

SUPPLY OF 8 DFU HIGH PRESSURE HEAT EXCHANGERS
AND 2 TUBE BUNDLES FOR DFU HEAT EXCHANGERS
FOR MILD HYDROCRACKER UNIT

Client / End User: Motor Oil Hellas Korinth Refineries S.A.

Duration: 13.12.2017 ÷ 15.12.2018

Short Project Description :

EKME's scope of supply includes the following :

- Detailed workshop engineering and fabrication studies,
- Material procurement,
- Fabrication,
- Non destructive testing,
- Sandblasting/painting,
- PED certification,
- Packing and marking,
- Transport/delivery of equipment at DDP MOH Premises,

for 8 new DFU High Pressure complete Heat Exchangers with tag Nos E-7501A/B/C/D/E, E-7516A/B/C and 2 Tube Bundles for heat exchangers E-7514 & E-7515 that will be installed at Mild Hydrocracker Unit at MOH Refinery, in Korinth, Greece.

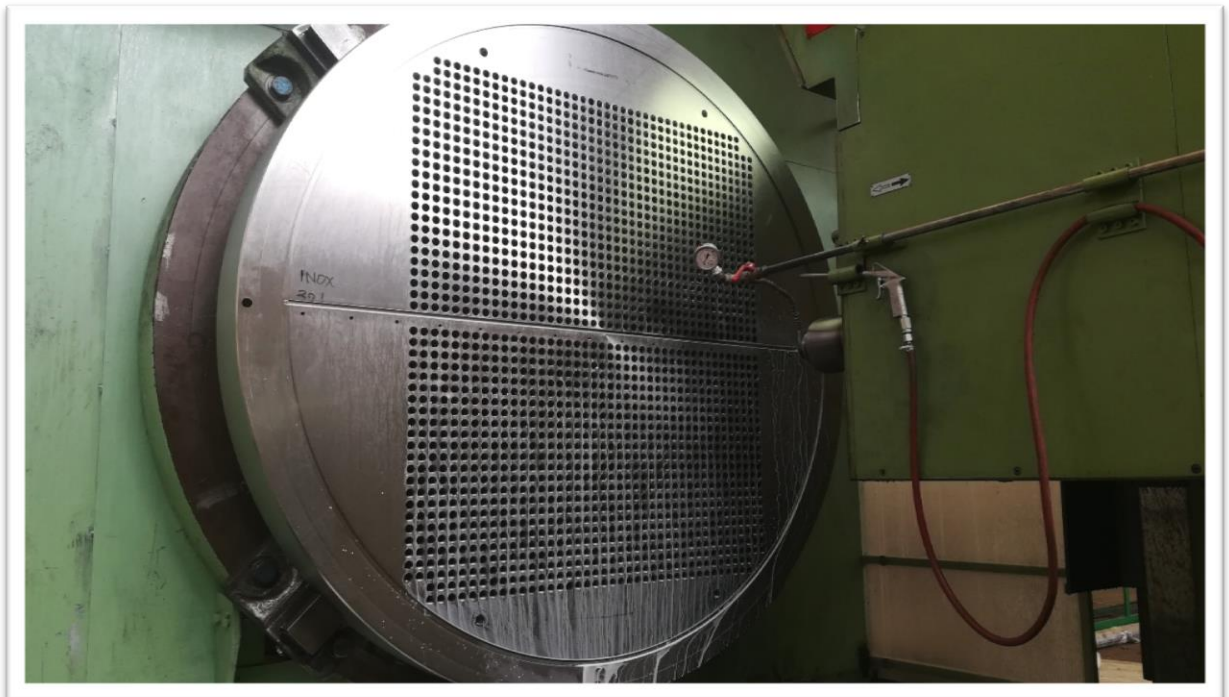
Heat Exchangers Technical Data are presented in detail at the next page.

Heat Exchanger	E-7501A/B/C/D/E MHC Reactor Feed/Effluent Exchangers	E-7516A/B/C 2nd HDT Reactor Feed/Effluent Exchangers
Type	DFU	DFU
Position	Horizontal	Horizontal
Special Service	Hydrogen	Hydrogen
Category / Module	IV / G	IV / G
Design Code	ASME VIII Div.2 ed. 2017 - TEMA 'R' 9th Ed., PED 2014/68/UE	ASME VIII Div.2 ed. 2017 - TEMA 'R' 9th Ed., PED 2014/68/UE
Design Temperature	305 up to 441 / 355 up to 460°C (Shell Side/Tube Side) (max : E-7501E)	202 up to 308 / 263 up to 352 °C (Shell Side/Tube Side) (max : E-7516C)
Design Pressure	122,5/F.V. / 104,2/F.V. kg/cm ² (Shell Side/Tube Side)	140,4/F.V. / 120,1/F.V. kg/cm ² (Shell Side / Tube Side)
Test Pressure	175,2 / 156,3 kg/cm ² (Shell Side / Tube Side)	200,8 / 171,7 kg/cm ² (Shell Side / Tube Side)
Shell Material	SA 387 Gr 22 Cl 2+ W.O. SS 347 _ 65+3mm to 68+3mm (max: E7501E)	SA 387 Gr 22 Cl2+ W.O. SS 347_ 68+3mm
Tube Material	SA 213 Tp 321 U type _ Ø19,05x2,11 'U'	SA 213 Tp 321 U type _ Ø19,05x2,11 "
Tubesheet Material	SA 965 F 321	SA 965 F 321
Weight (per item)	71,25 tns up to 72,85 tns (max : E-7501E)	61,75 tns up to 63,75 tns (max: E-7516A)
Bundle Weight (per item)	18,8 tns	14,35 tns
Length	9,93m up to 9,95m (max : E-7501D)	8,7 m
Internal Diameter	1,58m	1,52m
Capacity	11,32 / 5,82 m ³ (Shell Side / Tube Side)	9,04 / 5,19 m ³ (Shell Side / Tube Side)
P.W.H.T.	Yes (Shell Side / Tube Side)	Yes (Shell Side / Tube Side)

Buffles Drilling



Tubesheet Machining



Channel Machining



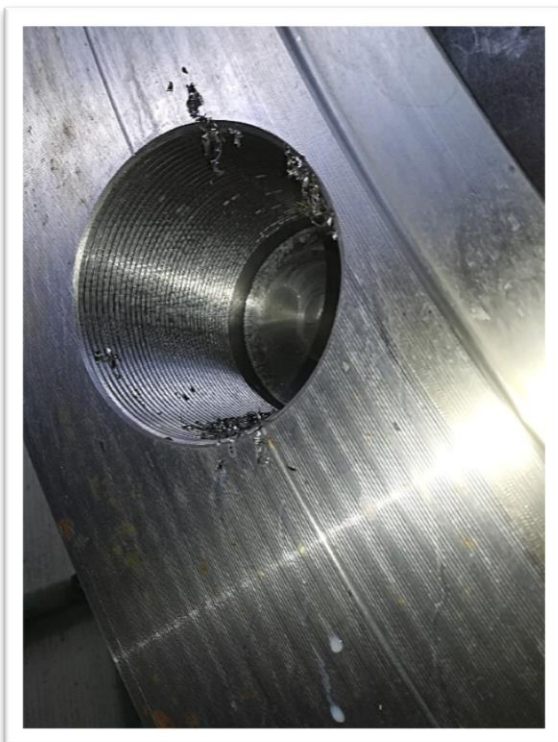
Threaded Couplings M64x3 to M39x3



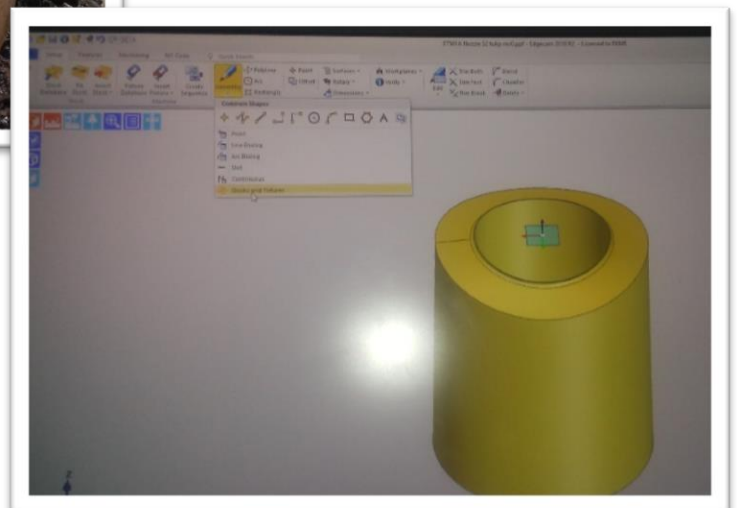
Welding of Threaded Coupling for Tubesheet



Threaded Flange Machining



Cover Holes $\Phi 106 \times 320 \text{mm}$ drilling (Edgecam 2018 machining software)



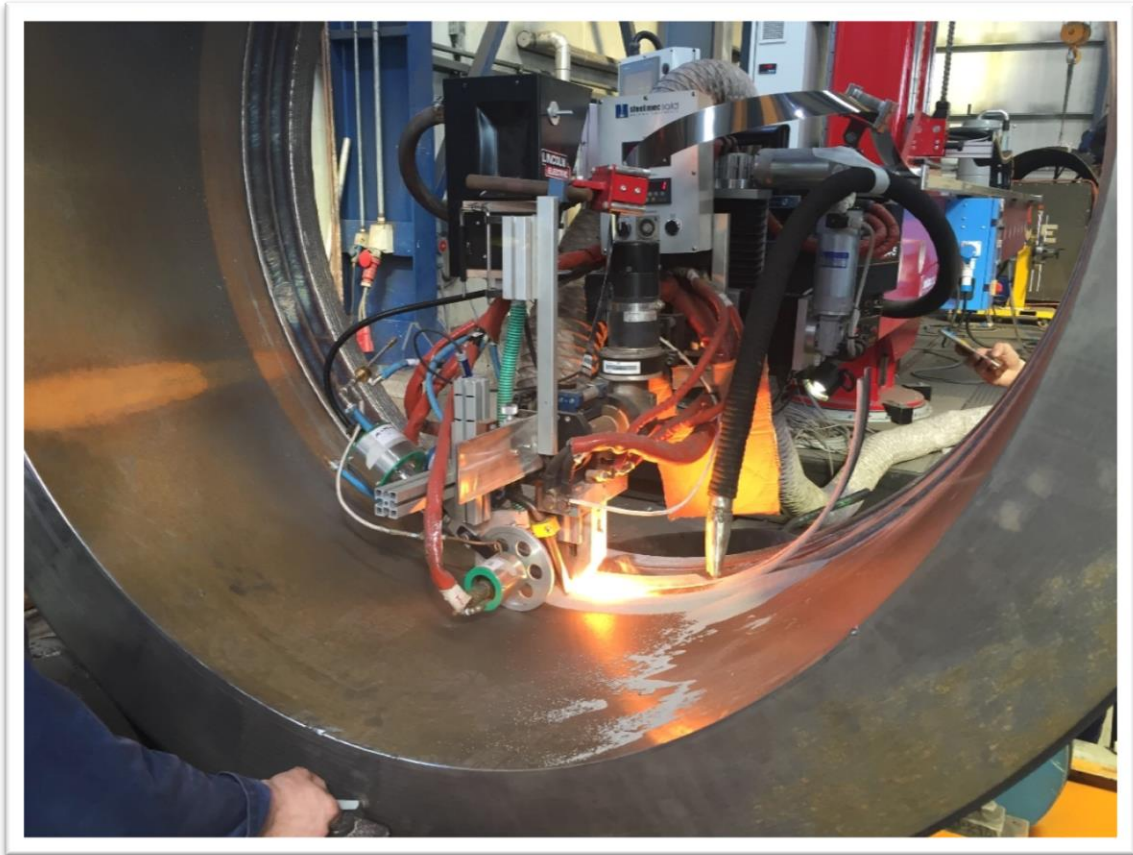
Lip Nozzle Machining



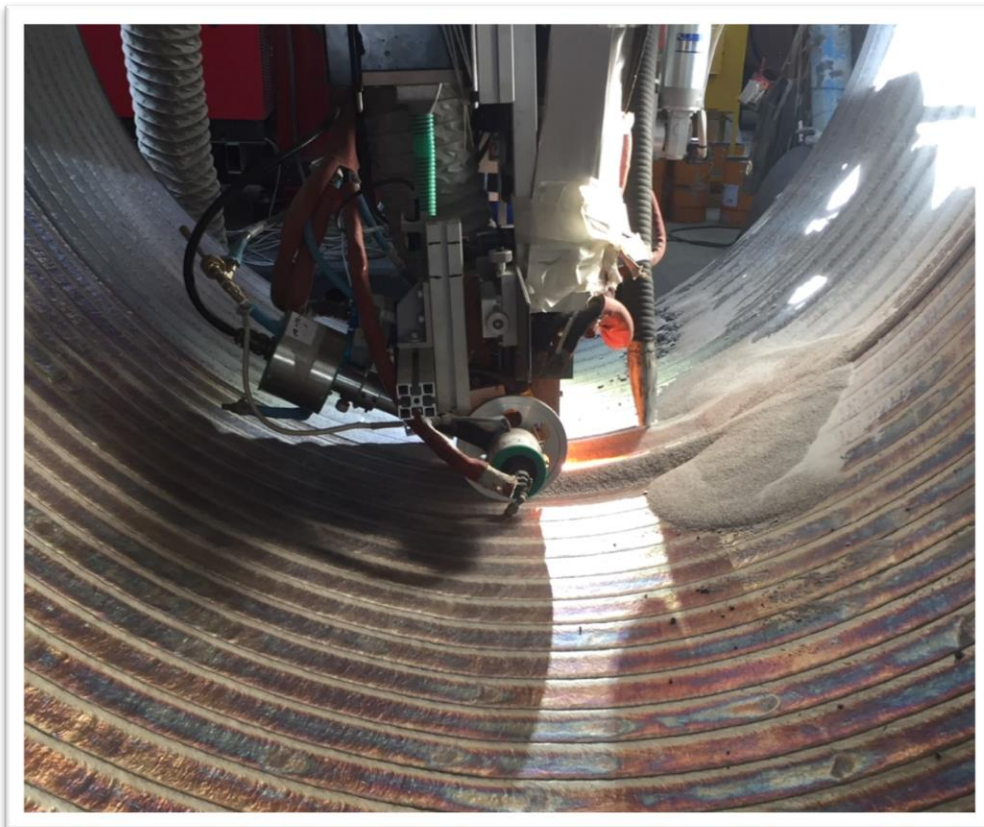
Internal Box Construction



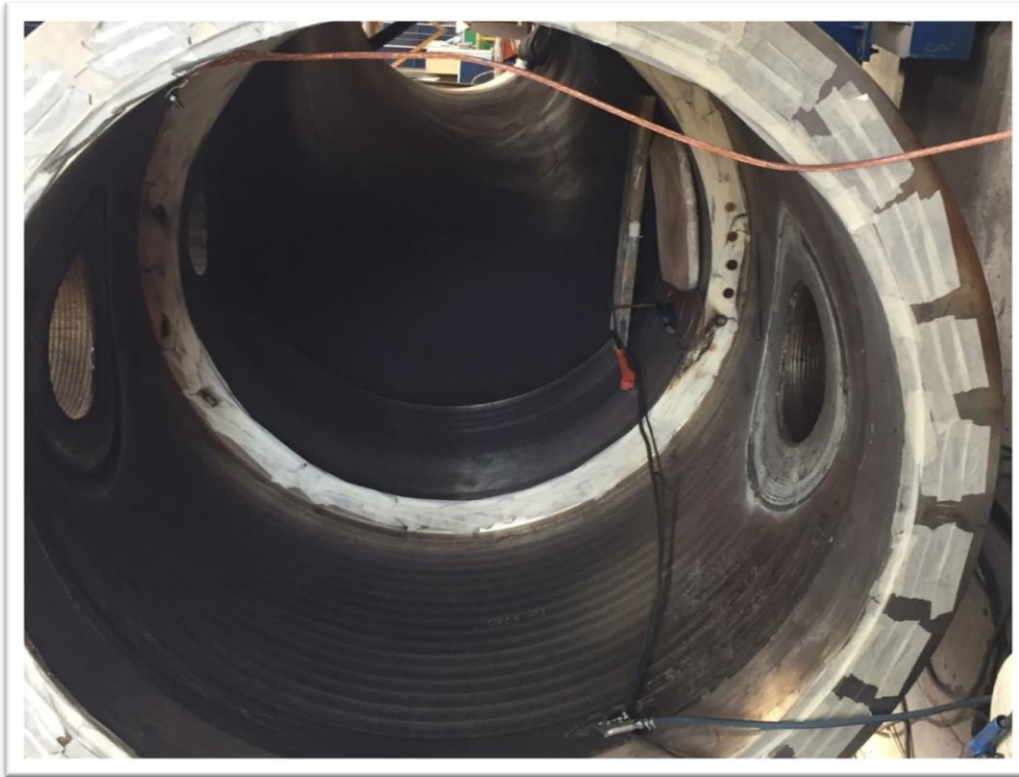
SAW Strip Lining on Shell (Weld Overlay)



Shell Plate with 309 Lining



Weld Overlay of Self Reinforced Nozzle



Weld Overlay of Spherical Cap



Weld Overlay of Self Reinforced Nozzle With Lip



Tube Bundle

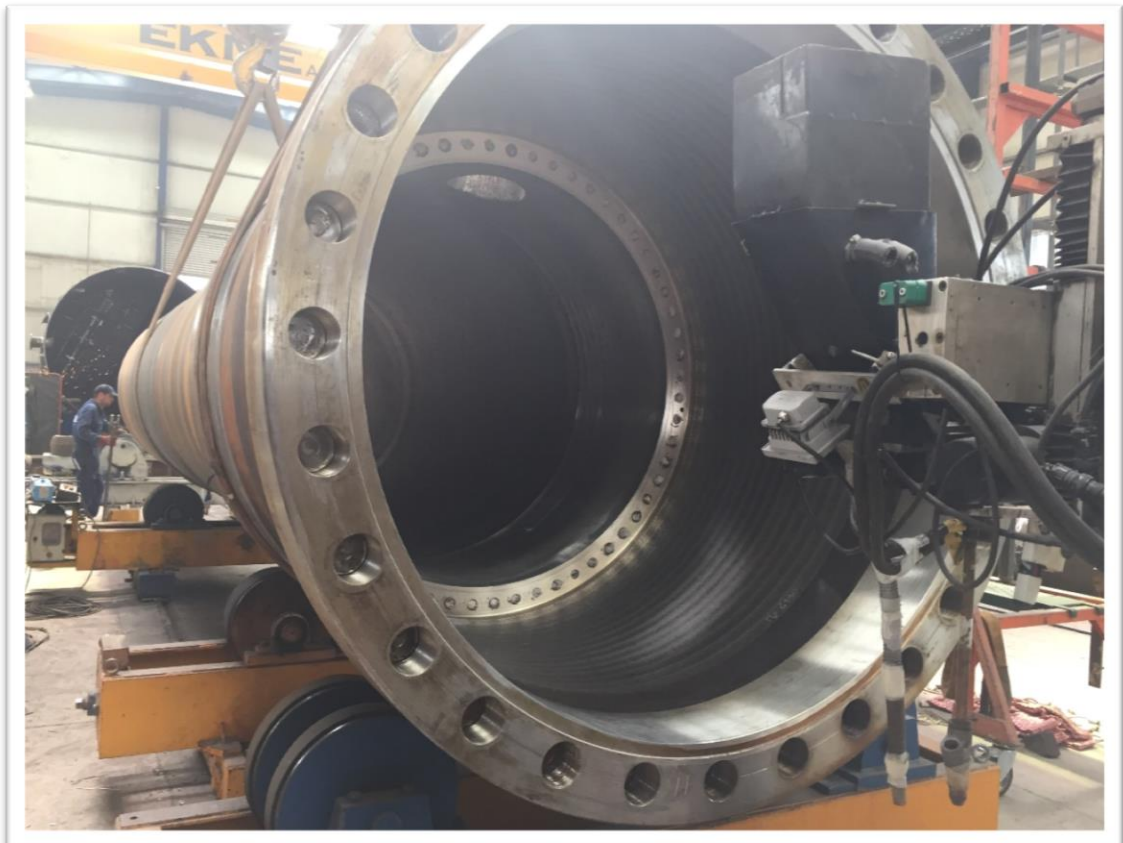


Tubesheet to Tubesheet Welding





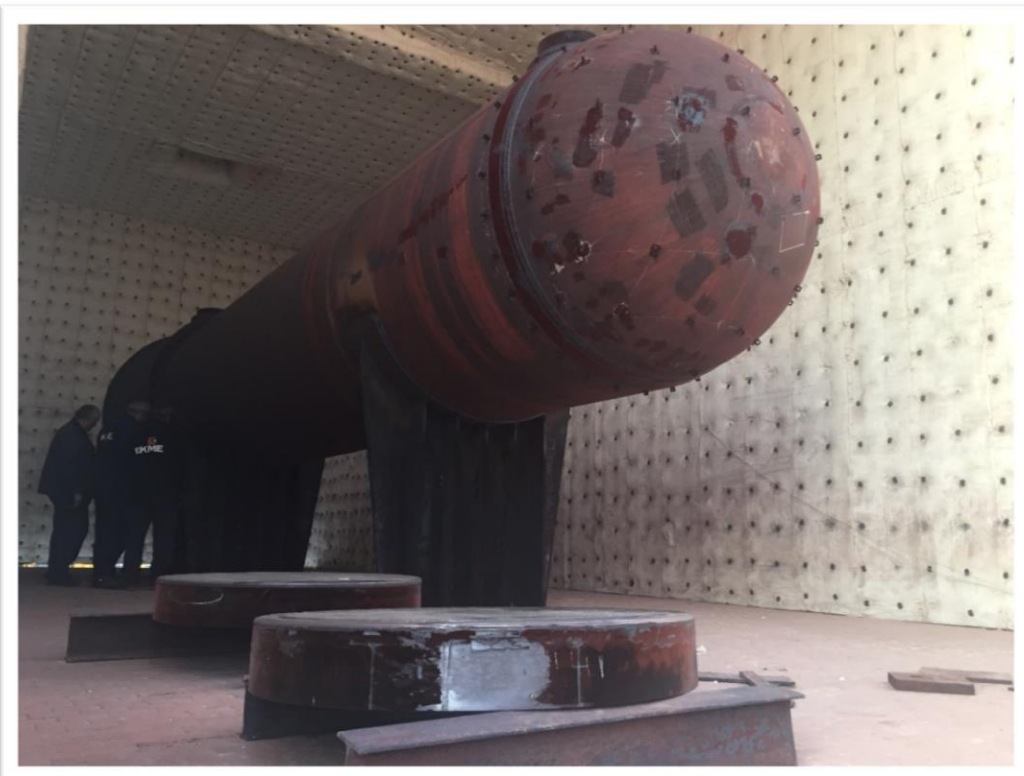
Shell DFU Type



Welding Transition Plates



Post Weld Heat Treatment



Tube Bundle Assembly



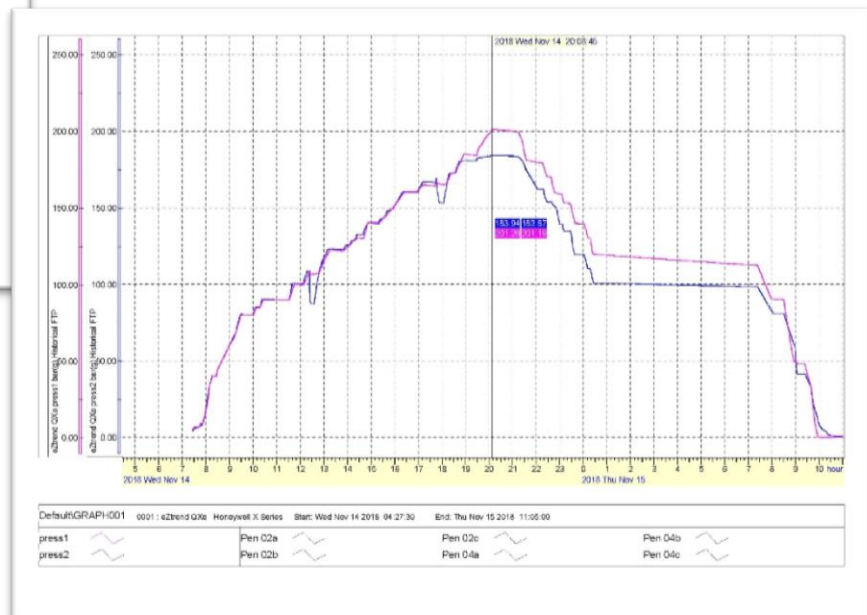
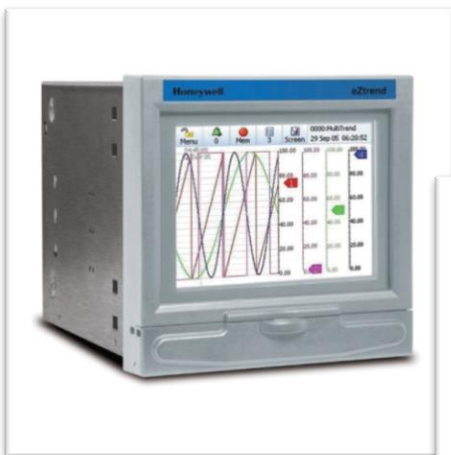
Gasket Assembly and Welding



E-7501 A/B Stacked Assembly



Preparation for Hydrotest



Painting



Shipment



