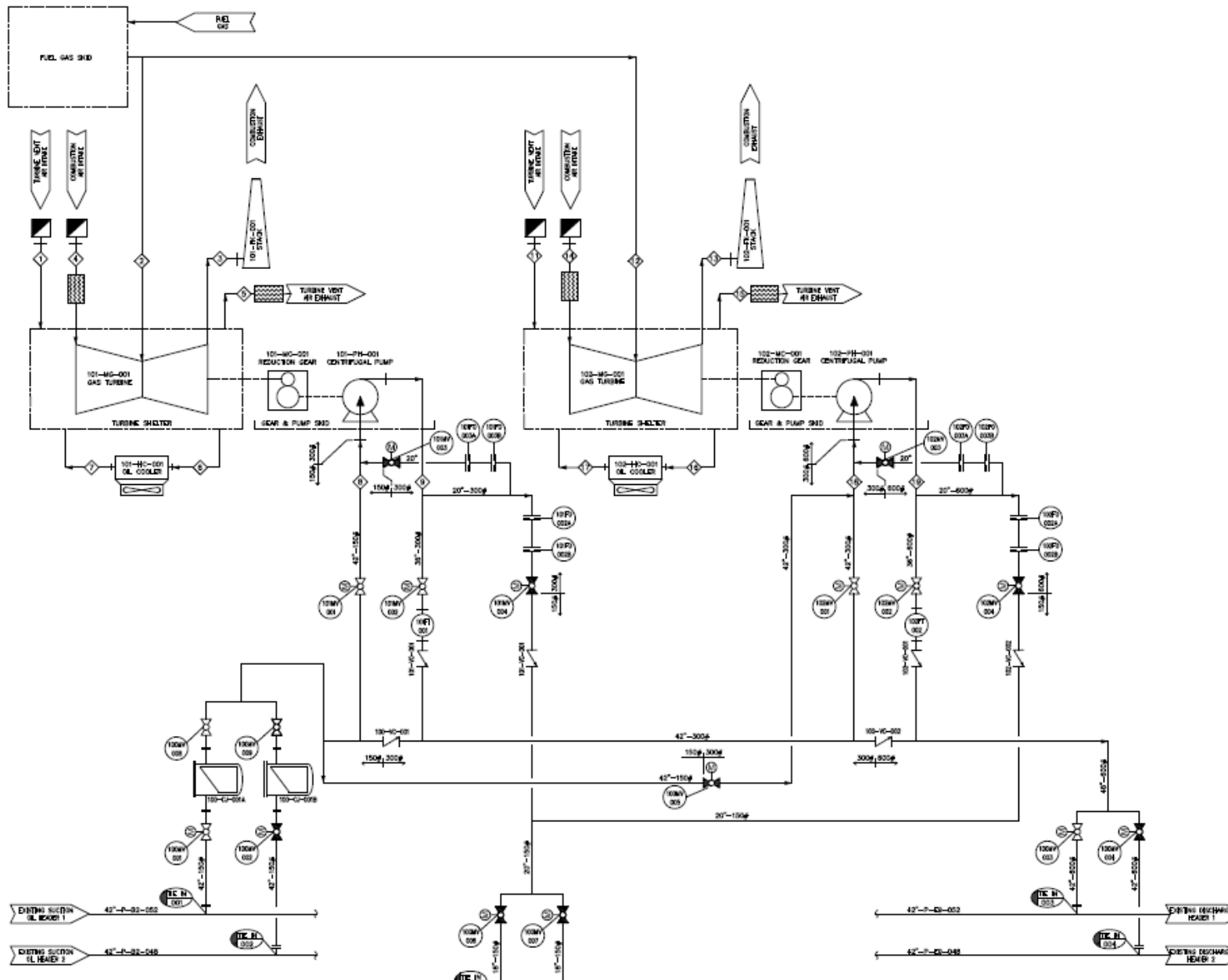
CONTRACTORS	DRWN	CHKD	APPVD	DATE
Endeco				

END NO
E-4712-B-A00-PI-0003



Tuba Turbogas Oil Pumping Station

Bassora-Iraq



REFERENCE DRAWINGS

PROCESS DESIGN BASIS	E-4712-B-A00-PR-0010
HEAT AND MATERIAL BALANCE	E-4712-E-A00-PR-0021

GENERAL NOTES

- 1) TEMPORARY STRAINERS FOR PUMP PROTECTION WILL BE INSTALLED
- 2) FOR MASS AND ENERGY BALANCE SEE DOC. E4712-E-A00-PR-0021 HEAT AND MATERIAL BALANCE

	APPROVED	APPROVED WITH COMMENTS	NOT APPROVED	DATE
CASTLE				
SOC				

REV	DESCRIPTION	ISSUED BY	CHECKED BY	APPROVED BY	DATE
001	APPROVED FOR CONSTRUCTION (AFC)	SEE	ODA	WPI	03-08-2014
002	APPROVED FOR CONSTRUCTION (AFC)	AGA	ODA	WPI	28-11-2015
003	APPROVED FOR CONSTRUCTION (AFC)	SSG	ODA	WPI	18-03-2013
P00	ISSUED FOR CONTRACTOR/END USER REVIEW (IRU)	SSG	ODA	WPI	14-02-2013
P01	ISSUED FOR INTERDISCIPLINARY CHECK (IC)	SSG	ODA	WPI	10-01-2013

CONTRACTOR: **Endeco**   **SOC** 

DRG NO: E4712-B-A00-PR-0001

Tuba Turbogas Oil Pumping Station

Bassora-Iraq



Tuba Turbogas Oil Pumping Station

Bassora-Iraq

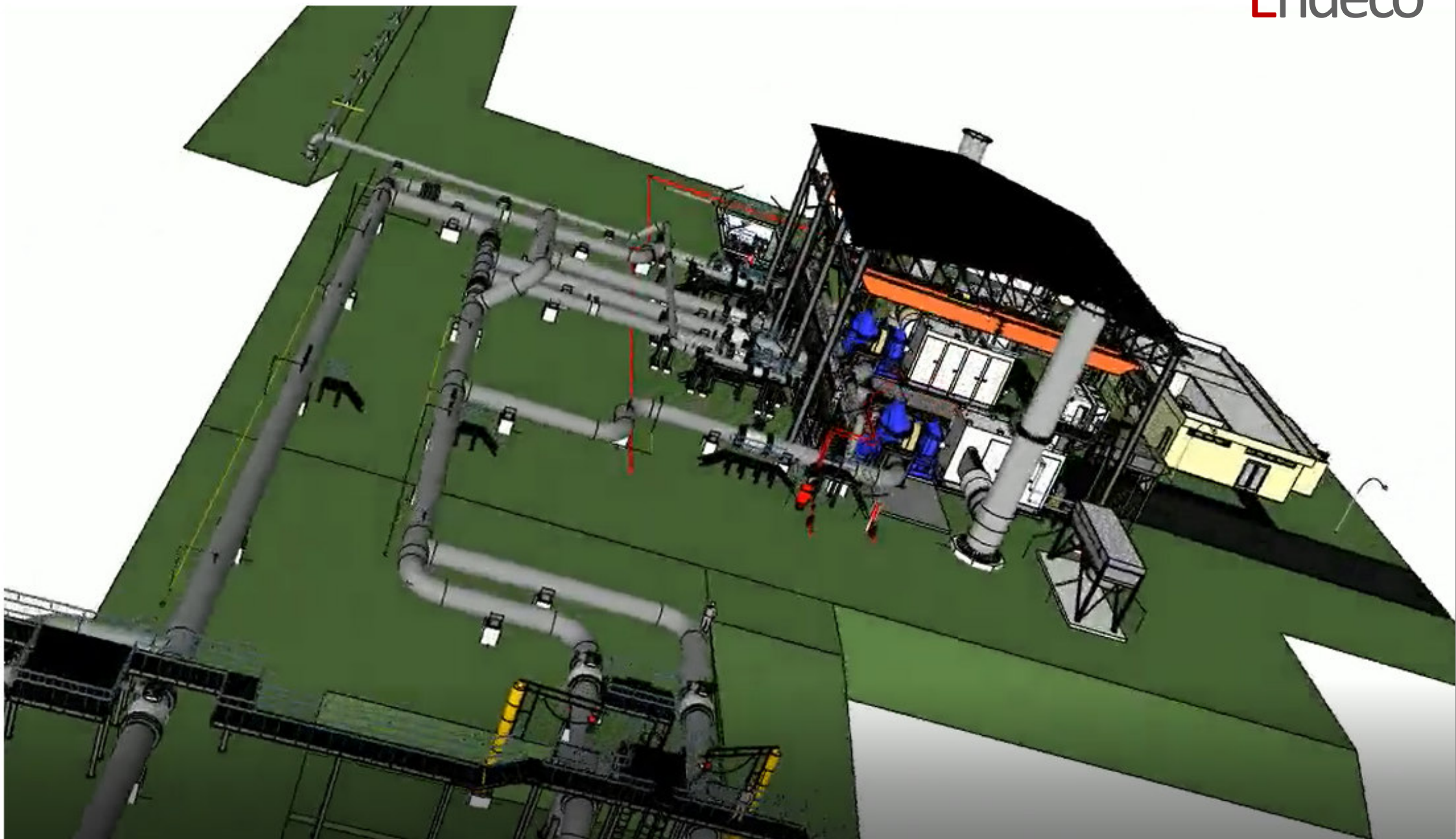
Project : **Zubair Depot Turbogas Oil**
Pumping Station

Bassora Iraq

Capacity 7.450 m³/h – Diff. Head 226+226m

Scope of work: Engineering & Turn-Key Supply of Complete Pumping Station including :

- Turbo Pumps Units
- Process Equipment
- Building and Cranes
- Fire detection and Fire Fighting System
- Supervision and Automation (DCS)
- MV e LV Power System



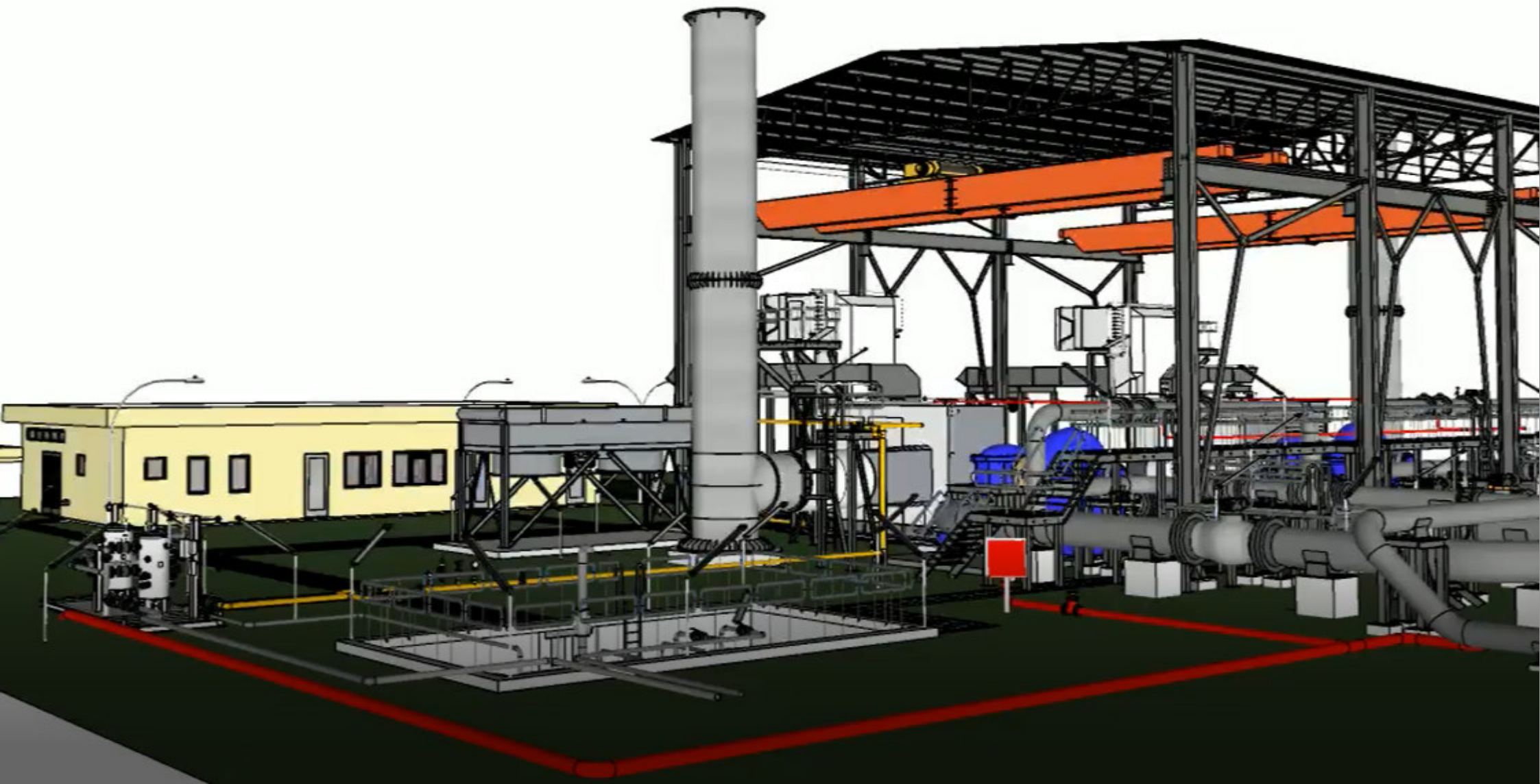
Zubair Turbogas Oil Pumping Station

Bassora- Iraq



Zubair Turbogas Oil Pumping Station

Bassora- Iraq



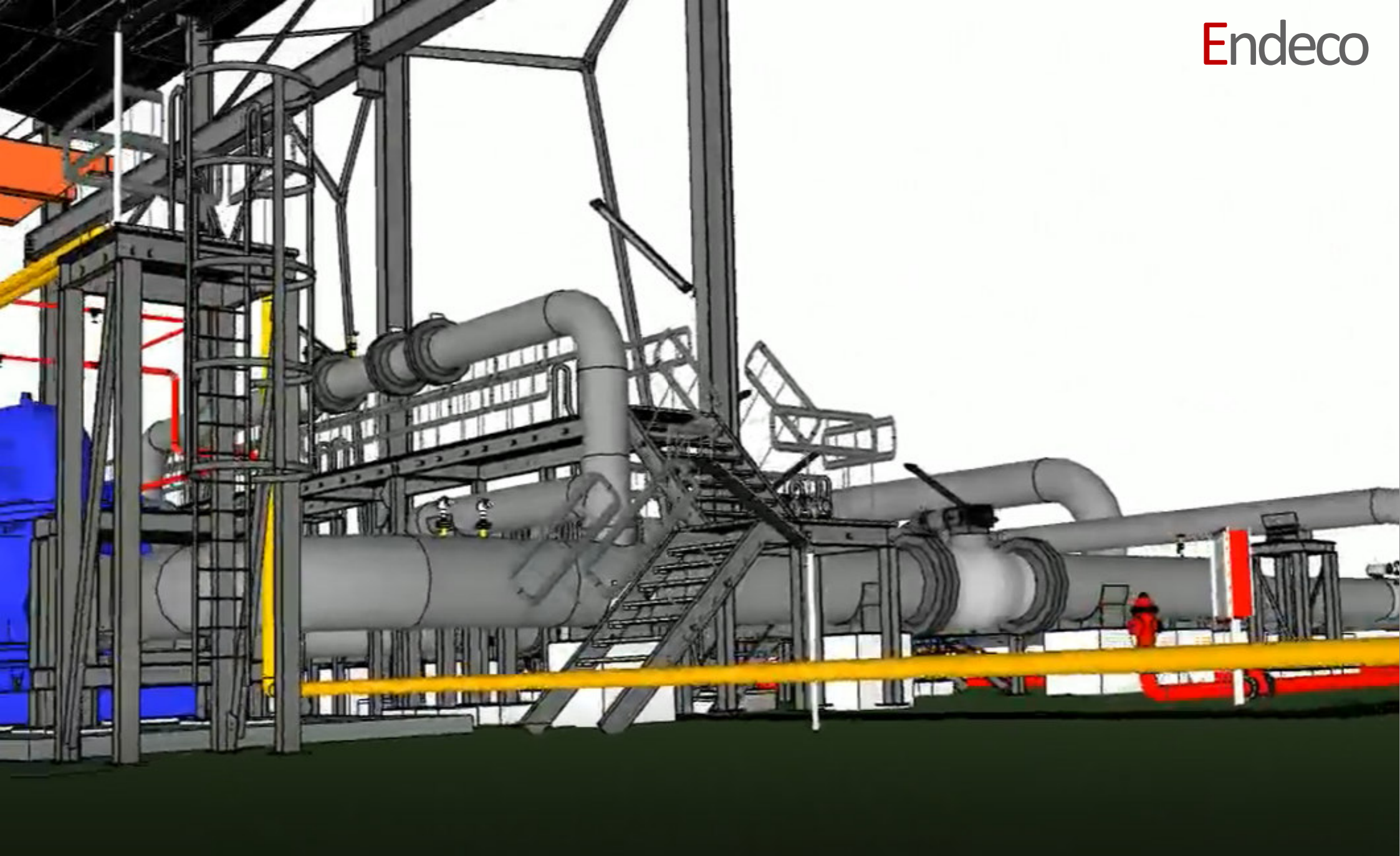
Zubair Turbogas Oil Pumping Station

Bassora- Iraq



Zubair Turbogas Oil Pumping Station

Bassora- Iraq



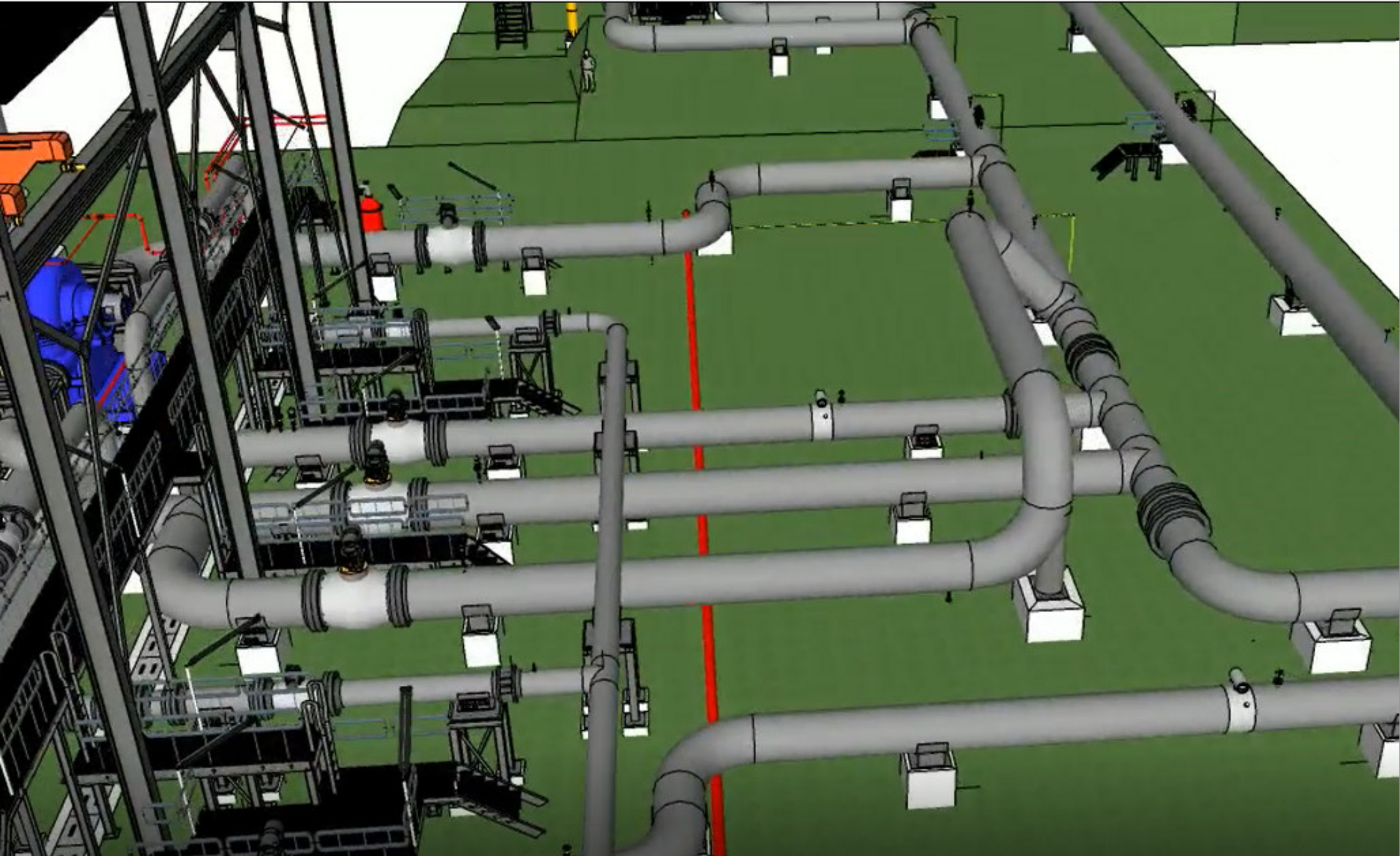
Zubair Turbogas Oil Pumping Station

Bassora- Iraq



Zubair Turbogas Oil Pumping Station

Bassora- Iraq



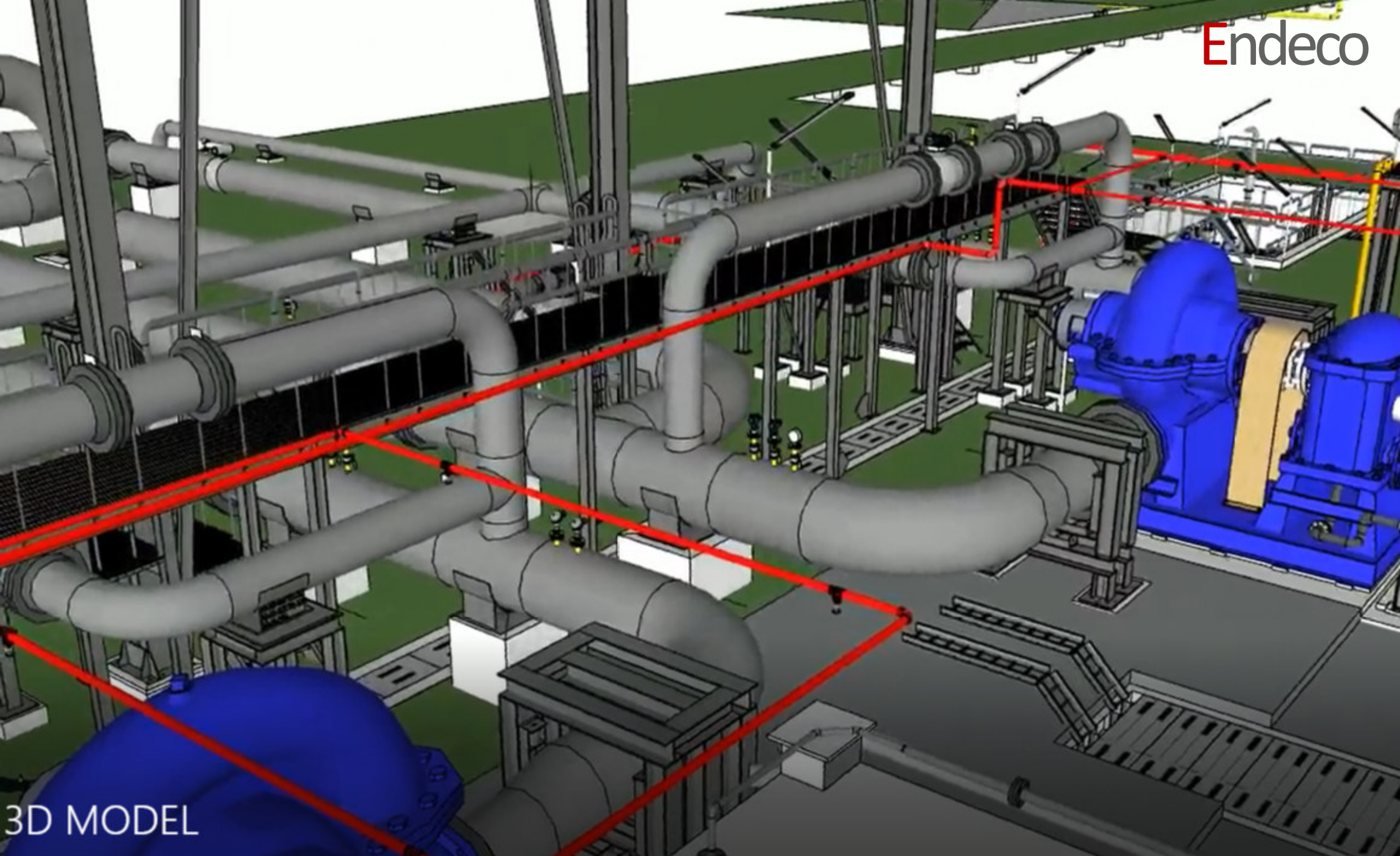
Zubair Turbogas Oil Pumping Station

Bassora- Iraq



Zubair Turbogas Oil Pumping Station

Bassora- Iraq



3D MODEL

Zubair Turbogas Oil Pumping Station

Bassora- Iraq



Zubair Turbogas Oil Pumping Station

Bassora- Iraq

Project : **Turbogas Power Plant –Sarir**
(Lybia)

Capacity

No.2 x 18MW at 11,5kV

Scope of work:

Civil and Electromechanical Installation
Works for a Turbogas Power Generation
Station

PLANT NORTH

ARC WAY

INDICATE IT

SOUTH SIDE

TRANSFORMER BUILDING

IDENTICAL ROOM

FIRE SERVICE

EXISTING ROAD

TRG

CSA

EXISTING HW CANALS OVER HEAD

EXISTING

D=132000

FW 1000

1000

1000

1000

EXISTING PFC WAY

EXISTING PFC WAY

1000

EXISTING PFC WAY

CONCRETE ROAD

EXISTING PFC

EXISTING PFC WAY

D=100000

1000

EXISTING ROAD

1000

1000

EXISTING PFC

EXISTING PFC

EXISTING HW CANALS OVER HEAD

REVISED NO.	REVISION	TITLE
01	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
02	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
03	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
04	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
05	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
06	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
07	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
08	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
09	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
10	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
11	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
12	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
13	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
14	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
15	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
16	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
17	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
18	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
19	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES
20	ISSUE FOR CONSTRUCTION	MECHANICAL SERVICES

PIANTE CIVILI

PLAN	NO.	REVISION	DATE	BY	CHKD.	APPR.	REMARKS
01	01						
02	01						
03	01						
04	01						
05	01						
06	01						
07	01						
08	01						
09	01						
10	01						
11	01						
12	01						
13	01						
14	01						
15	01						
16	01						
17	01						
18	01						
19	01						
20	01						

- ① LIVE OIL SERVICES 10-10/101
- ② TURBOCOMPRESSORS 10-10/101
- ③ TURBOCOMPRESSORS AND SAULT SYSTEM
- ④ TURBOCOMPRESSORS AND VENTILATION SYSTEM
- ⑤ WATER TREATMENT 10-10/101
- ⑥ FUEL GAS TREATMENT 10-10/101
- ⑦ FUEL GAS TREATMENT 10-10/101/101
- ⑧ LV ELECTRICAL ROOM
- ⑨ HV ELECTRICAL ROOM
- ⑩ 10/10 HV TRANSFORMER 10-10/101
- ⑪ 10/10 HV TRANSFORMER 10-10/101

△ THE AIR FILTER REQUIRES A CLEAR AREA AT THE INLET FACES TO ALLOW FOR ADEQUATE AIRFLOW. ANY OBSTRUCTION CLOSER THAN 20 IN (510MM) TO THE INLET FACES FOR CLEAR CIRCUMFERENCE OF THE AIR FILTER MAY CAUSE EXCESSIVE INLET PRESSURE.

△ ACCESS HATCHES ARE PROVIDED FOR VISUAL INSPECTION OF INLET DUCTING. A CONFINED SPACE ENTRY MAY BE REQUIRED TO ENTER THE DUCTING.

△ COMPONENTS MUST BE SUPPORTED BY THE CUSTOMER.

(FOR REFERENCE ONLY)

VENT INLET HAS FLEXIBILITY TO BE LOCATED OUT EITHER SIDE OF THE ROOF SYMMETRICAL ABOUT THE PACKAGE CENTERLINE.

ASSEMBLED TO THE LV DUCT PLUMBING ARE THE LV DEMISTER AND FLAME ARRESTOR VIA INTERMEDIATE VENT PIPING (CUSTOMER SUPPLIED).

CUSTOMER CONNECTIONS

① HP TRANSMITTER

② CONTROL BOX POWER

EXHAUST SYSTEM

ACS INDEX (CS)	ACS INDEX (SS)	EQUIPMENT NOMENCLATURE OR DESCRIPTION	NOTES	EQUIPMENT ENVELOPE SIZE INCHES	ESTIMATED HEIGHT/FT (AS/MS)	NO.
100108	100108	DUCT, EXHAUST, FEEL		107 X 61 X 20	2449/261	1
100125	100125	DUCT, TRANSITION		122 X 122 X 100	2292/195	2
100127	100127	SILENCER, EXHAUST		122 X 122 X 132	2100/1934	3
100128	100128	DUCT, EXHAUST		122 X 122 X 21	1327/653	4

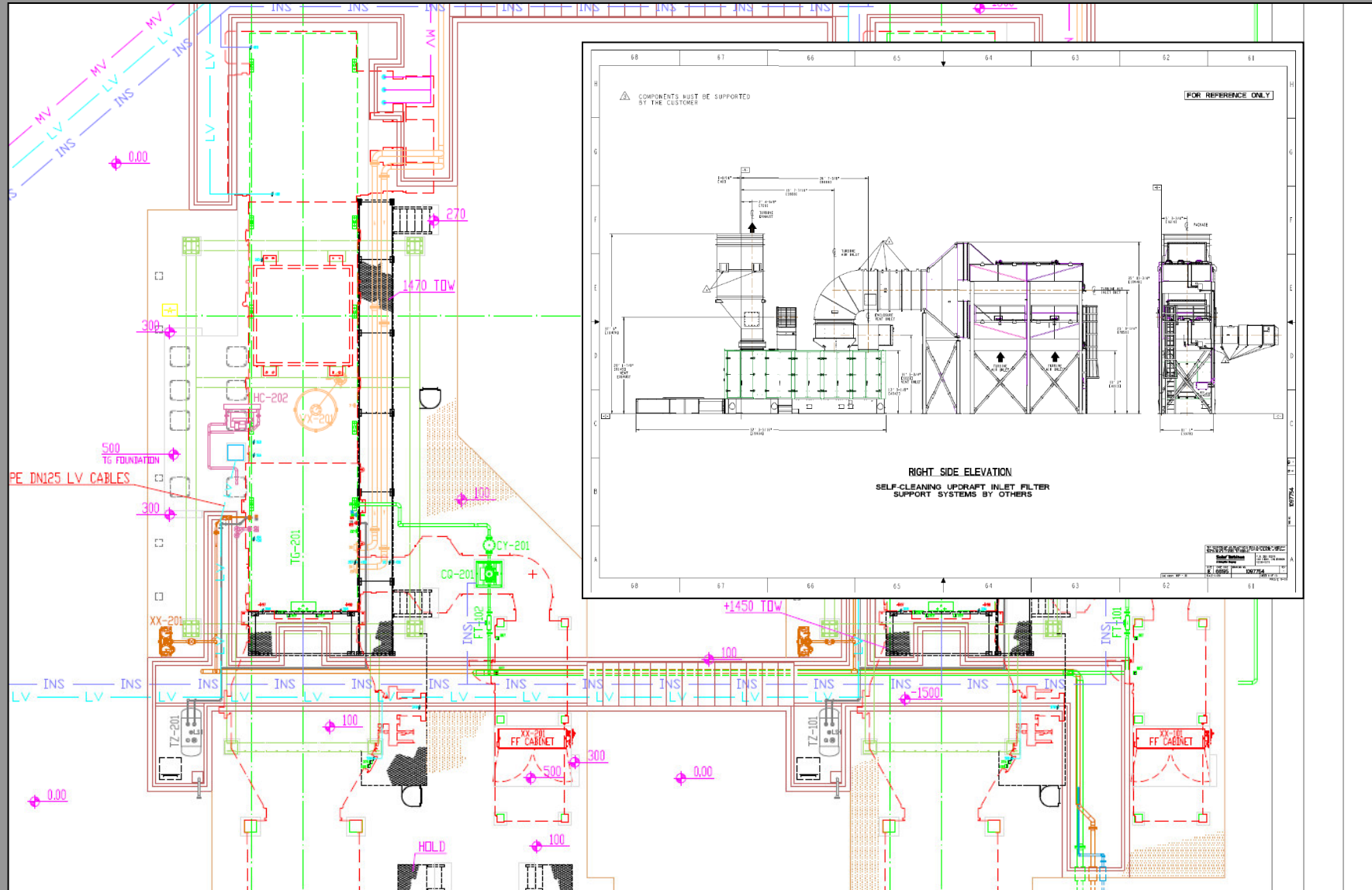
INLET SYSTEM

ACS INDEX (CS)	ACS INDEX (SS)	EQUIPMENT NOMENCLATURE OR DESCRIPTION	NOTES	EQUIPMENT ENVELOPE SIZE INCHES	ESTIMATED HEIGHT/FT (AS/MS)	NO.
100126	100126	DUCT, INLET, TRANS. LINE		141 X 105 X 20	184/154	5
100127	100127	SILENCER, INLET		140 X 104 X 36	5432/249	6
100128	100128	DUCT, INLET, PILET		142 X 100 X 12	856/265	7
100129	100129	DUCT, INLET, ELBOW		125 X 106 X 154	2100/194	8
100130	100130	DUCT, INLET, 90° MANNING		102 X 106 X 36	316/249	9
100131	100131	SILENCER, INLET		141 X 105 X 40	823/273	10
100132	100132	DUCT, INLET, 45°		142 X 108 X 48	1115/326	11
100133/107	100133/107	PLTR, TAI, SELF-CLN		112 X 272 X 140	1727/725	12

SELF-CLEANING UPDRAFT INLET FILTER SUPPORT SYSTEMS BY OTHERS

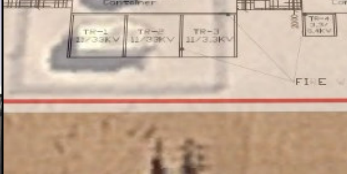
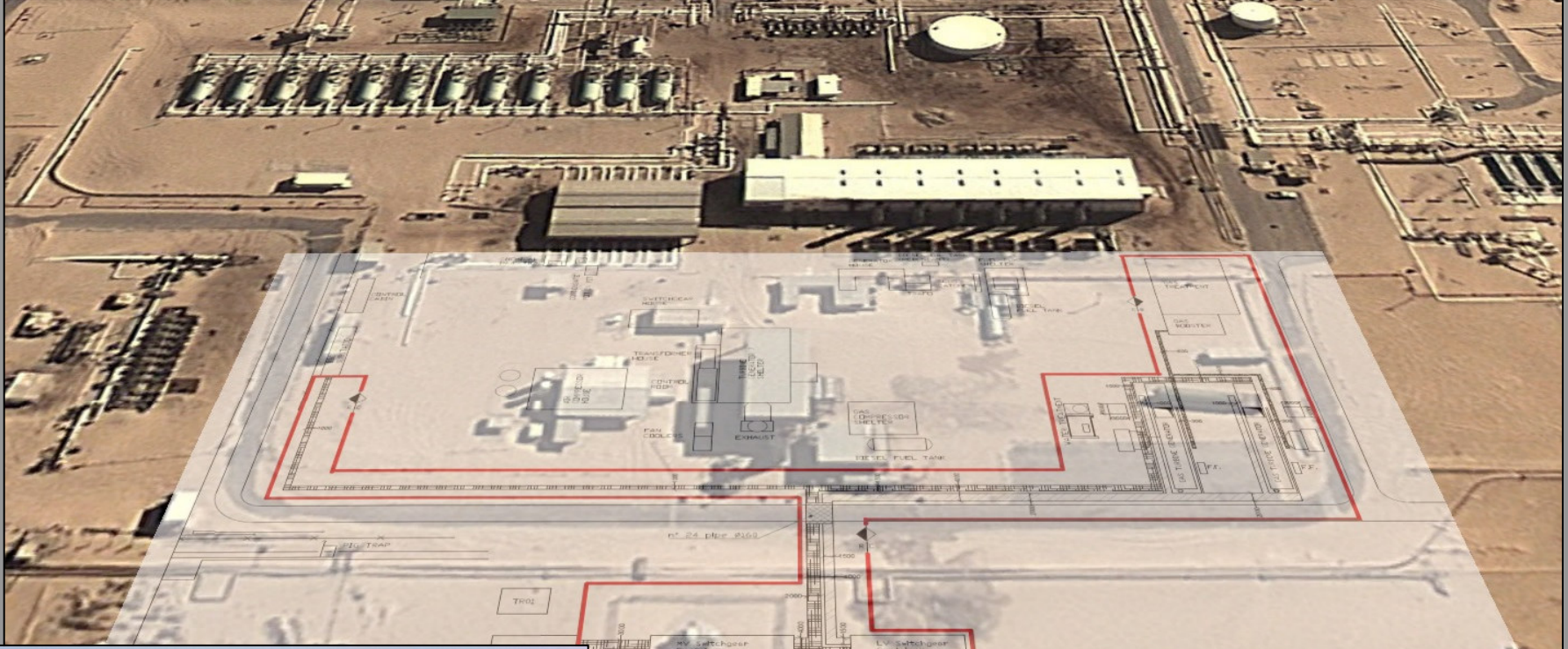
Turbogas 2x 18 MW Power Plant

Sarir - Lybia



Turbogas 2x18 MW Power Plant

Sarir -Lybia



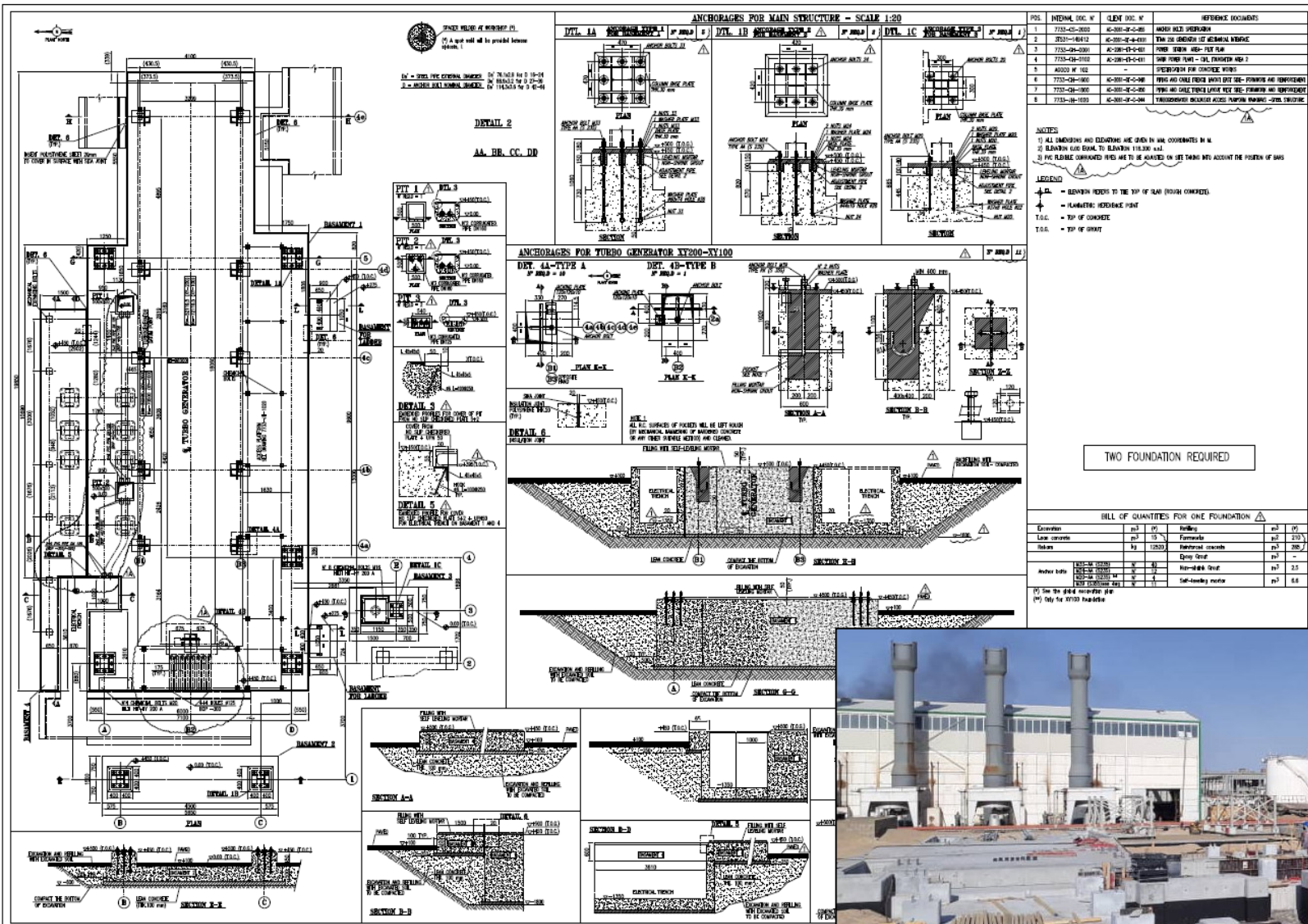
Turbogas 2x18 MW Power Plant

Sarir -Lybia



Turbogas 2x18 MW Power Plant

Sarir -Lybia



Turbogas 2x18 MW Power Plant

Sarir - Lybia



Turbogas 2x18 MW Power Plant

Sarir -Lybia



Turbogas 2x18 MW Power Plant

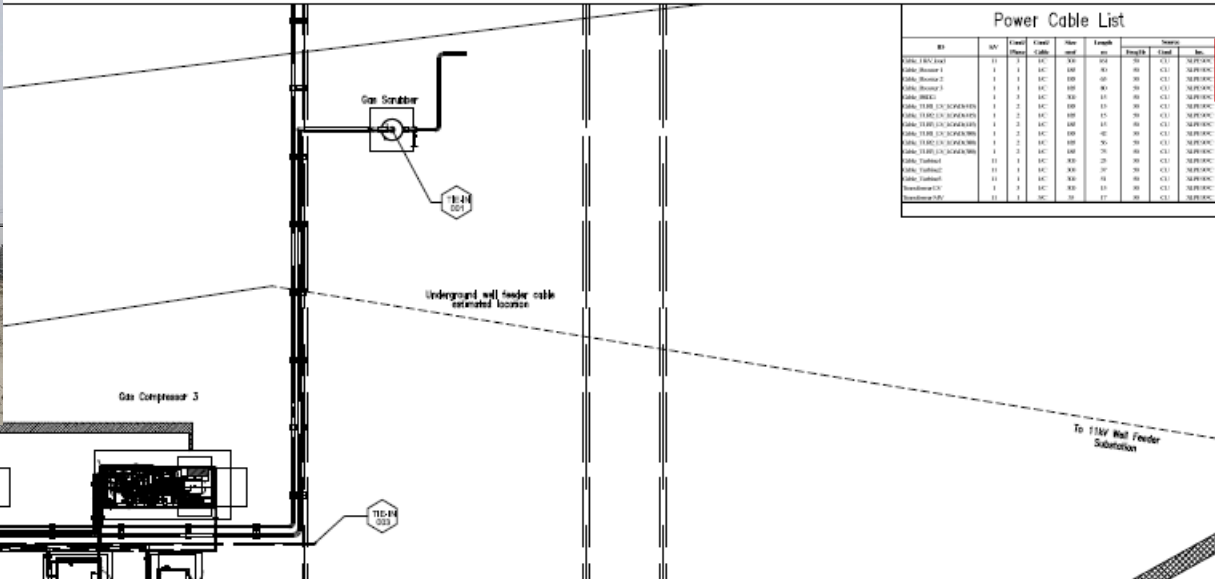
Sarir -Lybia

Project: **E**lectrical BOP for Solar MPU in
GC2 in SARIR

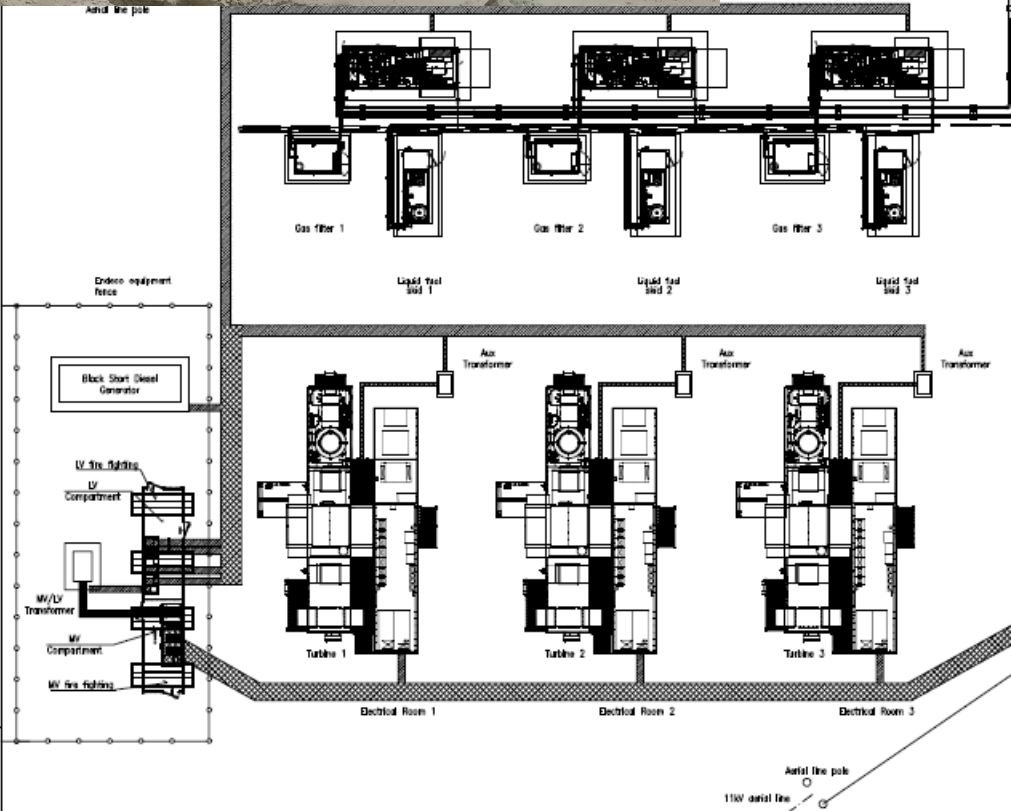
Lybia – Completed

Scope of work:

Engineering, civil works, supply,
installation, commissioning of Electrical
Balance of Plant for 3 Solar Mobile Power
Units (MPU)



No.	Mtr	Cable Type	Cable Size	Max. Temp.	Length (m)	Weight (kg)	Notes
Cable 1 (11kV)	11	1	3C	90	30	100	C11
Cable 2 (11kV)	11	1	3C	90	30	100	C11
Cable 3 (11kV)	11	1	3C	90	30	100	C11
Cable 4 (11kV)	11	1	3C	90	30	100	C11
Cable 5 (11kV)	11	1	3C	90	30	100	C11
Cable 6 (11kV)	11	1	3C	90	30	100	C11
Cable 7 (11kV)	11	1	3C	90	30	100	C11
Cable 8 (11kV)	11	1	3C	90	30	100	C11
Cable 9 (11kV)	11	1	3C	90	30	100	C11
Cable 10 (11kV)	11	1	3C	90	30	100	C11
Cable 11 (11kV)	11	1	3C	90	30	100	C11
Cable 12 (11kV)	11	1	3C	90	30	100	C11
Cable 13 (11kV)	11	1	3C	90	30	100	C11
Cable 14 (11kV)	11	1	3C	90	30	100	C11
Cable 15 (11kV)	11	1	3C	90	30	100	C11
Cable 16 (11kV)	11	1	3C	90	30	100	C11
Cable 17 (11kV)	11	1	3C	90	30	100	C11
Cable 18 (11kV)	11	1	3C	90	30	100	C11
Cable 19 (11kV)	11	1	3C	90	30	100	C11
Cable 20 (11kV)	11	1	3C	90	30	100	C11
Cable 21 (11kV)	11	1	3C	90	30	100	C11
Cable 22 (11kV)	11	1	3C	90	30	100	C11
Cable 23 (11kV)	11	1	3C	90	30	100	C11
Cable 24 (11kV)	11	1	3C	90	30	100	C11
Cable 25 (11kV)	11	1	3C	90	30	100	C11
Cable 26 (11kV)	11	1	3C	90	30	100	C11
Cable 27 (11kV)	11	1	3C	90	30	100	C11
Cable 28 (11kV)	11	1	3C	90	30	100	C11
Cable 29 (11kV)	11	1	3C	90	30	100	C11
Cable 30 (11kV)	11	1	3C	90	30	100	C11



GENERAL NOTES		REFERENCE DRAWINGS		REVISIONS			
Basement elevations of Endeco equipment to be confirmed after all neighboring facilities of turbines, sited transformers, poles and gables as per copyrighted survey information (plugs as per Dtd drawings)		NUMERO	TITLE	NO	DESCRIPTION	DATE	BY
		C117-02-008	SECTOR AREA PLAN WITH EXISTING FEATURES	0	PROPOSAL: PLOT PLAN FOR NEW INSTALLATIONS	21/11	AM
				1	REVISED AS PER ADDITIONAL COMMENTS	22/12	AM
					POWER CABLE LIST ADDED	22/12	AM



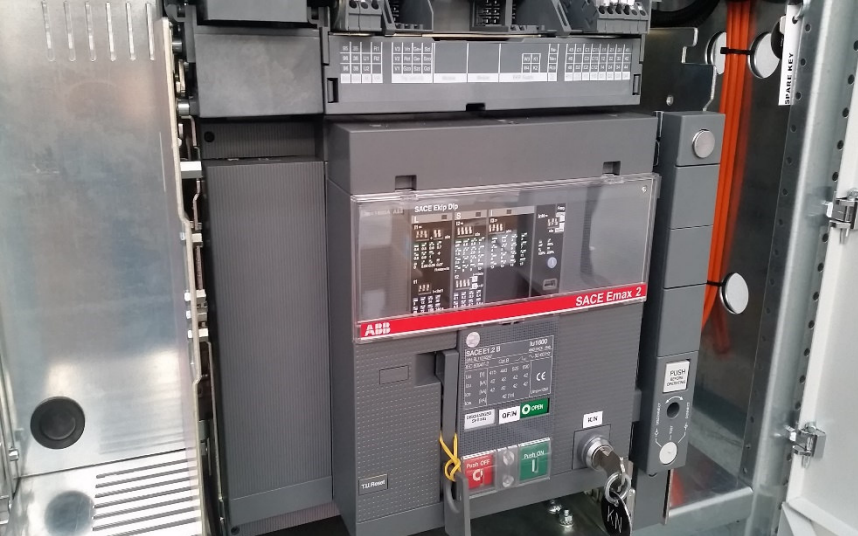
Electrical BOP for Solar MPU

Sarir-Lybia



Electrical BOP for Solar MPU

Sarir-Lybia



Electrical BOP for Solar MPU

Sarir-Lybia

Project : **E**ngineering and Supply of New
Messla Main Manifold

Lybia – Completed

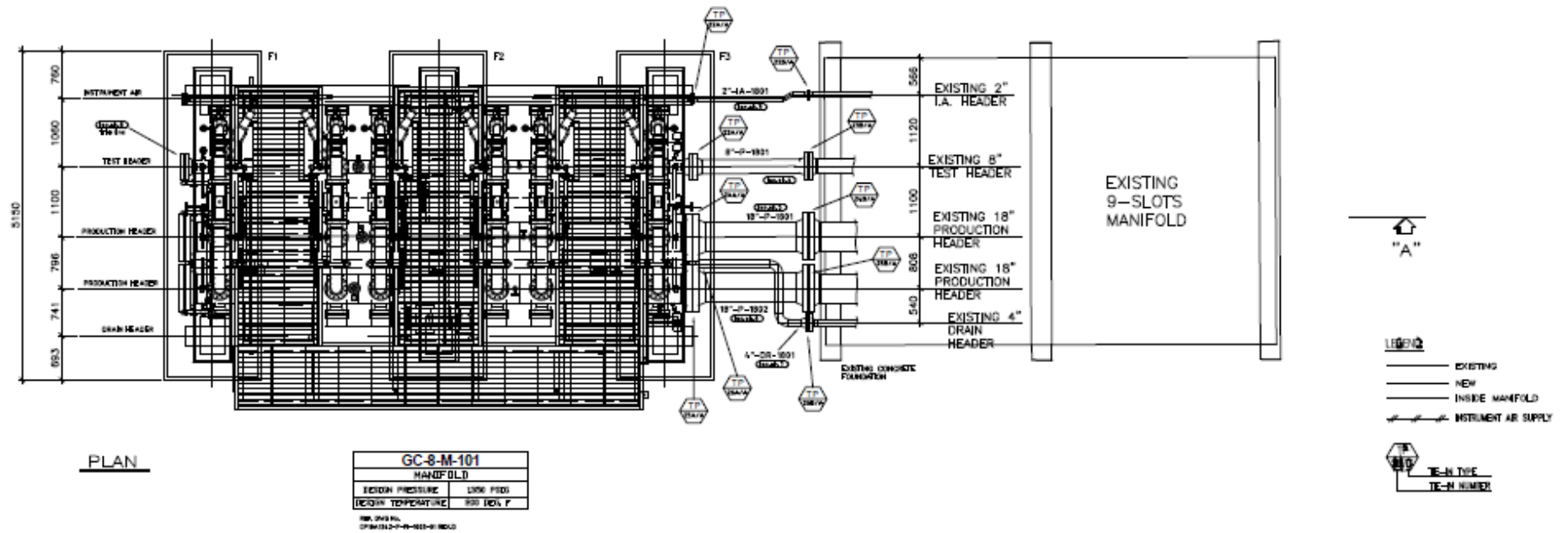
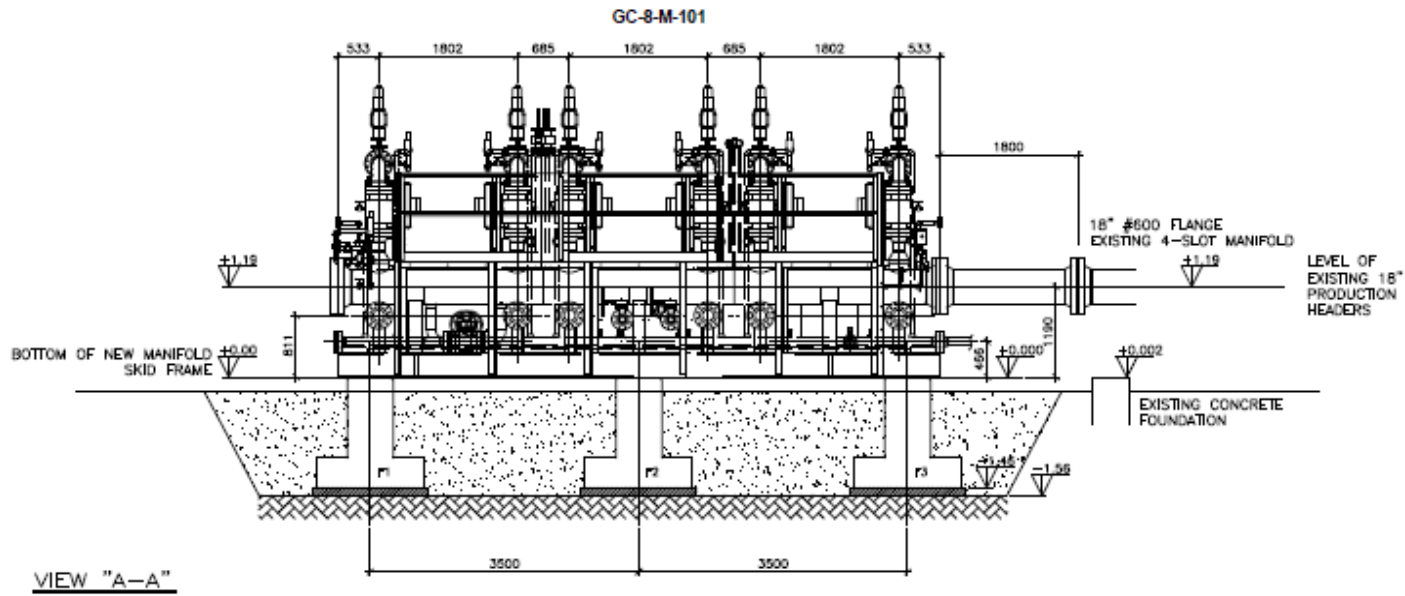
Scope of work:

INSTALLATION OF THREE (3) NEW
AUTOMATIC MANIFOLDS AT MESSLA
GC-7 & GC-9 FACILITIES



MESSLA MANIFOLDS INSTALLATION

Messla-Lybia

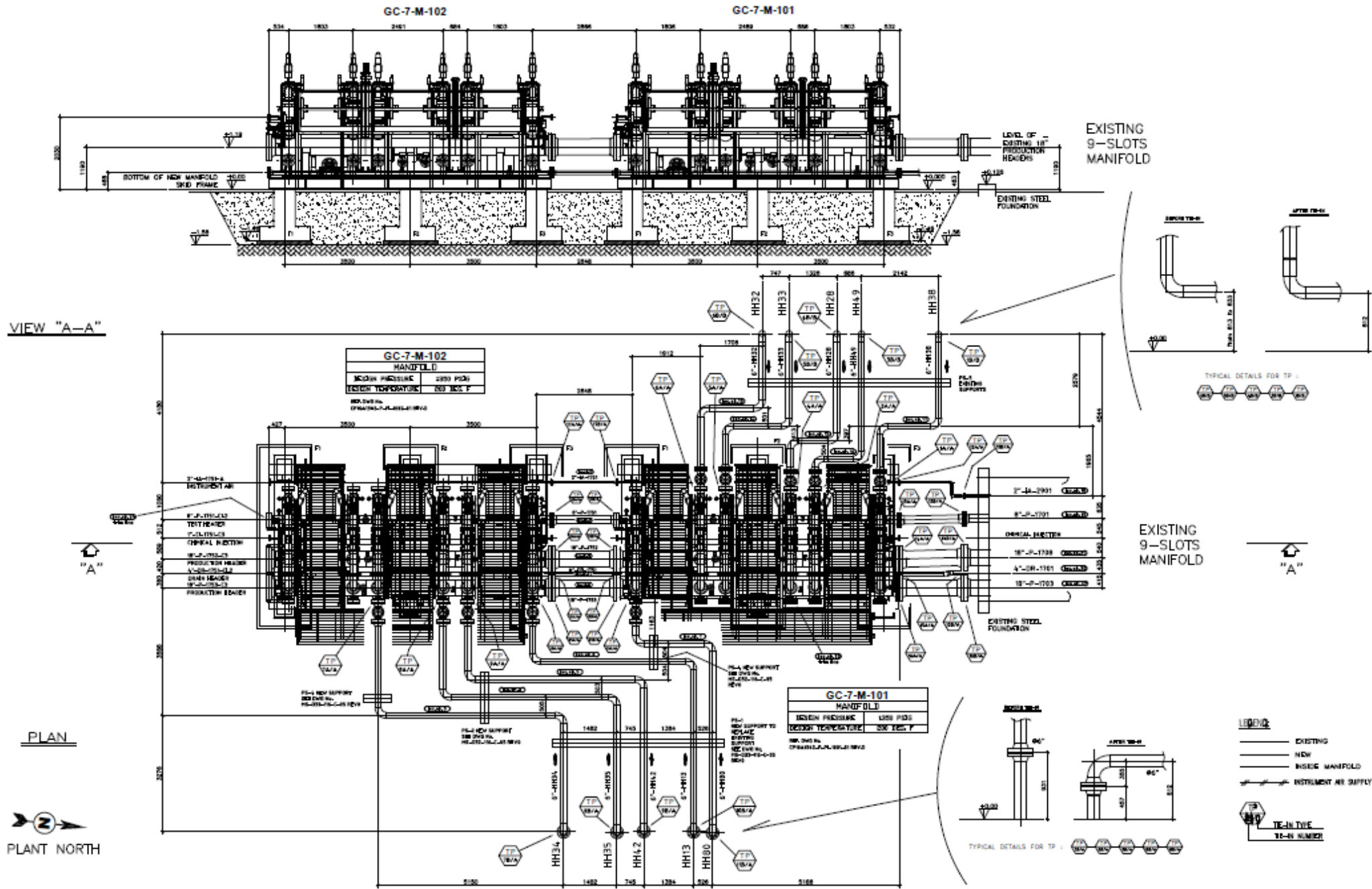






MESSLA MANIFOLDS INSTALLATION

Messla-Lybia





MESSLA MANIFOLDS INSTALLATION

Messla-Lybia



MESSLA MANIFOLDS INSTALLATION

Messla-Lybia





Project: **Fao Depot Power Plant**
Bassora (Iraq)

Capacity

N°3 Turbogas Unit x 30 MVA at 11 kV

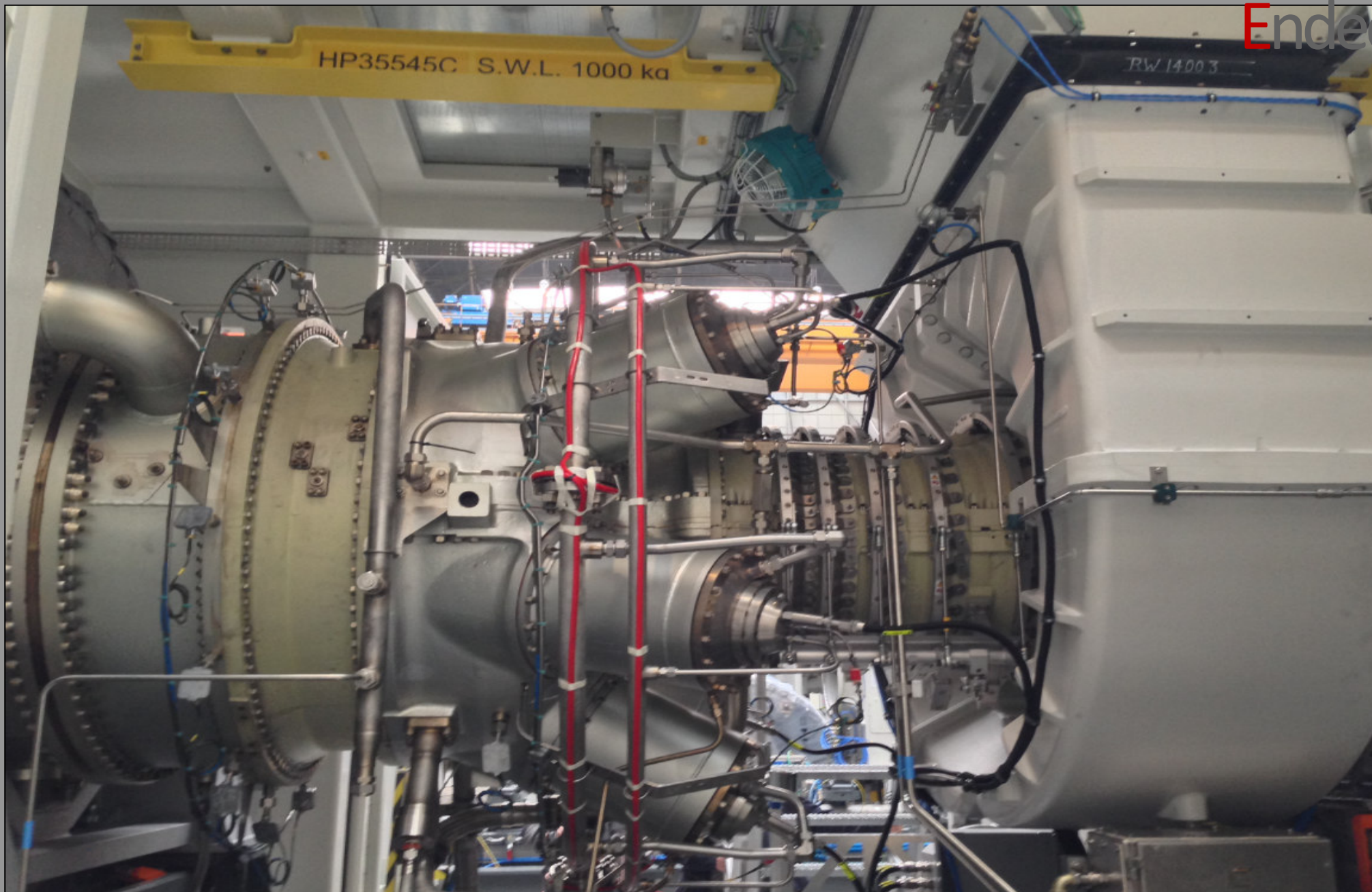
Scope of work:

Design and supply of MV e LV Electrical
Balance of Plant



FAO DEPOT POWER PLANT

Basra-Iraq



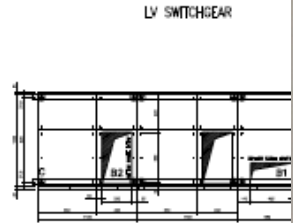
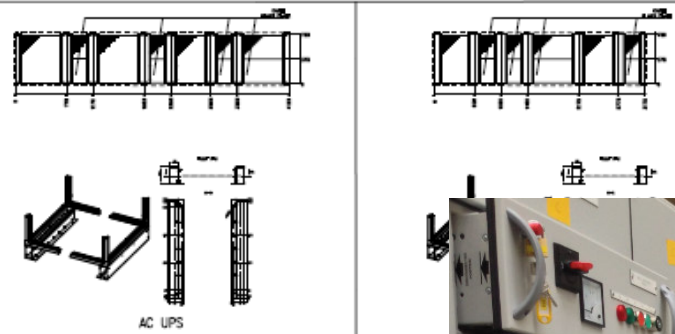
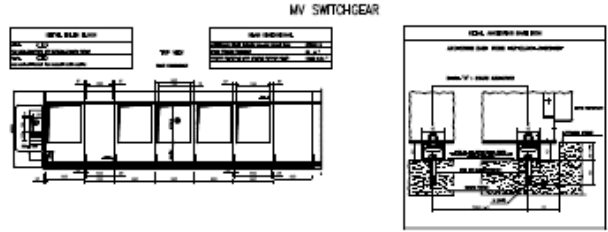
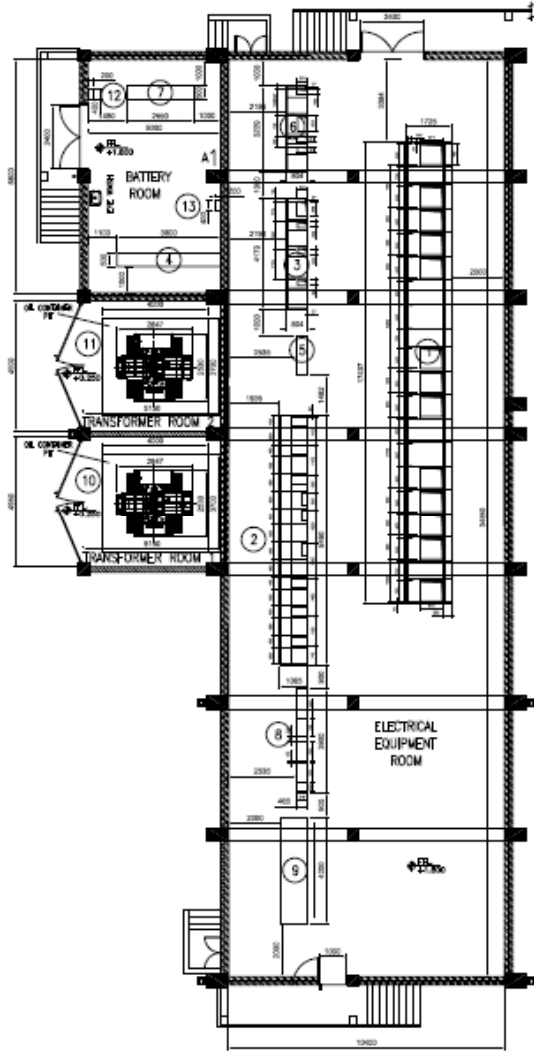
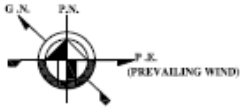
FAO DEPOT POWER PLANT

Basra-Iraq



FAO DEPOT POWER PLANT

Basra-Iraq

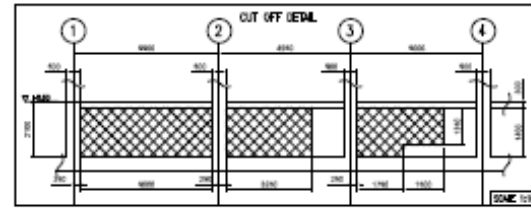
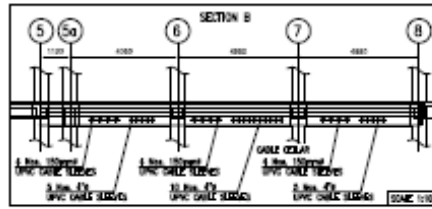
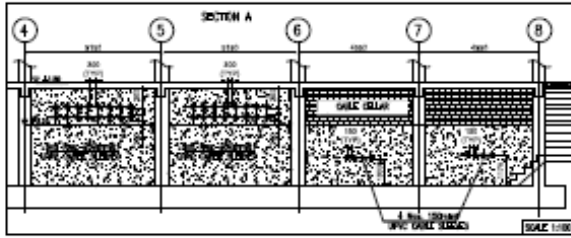
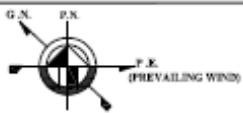


- NOTES**
- 1) DIMENSIONS OF ELECTRICAL EQUIPMENT SHOWN ARE PRELIMINARY AND SHALL BE CONFIRMED BY THE MANUFACTURER
 - 2) EXACT LOCATIONS AND DIMENSIONS, MUST BE VERIFIED WITH CONSTRUCTION DRAWINGS
 - 3) ALL DIMENSIONS AND ELEVATIONS ARE IN mm (UNLESS OTHERWISE NOTED)
 - 4) THE WALL BETWEEN:
 - TRANSFORMER ROOM 1 AND TRANSFORMER ROOM 2
 - TRANSFORMER ROOM 2 AND BATTERY ROOM
 - TRANSFORMER ROOMS AND SWITCHGEAR ROOM
 SHALL BE Fire Rating 2 HOURS

ITEM	DESCRIPTION	EQUIPMENT
①	MV SWITCHGEAR	10BBA
②	LV SWITCHGEAR	10BFA
③	AC UPS	10BRA
④	AC UPS - BATTERY RACK	10BRA
⑤	AC UPS - SUBDISTRIBUTION	10BRA
⑥	DC UPS	10BUB
⑦	DC UPS - BATTERY RACK	10BUB
⑧	LV DIST BOARD	10BHA
⑨	GAS CONDITIONING HEATER PANEL	
⑩	AUXILIARY TRANSFORMER 1	10BFT



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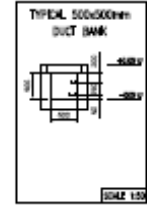
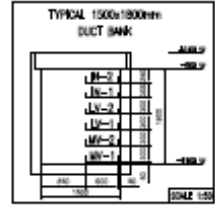
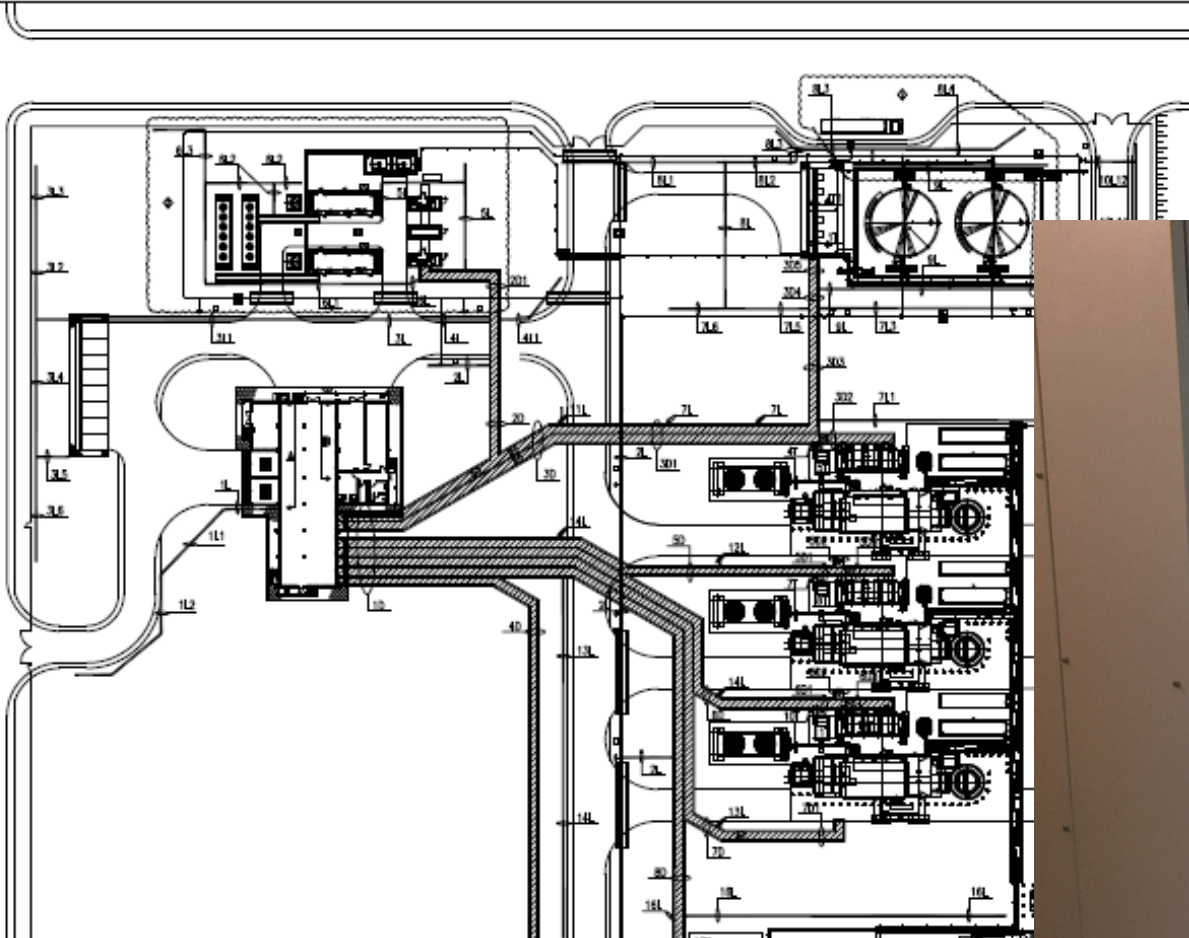


NOTES

- ALL DIMENSIONS AND ELEVATIONS ARE IN mm (UNLESS OTHERWISE NOTED)
- DUCT BANK-LIGHTING CABLES MUST BE PROTECTED THROUGHOUT ITS ROUTE, WITH APPROPRIATE SOLUTION ACCORDING TO THE POSITION OF INSTALLATION CONCERNED.
- UNDERGROUND CABLE ROUTE SHALL BE DESIGNED TO AVOID CLOSE PIPE ROUTES AND ADJACENT ROUTES. WHENEVER AN ELECTRICAL TRENCH CROSSES A PIPE TRENCH THE CLEAR DISTANCE OF 300mm HAS TO BE MAINTAINED BELOW THE PIPE AND ALL AROUND THE PIPE.
- SPACING BETWEEN LV CABLES AND INSTRUMENTATION CABLES SHALL BE MINIMUM 600mm, HOWEVER FOR LV CABLES OF 240VAC, BELOW 20 AMP LOAD, 300mm SEPARATION DISTANCE SHALL BE ALLOWED.
- CABLE TRAY SUPPORTS SHALL BE INSTALLED EVERY 2m

REFERENCE DRAWINGS

DRAWING NO.	TITLE
11123-ME-001	OVERALL PLAT PLAN
11123-EL-101	ELECTRICAL EQUIPMENT LAYOUTS
11123-EL-112	ELECTRICAL TYPICAL INSTALLATION DETAILS
11123-SCB-EL-003	ELECTRICAL CABLE SCHEDULE
11123-SPEC-EL-005	SPEC. FOR ELECTRICAL BULK MATERIALS
11123-IN-006	INSTRUMENT CABLE ROUTING LAYOUT

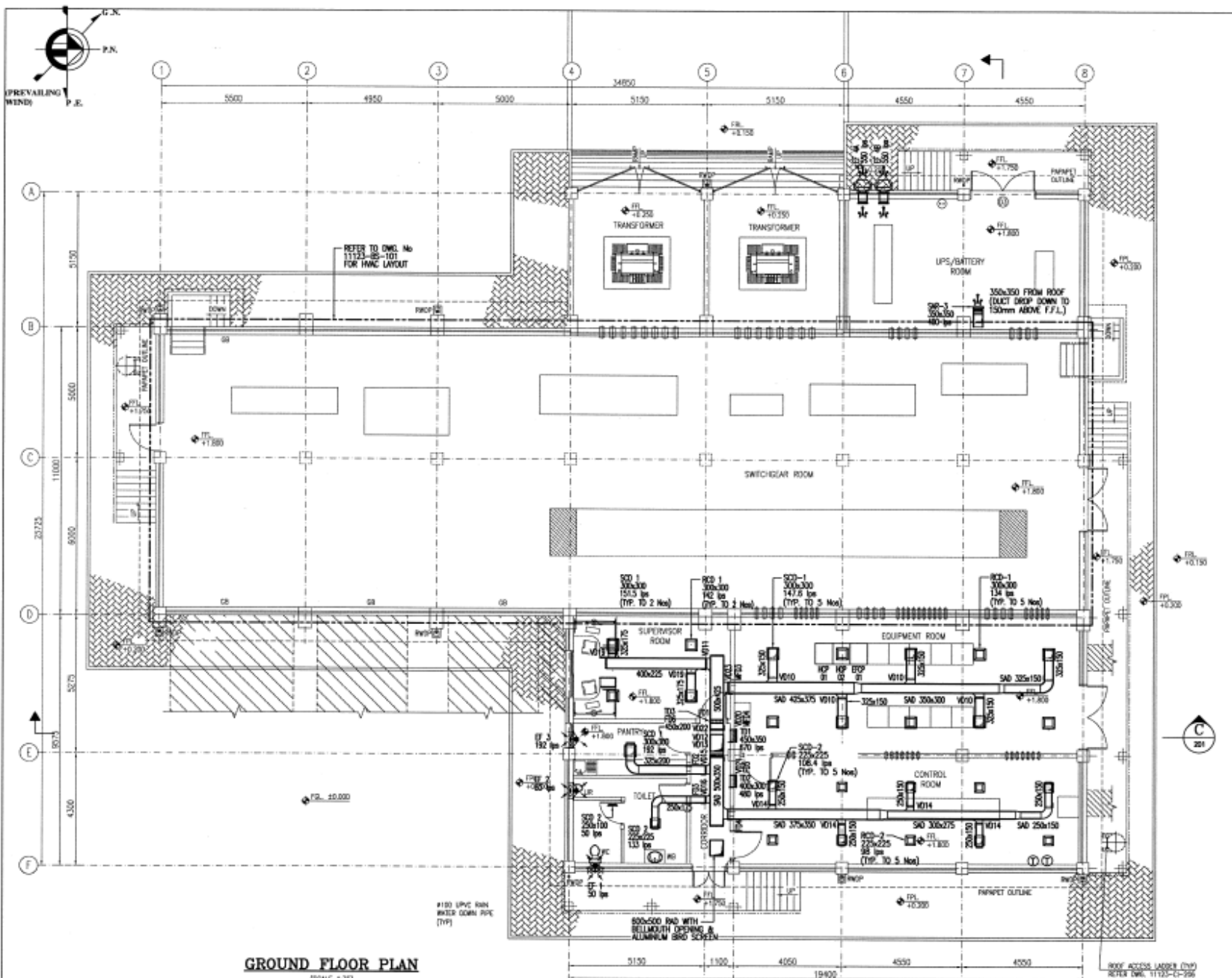


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FAO DEPOT POWER PLANT

Basra-Iraq



GROUND FLOOR PLAN
SCALE: 1:200

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED.
2. SUPPLY & RETURN AIR DUCT SHALL BE INSULATED, HANGED & SUPPORTED IN ACCORDANCE WITH SARKIS LOW & MEDIUM PRESSURE DUCT STANDARD, IMAA DPM4.
3. FIRE DAMPERS WITH ACCESS DOORS SHALL BE PROVIDED IN DUCTS PENETRATING FIRE RATED WALLS.
4. ALL FIRE DAMPERS SHALL HAVE ISOLATED ACCESS PANEL WITH IN THE DUCT.
5. HVAC EQUIPMENTS SHALL BE SUPPLIED WITH A HVAC CONTROL PANEL INCLUDING ALL NECESSARY COMPONENTS REQUIRED FOR CONTROL & SAFETY OPERATION.
6. SLIDES SHALL BE PROVIDED WHERE BOTH INSULATED & NON INSULATED DUCTS PASS THROUGH WALLS, FLOORS, ...ETC.
7. ALL SUPPLY & RETURN GRILLES & DIFFUSERS SHALL BE PROVIDED WITH VOG FOR AIR BALANCING.
8. ALL CONDENSATE DRAIN PIPES FROM A/C UNITS TO BE CONNECTED TO THE NEAREST DRAIN AS SHOWN IN THE DRAWING.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION WITH ALL OTHER SERVICES AND TRADES.
10. HVAC DRAWINGS SHALL BE READ IN COORDINATION WITH THE HVAC SPECIFICATIONS.
11. THE PACKING A/C UNIT DIMENSION IS ON HOLD, SUBJECT TO FINAL HVAC APPROVED VENDOR DATA.
12. FIRE DAMPER RATING SHALL BE IN UL CLASS A RATING AND CONSTRUCTED IN ACCORDANCE WITH UL655 & SARKIS.
13. THE PACKING A/C UNITS TO BE SUPPLIED AND INSTALLED SHALL NOT CONTAIN OZONE DEPLETING SUBSTANCES. THE REFRIGERANT GAS AND INSULATION TO BE USED SHALL BE CFC/FREON FREE, OZONE (ENVIRONMENTALLY) FRIENDLY AND SHALL BE LABELLED AS 'DRAFT' ALONG WITH DETAILS OF THE REFRIGERANT GAS USED SHALL BE INDICATED.
14. NO GAS DETECTORS & GAS TIGHT MOTORIZED DAMPER SHALL BE INSTALLED IN THE FRESH AIR INTAKE.
15. THE EXHAUST FANS IN THE BATTERY ROOM SHALL BE DUSTY ENCLOSURE SUITABLE FOR ZONE 1 GAS GROUP & CLASSIFICATION. EACH FAN SHALL BE EQUIPPED WITH AUTOMATIC SHUTTER, WHEEL GUARD & DISCONNECT SWITCH.
16. THIS DRAWING IS ONLY PRELIMINARY. ANY CHANGES DUE TO VENDOR INFORMATION SHALL BE CARRIED OUT BY HVAC CONSTRUCTION CONTRACTOR.

LEGEND & ABBREVIATIONS

SAD	SUPPLY AIR DUCT	FD	FIRE DAMPER
RAID	RETURN AIR DUCT	SAT	SOUND ATTENUATOR
WVAD	WINDMILL VALVE DAMPER	EDH	ELECTRIC DUCT HEATER
MVD	MOTORIZED VOLUME DAMPER	SFL	SMOKE TRAP LAMINAR
SAH	SUPPLY AIR REGISTER	IS	ISOLATOR/DISCONNECT SWITCH
RAH	RETURN AIR REGISTER	FC	FLEXIBLE CONNECTOR
PAHU	PACKAGE AIR CONDITIONING UNIT	SD	DUCT SMOKE DETECTOR
T	ROOM THERMOSTAT	MFD	MOTORIZED FIRE DAMPER
HCP	HVAC CONTROL PANEL	HC	HEMLOCKER
EXCP	EXHAUST FAN CONTROL PANEL	GD	GAS DETECTOR

KEY PLAN

REFERENCE DRAWINGS

DRAWING NUMBER	DRAWING TITLE
11123-SCM-SS-201	CONTROL, BLDG/HVAC EQUIPMENT SCHEDULE
11123-SS-001	HVAC MISC. DETAILS
11123-SS-102	CONTROL, BLDG. HVAC CONTROL FLOW DIAGRAM
11123-Q-201	ARCHITECTURAL GROUND FLOOR PLAN
11123-Q-202	ARCHITECTURAL ROOF FLOOR PLAN
11123-Q-204	ARCHITECTURAL SECTIONS
11123-EL-101	ELECTRICAL EQUIPMENT LAYOUT

REV	DATE	DESCRIPTION	BY	CHKD	APPROV	CLIENT
A	26.01.13	ISSUED FOR COMMENTS				

CLIENT: **SCOP**

MAIN CONTRACTOR: **SIEMENS**

SUB CONTRACTOR/ENGINEERING CONSULTANT: **PENSPEN International Ltd.**
P.O. Box 48582
Alia Bank, Iraq

PROJECT TITLE: **FAO DEPOT POWER GENERATING UNITS**

FAO DEPOT POWER PLANT

Basra-Iraq

Project : **Turbopump Water Injection**
Station
NOC Kirkuk-Iraq

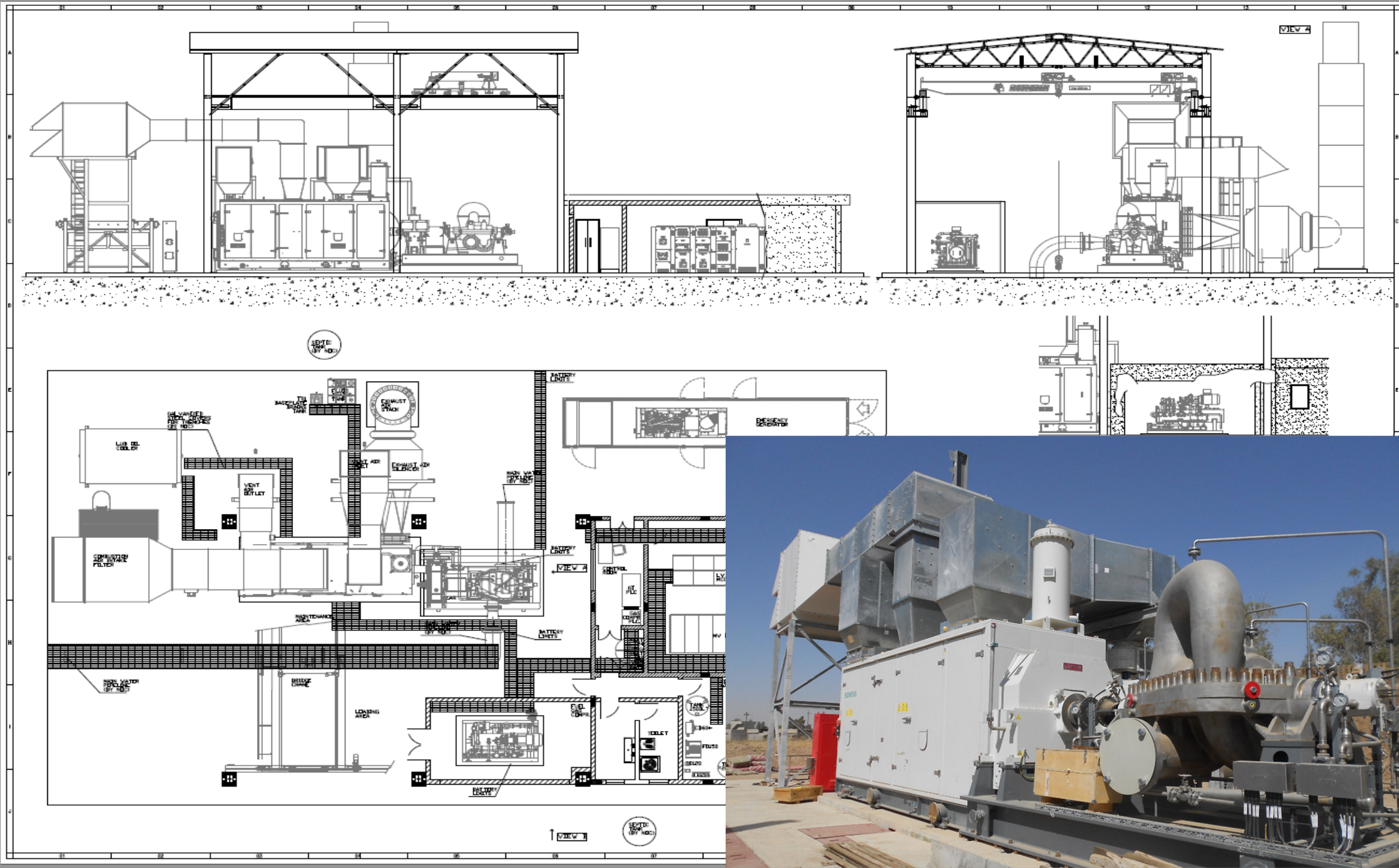
Capacity

Flow, rated : 500.000,0 USbl/day

Head, rated : 600,0 psi.g

Scope of work:

Design ,Supply, Supervision to
Erection and Testing of Turbine Driven
Water Injection Pump, including Power
Distribution System, Firefighting System,
Compressed Air System, Instrumentation

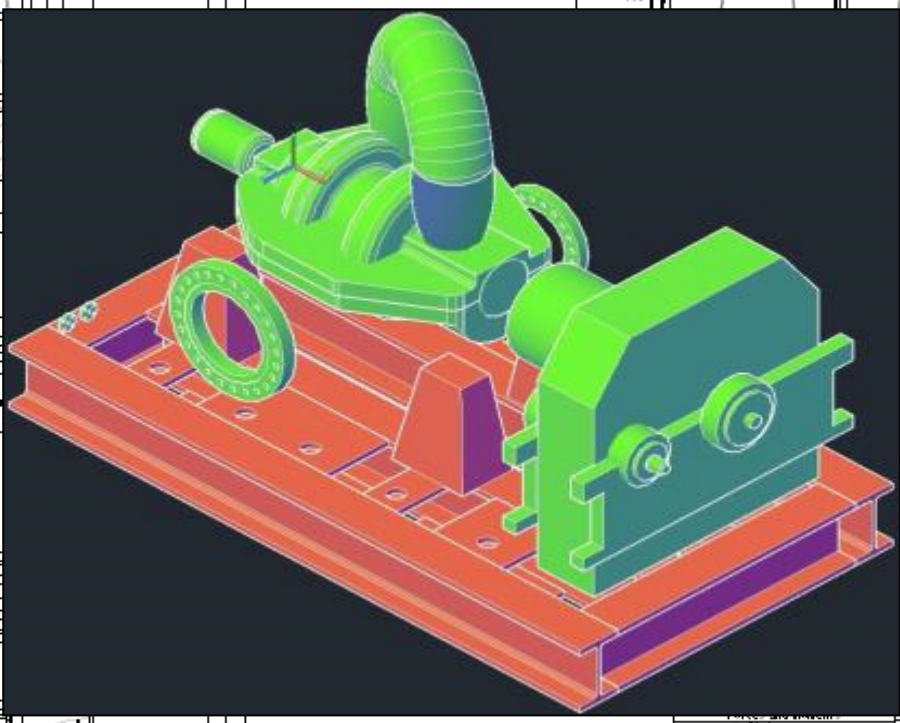
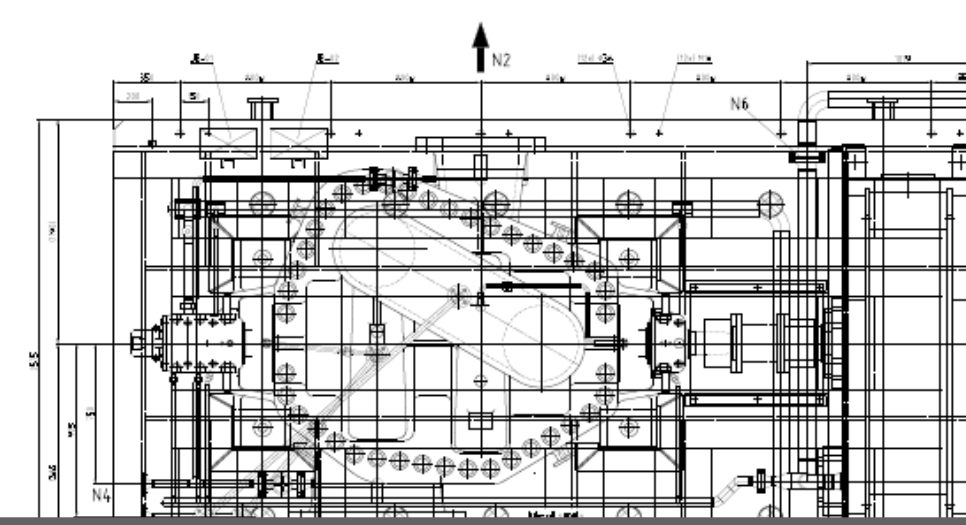
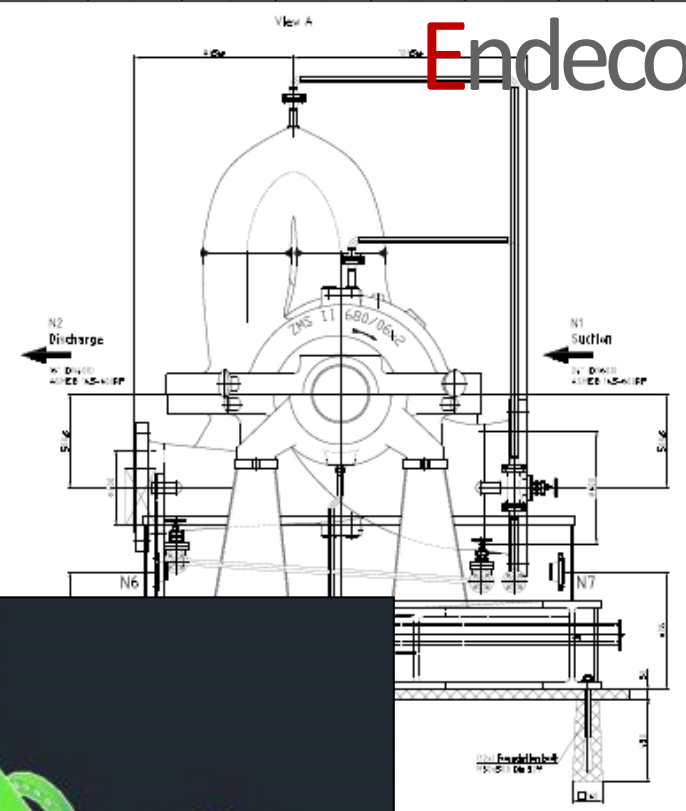
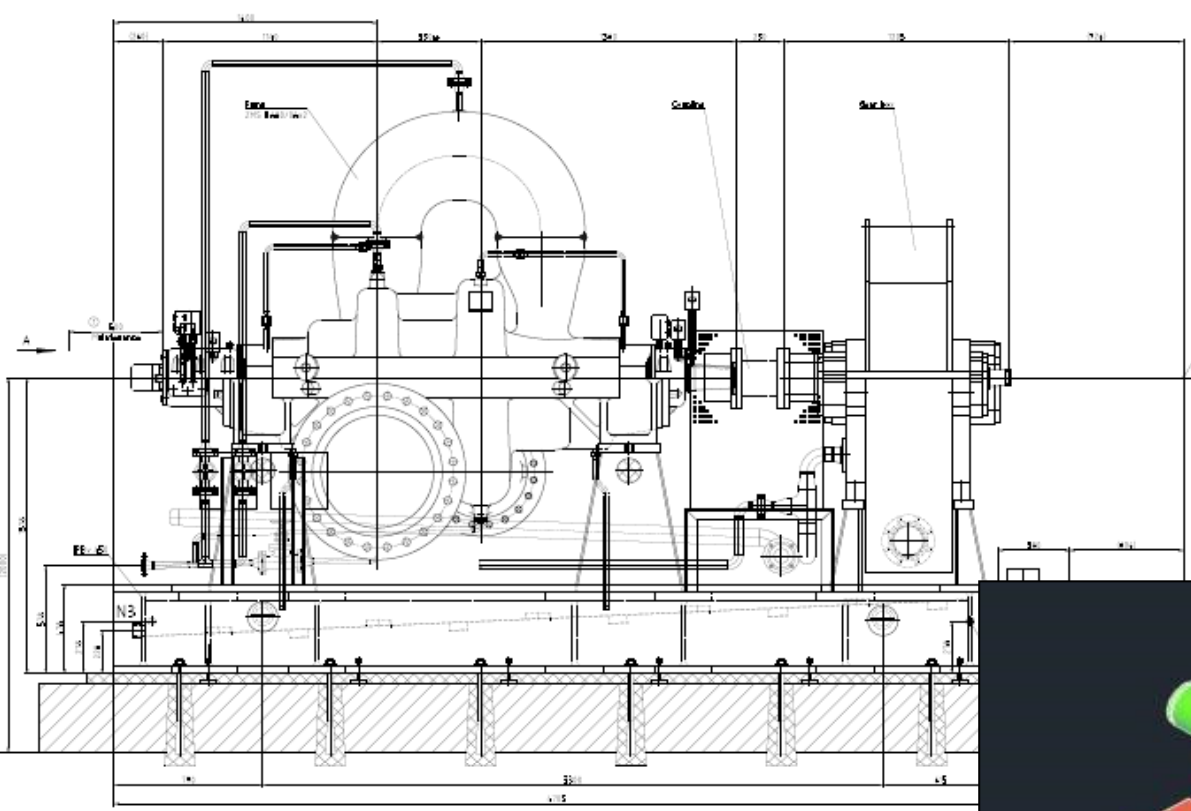


WATER INJECTION STATION

NOC-Iraq



WATER INJECTION STATION



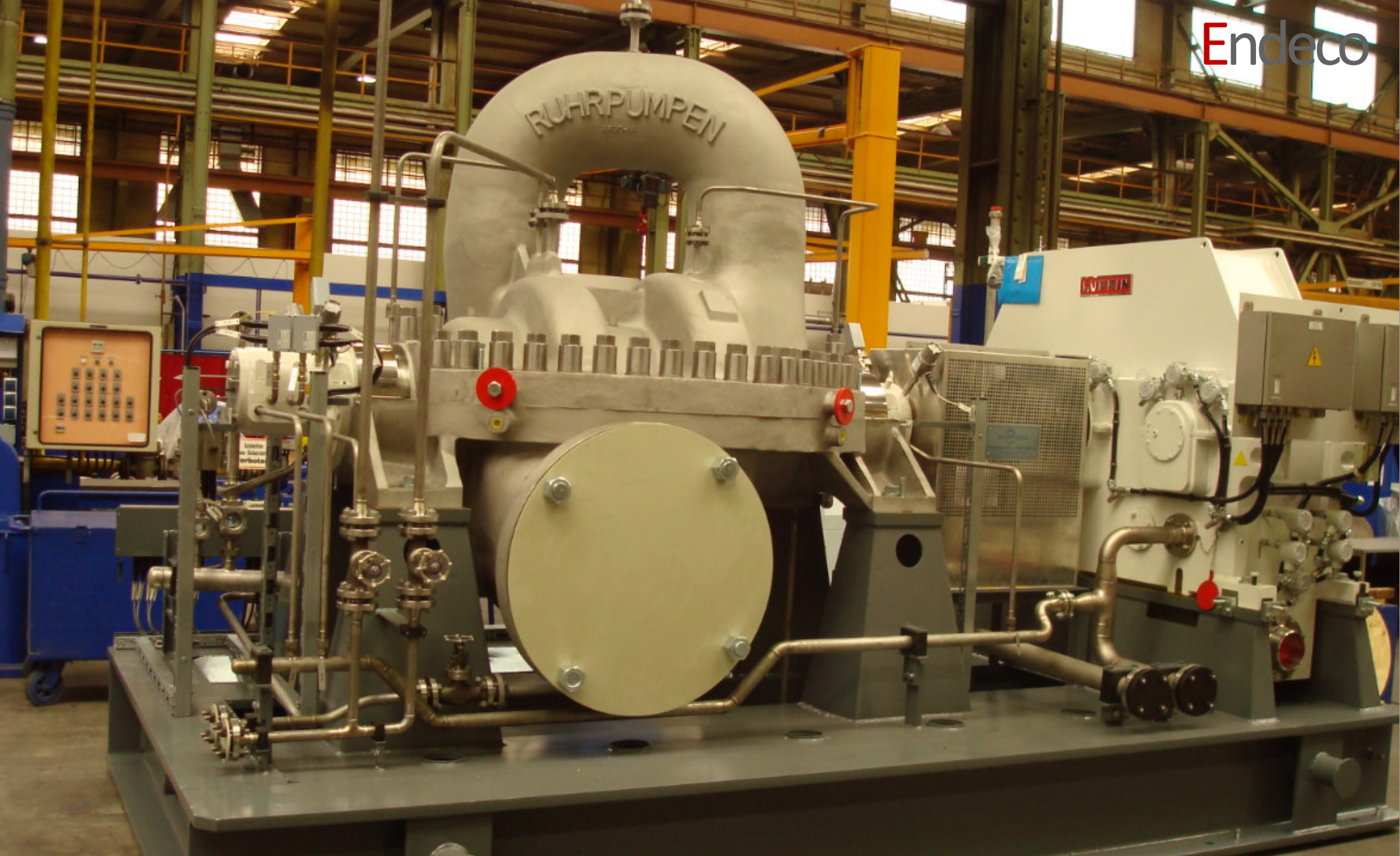
Manufacturer: Siemens Industrial Turbosachinery Ltd. U.K.
 Producer: North Oil Company, Kirkuk, Iraq
 Service: Water injection pump
 Type of PUMP: ZMS II 680/06x2
 Project No.: 203751

Terminal points	
Code	Description
1	Discharge
2	Suction
3	Oil Drain
4	Oil Drain
5	Oil Drain
6	Oil Drain
7	Oil Drain
8	Oil Drain
9	Oil Drain
10	Oil Drain

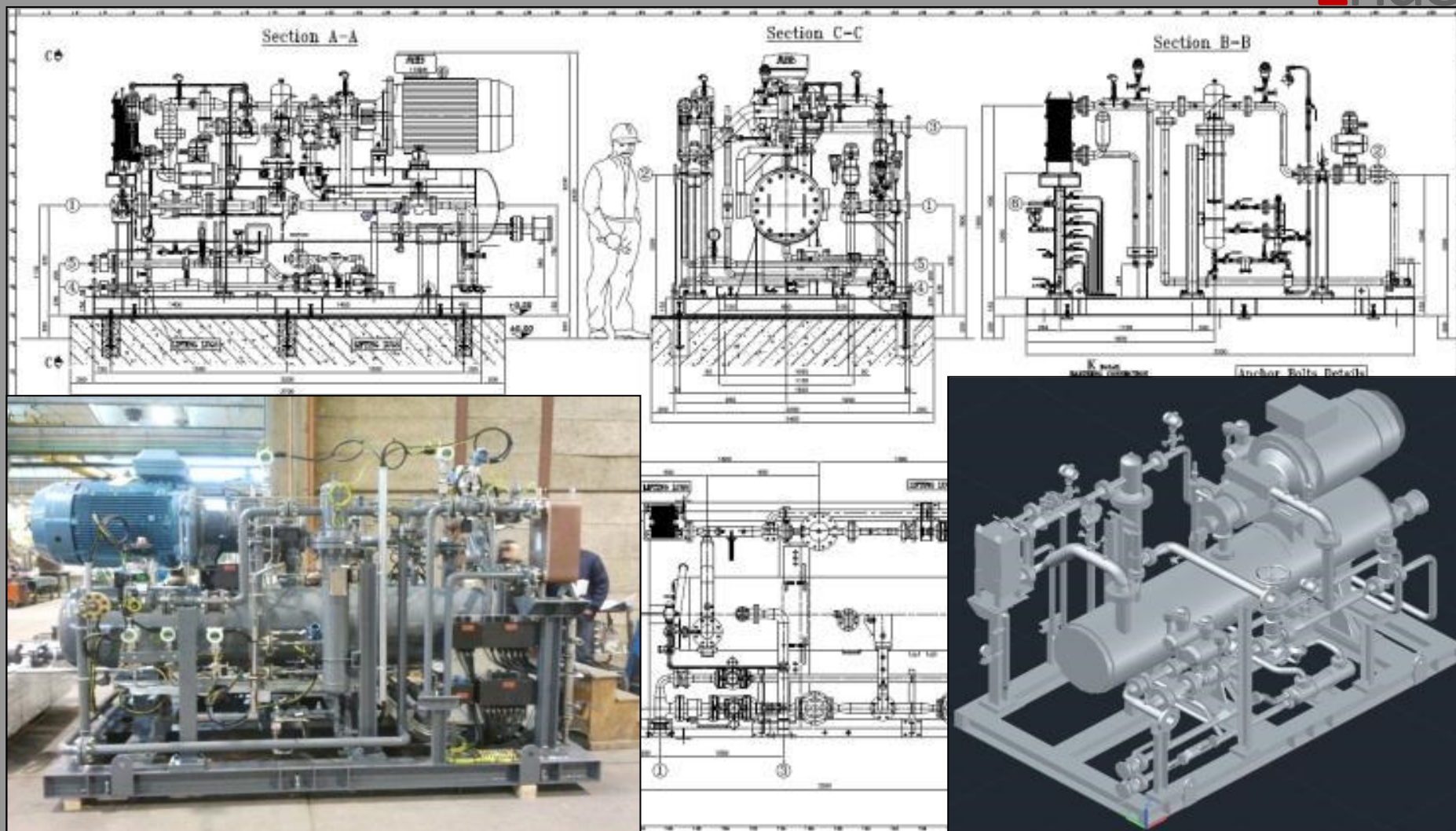
General notes:
 Direction of rotation of pump is as indicated on the pump CC.
 Pump size and key points in the pump CC.

WATER INJECTION STATION

NOC-Iraq

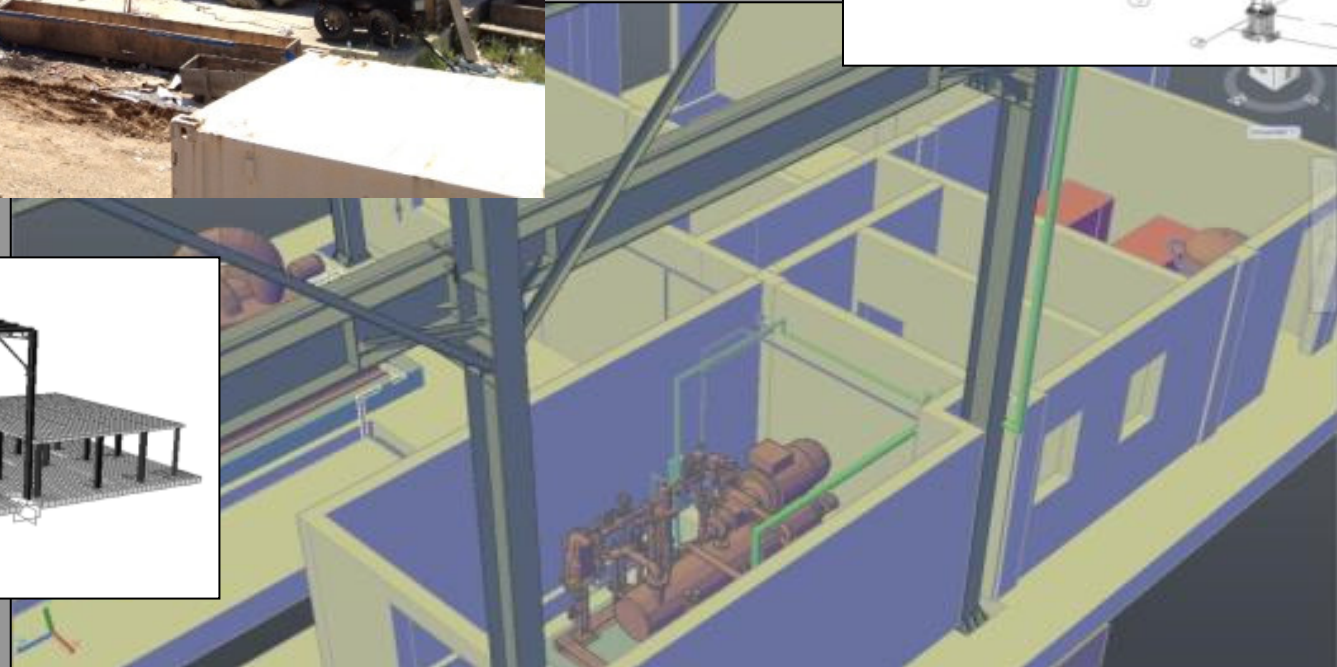
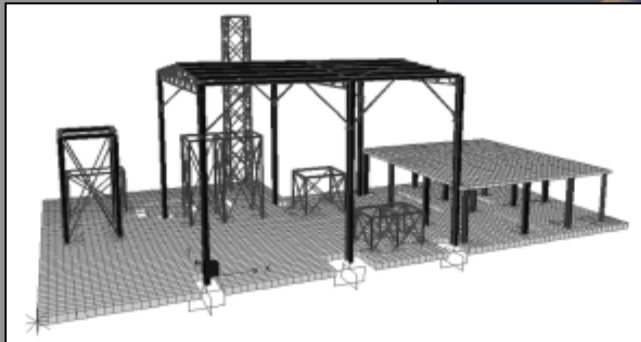
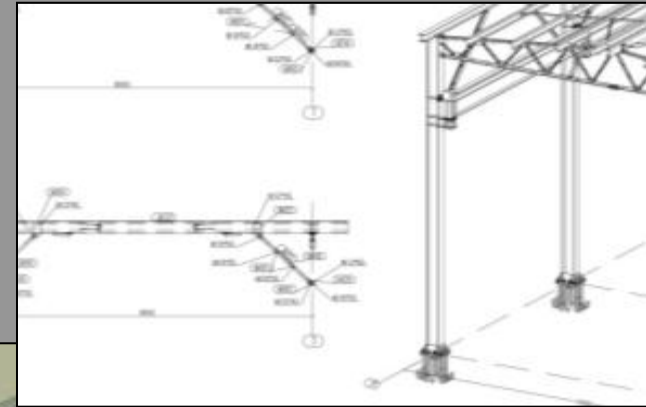


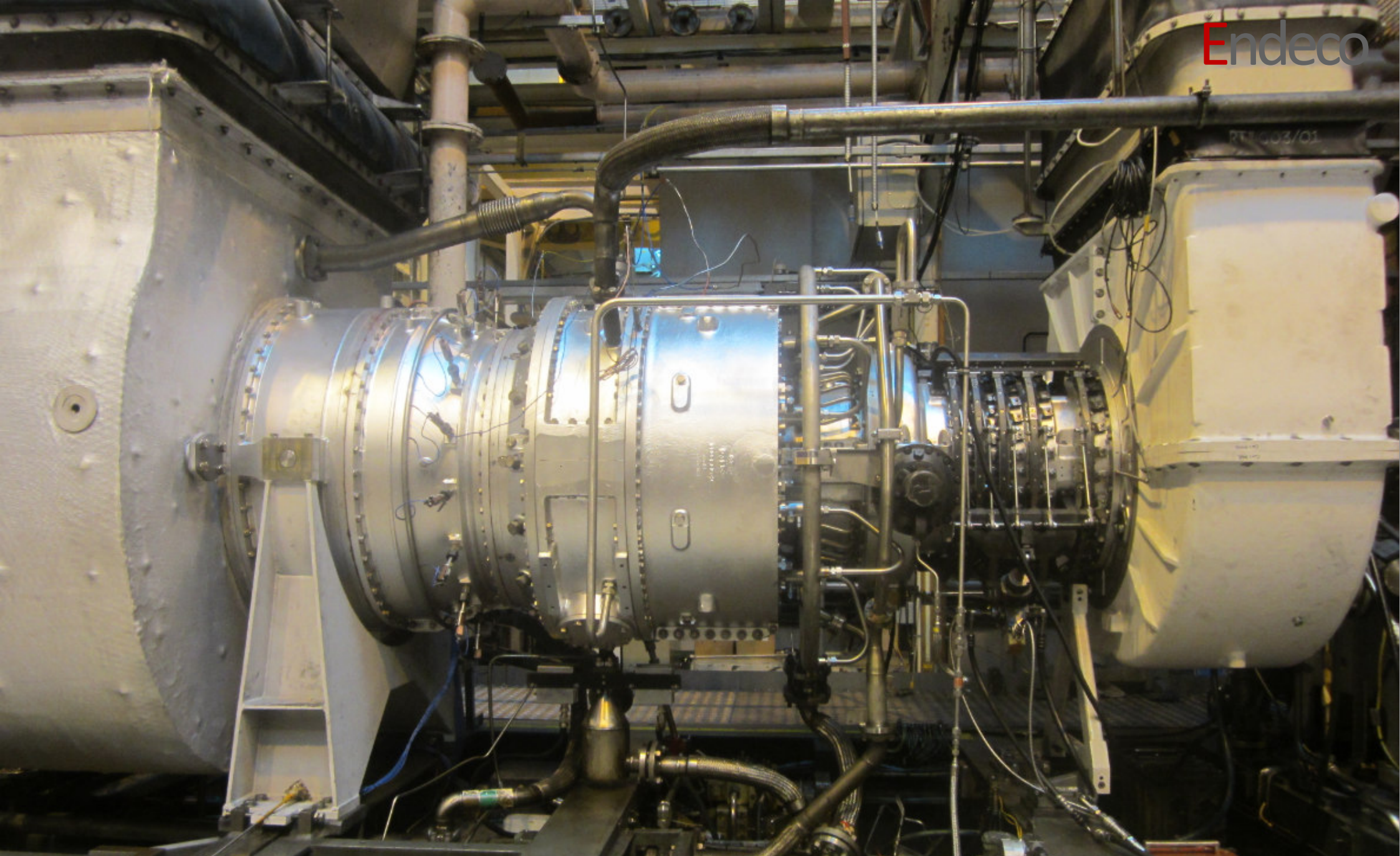
WATER INJECTION STATION





WATER INJECTION STATION





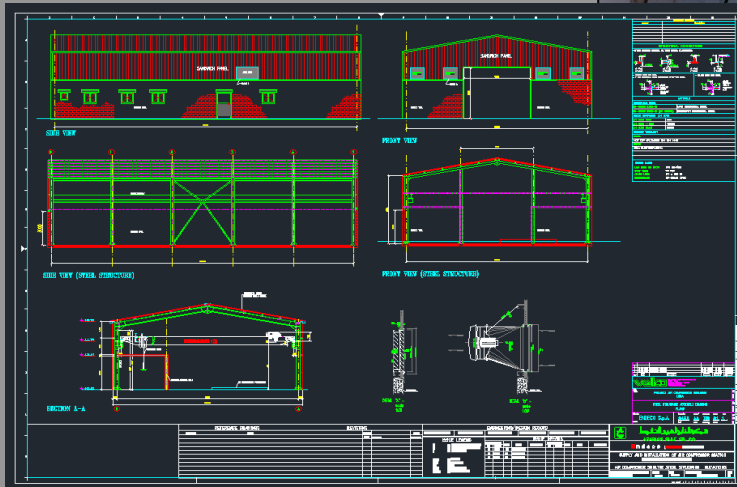
WATER INJECTION STATION

Project: **Air Compressor Station**

Libya

Scope of work:

Supply and installation of air compressor station at GC1 – Sarir Oil Field



AIR COMPRESSOR STATION

Sarir-Lybia



AIR COMPRESSOR STATION

Sarir-Lybia



AIR COMPRESSOR STATION

Sarir-Lybia

Detail: **E**lectrical Protection Study

Libya

Scope of work:

General Review of Electrical Distribution System for Messla, Sarir, Majid Sites with Protection Study, Selectivity Optimisation and Tripping Risk Minimisation

A Selection of Projects

Engineering
Protection
Study



ELECTRICAL PROTECTION STUDY

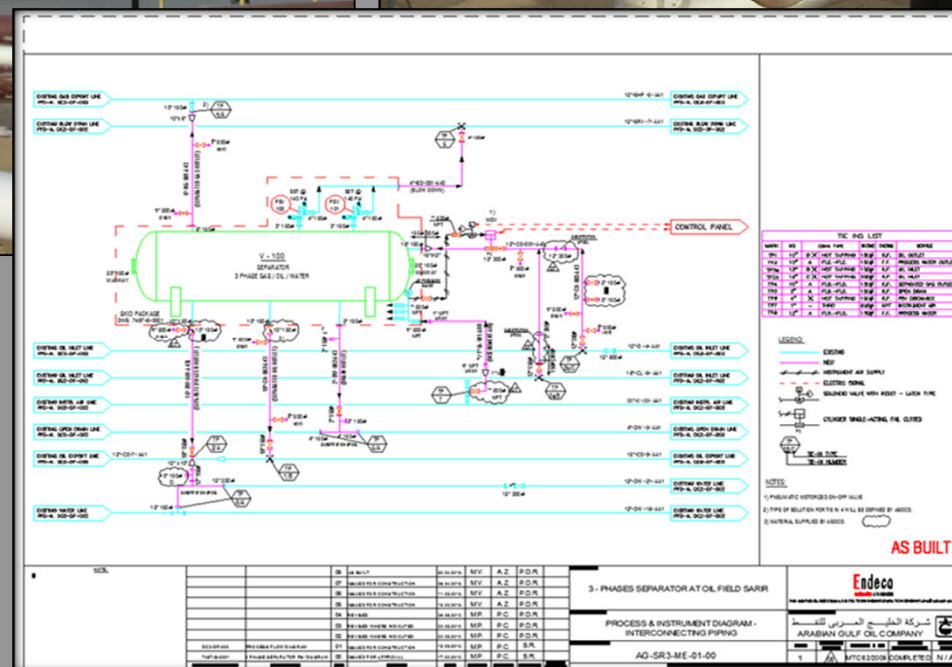
Messla, Majid, Sarir- Lybia

Project: **Three-Phase Separator**

Libya

Capacity: 100.000 bpd of fluid
(55000Bpd Oil / 45000bpd water)

Scope of work: Mechanical Design, and Installation of 3-phase separator



THREE PHASE SEPARATOR

Sarir - Lybia



THREE PHASE SEPARATOR

Sarir -Lybia



THREE PHASE SEPARATOR

Sarir -Lybia

CONTACT DETAILS



ADDRESS

ENDECO S.p.A.
Prato della Valle, 81
35123 Padova (Italy)



PHONE

+39 049 655433



FAX

+39 049 655697



EMAIL

endeco@endeco.it

