

Denarad Boilers

Single-Drum Boilers



John Cockerill's Denarad Boiler is a single-drum boiler with natural circulation and a vertical flue gas flow. This well-proven design was developed for heavy industrial use and easy maintenance.

- Self-supporting boiler with water cooled furnace walls
- Meets steam equipment design, fabrication and safety regulations for international codes and standards
- All tubes connected to the steam drum and to the headers are welded
- Convection parts (super-heaters, evaporators and economizers) are pre-assembled in the workshop
- Hydro-testing of convection parts performed prior to assembly on-site
- Outer drum designed to enable fast start-up & load changes
- Available cleaning systems – soot blowers, water guns, wall blowers and/ or gravitational bullet cleaning systems
- Capable of meeting stringent low NO_x emission requirements, (low NO_x burners, flue gas recirculation, SNCR or SCR systems)

Operational Data

Steam flow 110,000 to 1,100,000 lb/hr

Pressures 580 to 2,465 psig

Steam Temperatures up to 1,050 °F

Fuels

- Liquids
 - Heavy fuel oil
 - Light fuel oil
 - Waste liquid fuel
- Gaseous
 - Natural Gas
 - Refinery Gas
 - Waste gas
 - Blast furnace gas
 - Coke oven gas

References

Customer	Country		Steam Production (lb/hr)	Design pressure (psig)	Working Pressure (psig)	Temp (°F)
BASF	Belgium	1	418,878	2103	1813	968
Arcelor Mittal Fos	France	1	485,017	1377	-	932
Arkema	France	1	50,706	667	507	752
Innova	U.K.	1	59,525	754	-	752
BASF – Antwerpen	Belgium	1	130,073	798	739	590
BASF- Antwerp (Linde)	Belgium	2	176,370	2103	1813	986
Südzucker – Werk Zeitz	Germany	1	176,370	1595	1334	998
Intercom, Aalst	Belgium	1	496,040	2030	1740	1004
Rhône-Poulenc-Rous-sillon (CDF)	France	1	220,462	1102	986	932
Agroindustria La Sierra	Uruguay	1	44,092	290	-	608
Finaneste – Antwerp	Belgium	2	220,462	-	1494	950
Baron - Levêque-Krupp Moso Sugar Mill	Burundi	2	55,115	406	362	716
Leuna Werke AG	Germany	1	264,555	-	1682	959
Cargill – Tilbury – UK	U.K.	1	99,208	-	652	752
Intercom, Ruien Power Plant Unit 5	Belgium	1	1093,184	2741	2538	1007
Louis De Poortere – Mouscron	Belgium	1	50,706	333	290	Sat.
Tiense Raffinaderij Tienen Sugar Mill	Belgium	1	242,508	1064	1232	968
U.C.B – Sidac – Gent	Belgium	1	158,733	-	1160	887
Denaeyer Papier NV	Belgium	1	264,555	1523	1740	959
Britisch Sidac – Wigton	U.K.	3	55,115	-	623	752
Soc. De Cultures for Binga	Zaire	2	13,228	-	464	662
Unerg, Awirs Power Plant Unit 4	Belgium	1	837,756	2248	2030	1013
Intercom, Ruien Power Plant Units 3-4	Belgium	2	848,779	2741	2538	1031
Cousa	Uruguay	1	39,683	435	-	770
Intercom Ruien Power Plant Units 1-2	Belgium	2	407,855	2103	1885	1015
U.C.E. Linalux-Hainaut Liège Awirs Power Plant – Unit 1/2	Belgium	1	925,941	1276	1087	932

Main Strengths

- Operational flexibility from 10 to 100% MCR (Maximum Continuous Rate)
- High thermal efficiency up to 97.5% (LHV)
- High availability up to 99.5%
- Low-corrosion design features
- Guaranteed low NOX
- Optional Bundle cleaning systems
- Designed for easy maintenance

Our offer

Process Engineering

- Process Flow Diagram (PFD)
- Process and Instrumentation Diagram (P&ID)
- Risk analyses (HAZOP/SIL)

Mechanical & Electrical Engineering

- Steel structure
- Piping
- Ducting
- Insulation and cladding
- Electrical and Instrumentation (E&I)

Process Control

- Burner Controls
- Boiler Controls
- Emission Controls
- ESD, Emergency Shut-down system

Equipment Engineering

- Boilers (ASME, EN or DIN codes)
- Bundle Cleaning with soot blowers, water guns, wall blowers and/or gravitational bullet cleaning systems
- Rotating equipment (pumps, fans, turbines ...)
- Flue gas cleaning (DeNOx, DeSOx, bag house, ESP ...)

EPC Contracting

Certificates

- ISO 9001:2015
- ISO 14001
- ISO 3834-2
- ASME 'S' – 'U' – 'PP'

John Cockerill Energy Worldwide:

Belgium – USA – Canada – Mexico – China

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