



# 博纳船务(泰州)有限公司

BONA MARINE (TAIZHOU) CO., LTD



*Bona, Sincere Forever!*



**Bona Marine(Taizhou)Co.,Ltd**

Email: ye.hua@cnbonamarine.com, yehua@bonamarine.cn

Mob: +86 18951172668 Website: www.bonamarine.cn

## **Heater Exchanger Solutions**

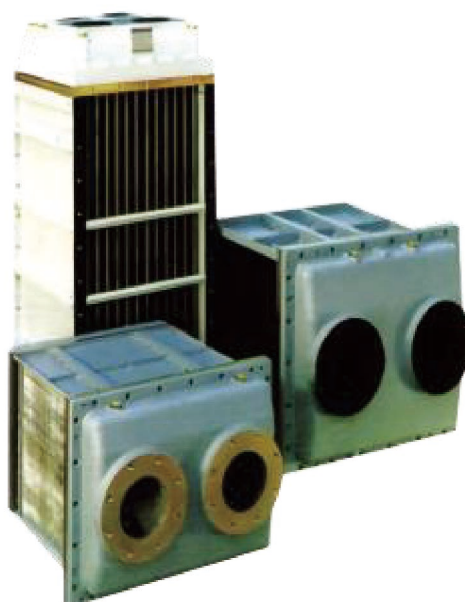
### **—. ME/AE Air Coolers**

We supply all type of diesel air-coolers that are good efficiency and compact heat exchangers used to cool diesels and increase air pressure to raise efficient

for diesel engine greatly, which also can apply to various Main Engine.

#### **Applied To Following Engine Tyes:**

- ◆ MAN
- ◆ B &W
- SULZER
- ◆ YANMAR
- MITSUBISHI
- ◆ WARTSILLA
- AKASAKA
- ◆ FIAT
- ◆ BLACKSTONE
- ◆ MAK
- ◆ PIELSTICK
- ◆ DEUTZ
- ◆ S.K.L
- ◆ CREPELLE
- ◆ M.W.M
- ◆ ALPHA
- ◆ CATERPILLAR
- ◆ DAIHATSU
- ◆ NOHAB POLAR





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Material:

Tube Sheet: Naval Brass

Tube: AL-Cu /Cu-Ni

Fin: Copper

To meet the requirement of our customers specification and different water quality, we are able to provide the optimum material combination of tube, tube fin, tube sheet and water headers, our standard range of tube material comprise copper, aluminum brass, copper-nickel alloy, titanium.

### ORDER NOTICE:

- The specification is decided by the area of heat exchanger that is the summation of the surface areas of air cooler tubes and cooling fins;
- Technical parameter and drawing requires while ordering;
- Our engineer can do on board survey and measurement, or fabricate accord to the old equipment;
- We provide chemical and ultrasonic cleaning service as well.



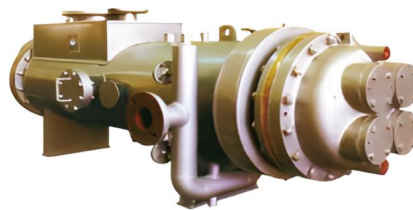
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## 二 .Shell-Tube Type Heat Exchanger



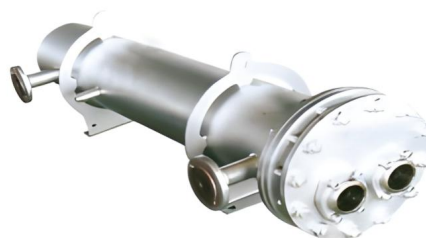
Fresh water generator



ATM condenser



L.O. cooler



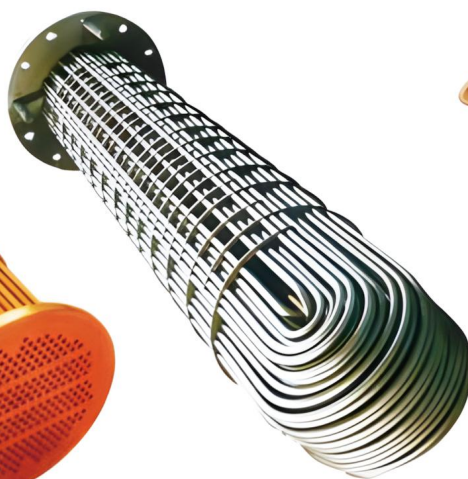
F.O. heater



Heater bundle



Cargo heater assembly





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The tube-shell typed heat exchanger with the wide adaptability advantage as well as sophisticated manufacturing technology, has become one of the most popular heat exchanging equipment in shipping industrial, it is mainly made up with heat exchanger the tube sheets, tubes, baffles, shell and head covers.

We classify heat exchanger to three type of tube-shell typed heat exchanger by the functional:

Oil(water)cooler, condenser and oil(water)heater

Oil(water)Cooler is used in cooling of lubrication oil or water system

Our lubricating oil and fresh water cooler are used to cool lubricating oil and fresh water of diesel engine, this cooler is shell expansion type of horizontal shell and straight tubes, the end of the cooling tubes are connected separately to left and right and right tube by means of expansion, there are one lubricating oil or fresh water inlet and outlet in left and right of the shell, the cooling water following in tubes conducts heat exchanger with lubrication oil or fresh water while they flow across the tube along the route formed by the curved membranes.

Atmosphere Condenser is used in condensing excess steam or refrigerant. The condenser is shell expansion type of horizontal shell and straight tubes, the ends of the cooling tubes are connected separately to left and right tube plate by means of expansion, left and right tube plates are linked to end covers with bolts and cooler bolts, the shell is equipped with steam inlet pipe joint, condensed water outlet pipe joint, soda water injecting valve, steam valve, valve for air and liquid discharge and relief plugs, the cooling water flowing in the tubes, and conducts heat exchange with the steam when it flowing across the tube along the routes formed by the baffle in the shell, this condenser is used for atmosphere condensing.

Oil (water)Heater is used in heating lubricating oil, fuel oil or fresh water

According to synthesize structure of tube and shell parts, it can be classified as set style /float style/U tube type style.



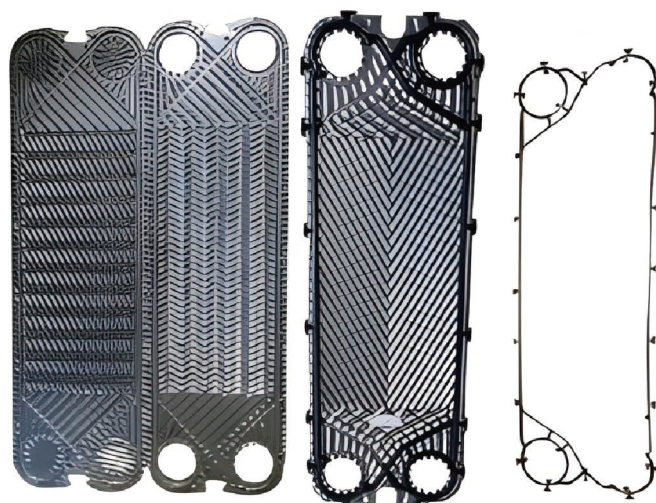
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## ≡ . Plate Type Heat Exchanger



**Plate-type heat exchange** can be classified into plate-type cooler and plate-type heater. The plate-type cooler is used for cooling the lubrication oil, fresh water or acid and alkali media on the power equipment. The plate-type heater is used for heating fresh water, oil and drinking water.

Material:

1. Stainless steel 304
2. Stainless steel 316
3. Titanium and titanium alloy



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### **Max working Temperature of gasket material**

Bucrylate120

EPDM160

Fluororubber250

### **Working pressure 1.0-2.0 MPa**

### **ADVANTAGE OF PLATE HEAT EXCHANGER**

#### **Compact size**

The plate-type heat exchanger occupy much less space for maintenance and repairing , even with very limited space volume of frame but provide large heating area, the capacity volume is only 30% and occupied only 1/5 – 1/10 floor area compare tube-shell heat exchanger

#### **Light weight**

The weight can be reduced as much as 50% due to small frame and volume

#### **High heat transmission**

Due of high torrential flow of the fluid inside, the heat transmission coefficient if 3 to 5 times high than tube type heat exchanger

#### **Easy for dismantling**

There is no welding upon the plate-type heat exchanger, so it is easy to dissemble in case of cleaning or replacing require, and easy for increasing or decreasing the plates , all the means that is has high flexibility

#### **Low scaling possibility**

The higher smoothness of the plate and the torrential flow of fluid inside the passage way result in thinner layer of scale so that the heat resisting coefficient is only 1/5 in compare to tube-type heat exchanger.

#### **Avoid of mixing of the two media**



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In case of leakage of the fluid from the sealing gasket, the fluid can only come out from the overflow hole without being mixed.

### **High rate of heat recovery**

As a result of high rate of heat transmission by way of the backflow mode, the heat difference of the end is as little as 1 degree so that the rate of heat recovery is as high as 95%

### **Minimum hold up of liquid**

Its hold up of 80% less that of the tube type heat exchanger

### **Order Notice:**

New type design & fabricate according to clients"s requirements

We supply plate & gasket spares for heater exchanger, such as ALFA-LAFA,APV , SONDEX ,TRANter, GEA etc,

Plate/gasket replacement or new fabrication according to existing/used one  
Maintenance service including chemical cleaning, replacing gasket and plates on board or in workshop

Maintenance procedure including plate cleaning, NDT, assembling, pressure test, commissioning etc.

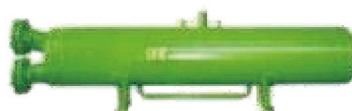
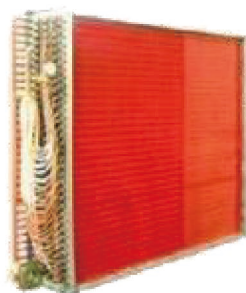


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### 四. AC Condenser/AC Evaporator/AC Heater



The specification of product is decided by cooling surface area. Please provide your technical parameters and drawing before order, we will produce according to your requirements. We also can get on board to survey the dimensions of your cooler if possible

#### Main Materials:

##### 1. AC Condenser

Tubes: Al-Cu, Cu-Ni

Tube sheet: Copper and steel composite

Plate Sheet: Carbon steel

##### 2. AC Evaporator

Fins: Aluminum/Copper

Tubes: Copper

##### 3. AC Heater

Fins: Aluminum/Copper; Tubes: Copper



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## **五. Crane oil cooler/GE Radiator**



The Crane oil cooler/radiator consist of three parts: water inlet chamber, outlet chamber and cooler core. The coolant flows in the cooler core inside and the air passes through the cooler core outside. Hot coolants are cooled by cooling off the air, which heats up by absorbing the heat from the coolant.

Please provide your technical parameters and drawing before order, we will produce according to your requirements. We also can get on board to survey the dimensions of your cooler if possible.

Core material:

1. Aluminum (Crane oil cooler)

2. Aluminum/Copper (GE Radiator)



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## 六. Pressure Water Tank/Calorifier /Air Bottle



### **Pressure Water Tank**

Our pressure cabinet is suitable to provide daily fresh water, sea water and sanitary water, it is applicable to the fresh water pipeline and the sanitation water system. In terms of working manner, it can be classified as drinking water pressure tank, fresh water pressure tank, sea water pressure tank and chemical storing tank.

### **Calorifier**



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The hot water tank can be used for heating the water from normal temperature to 60-80 degree by steam or electricity for on board staff.

### **Order Notice:**

The specification is decided with the volume

Technical parameter requires while ordering, we will produce according to your requirement

Our Engineer can do on board survey and measurement, or fabricate according to the old equipment

### **Air Bottle**

Air bottle is used to store compressed air and supply start up or air whistle for main engine and auxiliary engine.

Two types:

A: Vertical or inclination

B: Horizontal Structure:

A style is made up of bottle valve and steel body, body has hand hole (or man hole) for easy wash and examination, and bottle valves set up inlet/outlet valve safety valve, drain valve etc.

B style is made up of steel body manhole for easy examination and repairs set inlet /outlet valve, installation seat etc.