

FORBES-BRYAN Low Corrosion TRAY TYPE DEAERATOR – 5MW to 400MW

Supply and install tray type deaerator, which shall be manufactured in Australia using skilled labour and proven materials, for optimum life and efficiency and will comply with the following Australian Standards:

AS1200-2000	Pressure Equipment
AS1210-2010	Pressure Vessels
AS1657-1992	Fixed platforms, walkways, stairways and ladders – Design, construction and installation
AS1271-2003	Safety valves, other valves, liquid level gauges and other fittings for boilers and unfired pressure vessels
AS3000-2007	Electrical Installations
AS3920.1-1993	Assurance of Product Quality – Pressure Equipment Manufacture
AS3992-1998	Pressure equipment – Welding and brazing qualification
AS4037-1999	Pressure equipment – Examination and testing
AS4343-2005	Pressure equipment – Hazard levels
AS4458-1997	Pressure Equipment – Manufacture

DEAERATOR

The deaerator shall be of Forbes and Hunt Boilers manufacture or equal approved and must comply with the following performance and construction criteria:

Construction

The deaerator storage vessel and tray vessel will be manufactured from carbon steel and have adequate storage capacity to provide 120% of the rated capacity of the steam plant that it feeds.

The deaerator shall be fitted with individual replaceable trays, which will be manufactured from stainless steel to ensure protection from the effects of corrosion.

The deaerator trays will be housed within a sealed stainless steel chamber, such that all corrosive gasses extracted from the water are vented to atmosphere without contacting any carbon steel surfaces.

Steam shall enter the deaerator first coming into contact with the hottest water, which is leaving the last row of trays and then proceed upwards through the tray stack.

The deaerator shall be designed for a maximum Working Pressure of 350 kPa and Operating Pressure of 300 kPa.

The deaerator will be provided with an adequate number of inspection openings to facilitate internal inspection, tray replacement and cleaning.

Water Entry

The water for deaeration shall enter the vessel through a spray tube(s) which will be manufactured from stainless steel to minimize corrosion effects.

The spray tube(s) shall disperse the water evenly across the trays where it will be controlled for suitable deaeration to take place.

ADELAIDE

599 Port Road, West Croydon SA 5008
Ph: 61 8 8268 8877 Fax: 61 8 8347 1311

MELBOURNE

49 Lambeck Drive, Tullamarine Vic 3043
Ph: 61 3 8336 1100 Fax: 61 3 8336 1177

MELBOURNE (Hunt Boilers)

11 Helen Kob Drive, Braeside Vic 3195
Ph: 61 3 9580 9377 Fax: 61 3 9580 9411

BRISBANE (Hunt Boilers)

10/37 Mortimer Road, Acacia Ridge Qld 4110
Ph: 61 7 3277 4730 Fax: 61 7 3277 9730

SYDNEY (Hunt Boilers)

4/38 Powers Road, Seven Hills NSW 2147
Ph: 61 2 9674 1255 Fax: 61 2 9674 1877

PERTH (Hunt Boilers)

1/14 Baling Street, Cockburn Central WA 6164
Ph: 61 8 9414 8787 Fax: 61 8 9414 8383

FORBES-BRYAN Low Corrosion TRAY TYPE DEAERATOR – 5MW to 400MW

Gas Venting

All gases removed through the deaeration process shall be vented through a stainless steel vent condenser pipe, which extends through a stainless steel tray box.

No undeaerated water or removed gasses shall come into contact with any carbon steel surfaces within the deaerator vessel(s)

Deaerator Trays

All deaeration trays shall be manufactured from stainless steel and be suitable for replacement without the need for specialised tools or welding.

All trays will have a controlled overflow and retention such that effective gas removal occurs, after which deaerated water shall naturally fall into the storage area.

Deaerator Valves and Mountings

The deaerator shall be supplied complete with valves and fittings including main steam stop valve, safety valve(s), feed water isolating and check valves, blowdown valve, and water gauges.

Equipment Access

Ladders and galleries shall be provided to the deaerator such that the necessary valves and fittings can be operated effectively.

Control Overview

The deaerator control panel shall be rated to IP55 and incorporate the necessary controls, switches and other components to effectively manage the system.

The control panel shall include the display of current operating conditions and fault identification.

Management System

The deaerator management system shall, as a minimum, control and detect the following:

- Automatic feed water control;
- Input pressure reduction control;
- Vacuum breaker;
- Vent valve;
- Pressure and temperature indication;
- Overflow control;
- Low water level control;
- High water level control;

ADELAIDE

599 Port Road, West Croydon SA 5008
Ph: 61 8 8268 8877 Fax: 61 8 8347 1311

MELBOURNE

49 Lambeck Drive, Tullamarine Vic 3043
Ph: 61 3 8336 1100 Fax: 61 3 8336 1177

MELBOURNE (Hunt Boilers)

11 Helen Kob Drive, Braeside Vic 3195
Ph: 61 3 9580 9377 Fax: 61 3 9580 9411

BRISBANE (Hunt Boilers)

10/37 Mortimer Road, Acacia Ridge Qld 4110
Ph: 61 7 3277 4730 Fax: 61 7 3277 9730

SYDNEY (Hunt Boilers)

4/38 Powers Road, Seven Hills NSW 2147
Ph: 61 2 9674 1255 Fax: 61 2 9674 1877

PERTH (Hunt Boilers)

1/14 Baling Street, Cockburn Central WA 6164
Ph: 61 8 9414 8787 Fax: 61 8 9414 8383

Deaerator Insulation

The deaerator pressure vessel(s) shall be fully insulated over their complete length using Glasswool or Rockwool insulation, selected to be suitable for the continuous operating temperature of the deaerator.

A suitable metal case shall cover over the insulation with all longitudinal and transverse joints lapped by a minimum of 40mm.

Metal cone downs shall be used at all terminations and transitions on the deaerator and all joints being made weatherproof with the application of a suitable sealant.

Documentation

The deaerator shall be provided with complete set of documentation as follows:

- Design Registration Statement
- Design verification Statement
- Manufacturer's Data Report
- Copies of all Material Certificates
- Copies of all Non-destructive Test Reports
- Complete Instruction Manuals (2 sets - electronic)

General Capacity Specification

The deaerator shall be provided as follows:

Model	Forbes-Bryan or approved equal
Maximum water volume for deaeration	(specify) kgs per hour
Minimum deaerated water volume stored	(specify) Litres
Maximum retained oxygen after deaeration	0.005 cc/l or 7 ppb
Maximum retained carbon dioxide after deaeration	Zero (measurable)
Design Temperature	250°C
Design pressure	350 kPa
Maximum operating pressure	300 kPa
Hydrostatic Test Pressure	525 kPa
Principle Design Standards	AS1200, AS1210, AS3920.1, AS3992, AS4343 and AS4458

ADELAIDE

599 Port Road, West Croydon SA 5008
Ph: 61 8 8268 8877 Fax: 61 8 8347 1311

MELBOURNE

49 Lambeck Drive, Tullamarine Vic 3043
Ph: 61 3 8336 1100 Fax: 61 3 8336 1177

MELBOURNE (Hunt Boilers)

11 Helen Kob Drive, Braeside Vic 3195
Ph: 61 3 9580 9377 Fax: 61 3 9580 9411

BRISBANE (Hunt Boilers)

10/37 Mortimer Road, Acacia Ridge Qld 4110
Ph: 61 7 3277 4730 Fax: 61 7 3277 9730

SYDNEY (Hunt Boilers)

4/38 Powers Road, Seven Hills NSW 2147
Ph: 61 2 9674 1255 Fax: 61 2 9674 1877

PERTH (Hunt Boilers)

1/14 Baling Street, Cockburn Central WA 6164
Ph: 61 8 9414 8787 Fax: 61 8 9414 8383