

Package No:

0482-MI20-94PO-9910

Package Name:

API 610 CENTRIFUGAL PUMPS

Scope of Work

Listed below are the API 610 Centrifugal Pumps to be utilized on various application as mentioned:

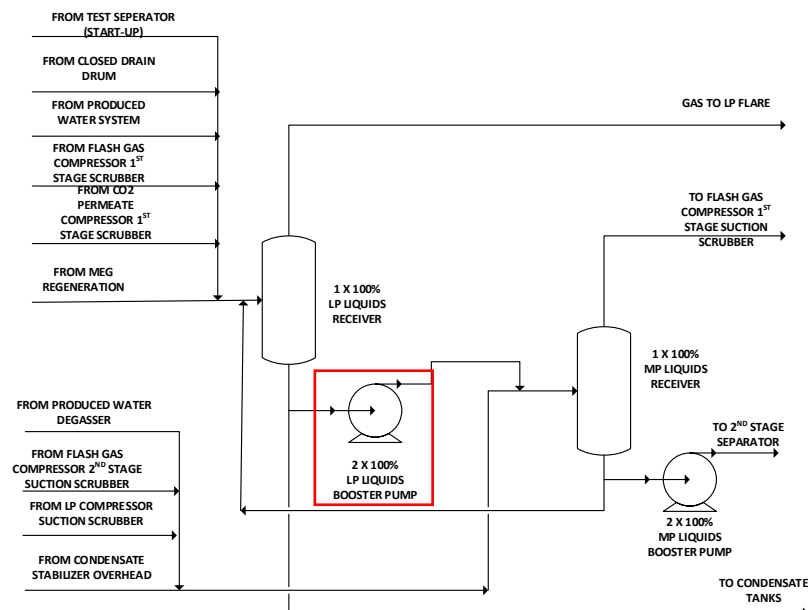
TAG NUMBER	SERVICE	SYSTEM LOCATION
PBA-1159AB	LP Liquids Booster Pump (2.2 m3/hr @ 113 meters)	Liquid Receiver System
PBA-1340AB	Condensate Recycle Pump (26.4 m3/hr @ 92 meters)	Condensate Stabilization System
PBA-1435AB	IGF Recirculation Pump (99 m3/hr @ 17 meters)	Produced Water Treatment System
PBE-3615ABC	Cooling Medium Circulation Pump (3800 m3/hr @ 92 meters)	Cooling Medium System
PBE3515AB	Heating Medium Circulation Pump(330 m3/hr @ 98 meters)	Heating Medium System

Refer to below for Process Description of each system

Liquid Receiver System

The purpose of the Liquids Receiver System is to recover the hydrocarbon liquids from the low pressure systems and recycle back to the process. The two-stage Liquids Receiver System also functions as a back-up condensate stabilization system via staged flashing to near atmospheric pressure before the partial stabilized condensate is sent to the hull condensate tanks. The system also facilitates start-up via the Test Separator. The Liquids Receiver System consists of the following components:

- 1 x 100% MP Liquids Receiver
- 2 x 100% MP Liquids Booster Pump
- 1 x 100% LP Liquids Receiver
- **2 x 100% LP Liquids Booster Pump (PBA-1159AB) – 2.2m3/hr per pump**

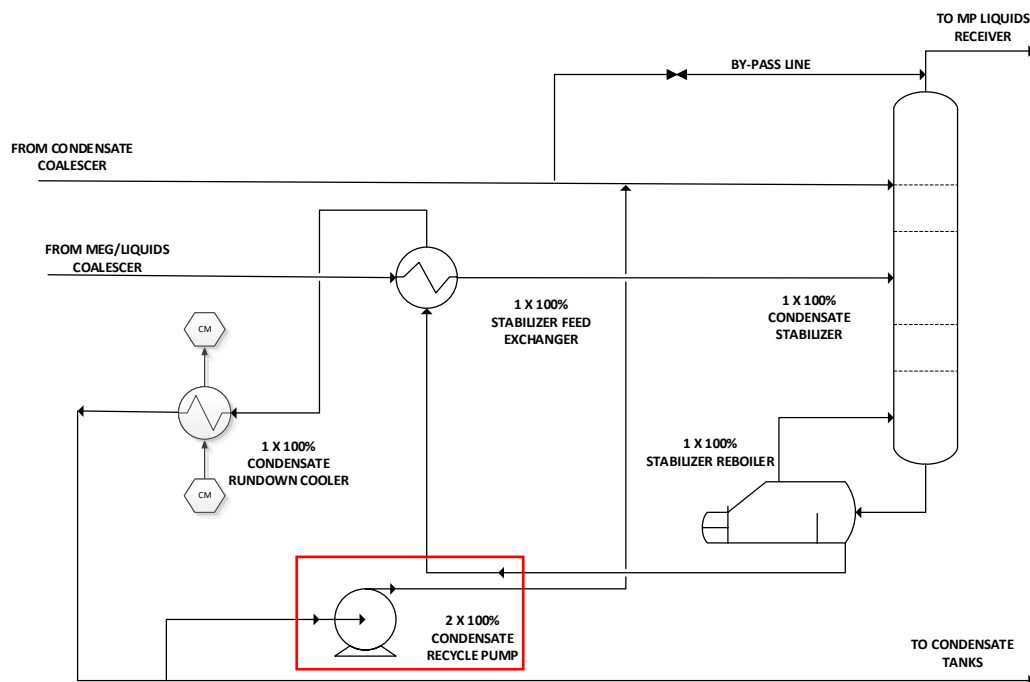


During the Condensate Stabilizer by-pass mode, both the MP Liquids Booster Pump and the LP Liquids Booster Pump will be stopped. The condensate will be first sent to the MP Liquids Receiver and then to the LP Liquids Receiver for two-stage flashing separation. The condensate will be partially stabilized to a True Vapor Pressure near atmospheric pressure and sent to the hull condensate tanks for storage

Condensate Stabilization System

The purpose of the Condensate Stabilization System is to stabilize the condensate and remove mercury in order to meet the condensate specifications: RVP(Reid Vapor Pressure) shall be below 0.69 bara (at 37.8°C) and the maximum mercury content is 30 ppb by weight. The Condensate Stabilization System consists of the following components:

- 1 x 100% Stabilizer Feed Exchanger
- 1 x 100% Condensate Stabilizer
- 1 x 100% Stabilizer Reboiler
- 1 x 100% Condensate Rundown Cooler
- **2 x 100% Condensate Recycle Pump (PBA-1340AB) – 26.4m³/hr per pump**

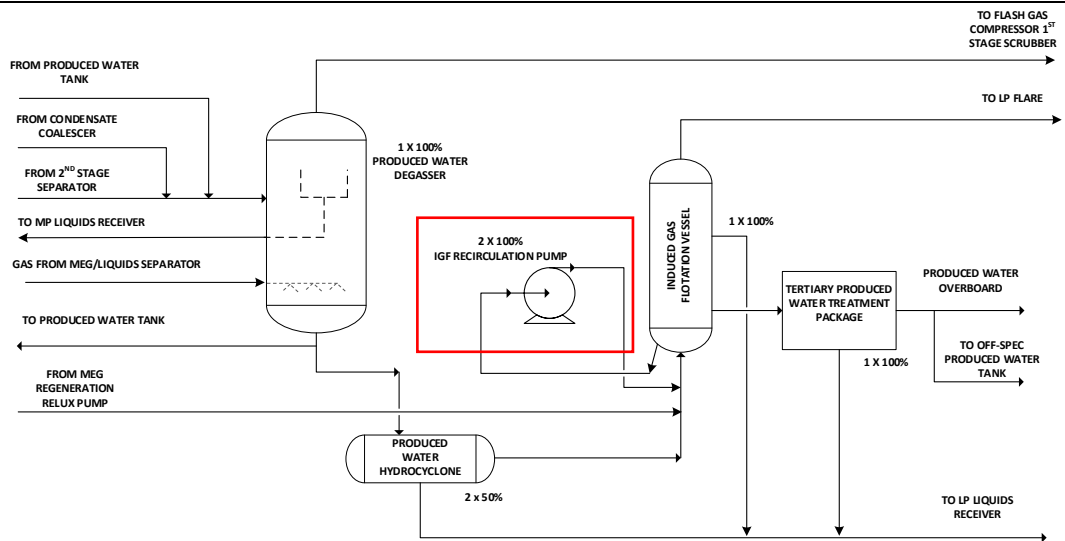


Condensate Recycle Pump is provided to handle the Condensate Stabilizer low turn-down conditions.

Produced Water Treatment System

The purpose of the Produced Water Treatment System is to remove hydrocarbons from the produced water stream and meet the overboard specifications: Shall be designed and maintained to achieve a final total OIW (Oil in Water) that can be demonstrated to be ALARP and acceptable to Australia regulations. The target design value for the 24-hourly average OIW shall not be greater than 30 mg/L as an upper bound. The produced water also needs to meet the mercury content specification which is max. 10 ppbw. The Produced Water Treatment System consists of the following components:

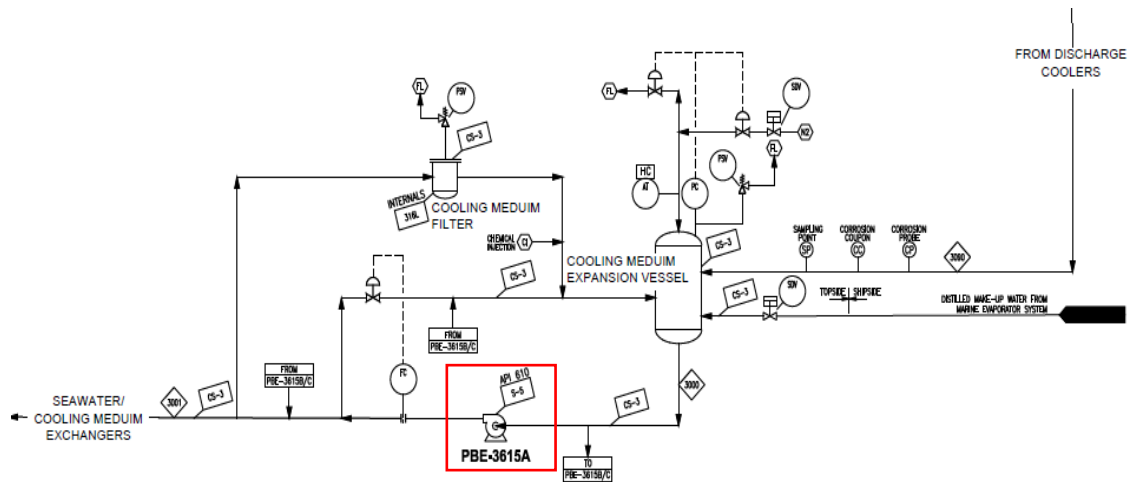
- 1 x 100% Produced Water Degasser
- 2 x 50% Produced Water Hydrocyclone
- 1 x 100% Induced Gas Flotation (IGF) Vessel
- **2 x 100% IGF Recirculation Pump (PBA-1435AB) – 99m³/hr per pump**
- 1 x 100% Tertiary Produced Water Treatment Package



Cooling Medium System

The purpose of the Cooling Medium System is to meet the cooling demands of the FPSO by supplying cooling medium to the end users. The Cooling Medium System consist of the following components:

- 1 x 100% Cooling Medium Expansion Vessel
- 3 x 50% Cooling Medium Circulation Pump (PBE-3615ABC) – 3800m³/hr per pump
- 1 x 10% Cooling Medium Filter
- 6 x 20% Seawater/Cooling Medium Exchanger (part of the Sea Water System)



The Cooling Medium System is a closed loop cooling water system circulated by the Cooling Medium Circulation Pump. It includes an expansion tank and a slip stream filter.

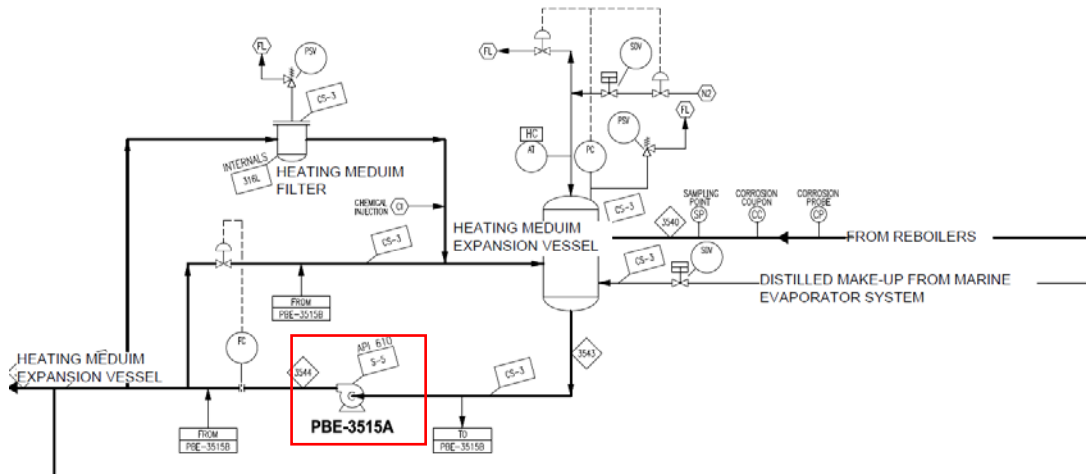
The Cooling Medium System supplies constant low temperature water (33.5°C @ ~ 12 barg) to all consumers. The returned cooling medium from the end users is cooled by seawater in the Seawater/Cooling Medium Exchanger back to the supply temperature.

Heating Medium System

The purpose of the Heating Medium System is to meet the heating demands of the FPSO by supplying heating medium to the end users. The Heating Medium System consist of the following components:

- 1 x 100% Heating Medium Expansion Vessel
- 2 x 100% Heating Medium Circulation Pump (PBE-3515AB) – 330m³/hr per pump

- 1 x 10% Heating Medium Filter
- 2 x 100% Heating Medium Heater (heated by steam)



The Heating Medium System is a closed loop hot water system circulated by the Heating Medium Circulation Pump. It includes an expansion tank and a slip stream filter.

The Heating Medium System supplies constant high temperature water (215°C @ ~ 29 barg) to all consumers. The returned heating medium from the end users is heated back to supply temperature in the Heating Medium Heater using desuperheated steam.

- Contract Award Q3 2020; Delivery Q2 2021 all units

Project Registration

ConocoPhillips is committed to ensuring Australian Industry full, fair and reasonable opportunity to participate in the Barossa Offshore Project. Expressions of Interest are invited from contractors and suppliers with the relevant capability and capacity to undertake the scope of work.

This is a request for specific expressions of interest. Contractors and suppliers will be considered for prequalification and tender if suitably qualified against this package.

Note that an important part of the project registration process is to register an Expression of Interest at the correct Scope level.

Scope level definition:

Full scope: Able to produce / supply the entire package.

Partial scope: Able to produce / supply one or more of the sub-packages.

All registrations are to be completed via ICN Gateway BarossaOffshore.icn.org.au. Please contact the ICNNT if registration assistance is required. Contact details: (08) 8922 9422 or admin@icnnt.org.au.

Project Website: ConocoPhillips Australia