

Control Cabinet NovaReg 3

Control & Monitoring cabinet for bio fuel boiler 200.000-6.800.000 Btu



- PLC based control
- WEB server, remote monitoring
- Uninterrupted heat production
- Automatic heat regulation
- Efficient combustion control
- Easy to use
- Safe monitoring
- Variable power regulation

PLC based control cabinet for bio fuel plants with a colour display in the cabinet door. The display also functions as a control panel. Variable modulating power control for optimization of control parameters.

Application area

The control cabinet controls the complete bio fuel plant from silo to chimney. Except for the boiler control, screws and sluices may also be controlled by the cabinet. The cabinet is adapted according to every single plants demand. It also admits for alarm control where the cabinet sends possible alarms to the operation staff.

Design text

Control cubicle for regulation and monitoring of solid fuel boiler
Control cabinet, PLC based for bio fuel boiler of type D'Alessandro with effect Btu. Variable effect regulation 10 – 100 %.

Function & Construction

The control is made up by a PLC integrated web server. As standard, there are 3 regulators in the PLC: one PID regulator keeping the outgoing temperature from the boiler on a set control point by regulating the boilers effect (for instance fed amount of fuel), one PID regulator controlling the flue fan in order to keep the set depression in the boiler and finally one PD regulator keeping the O2 proportion in the flue on a correct level by controlling the secondary air fan. The cabinet is supplied complete with necessary contactors and motor protection. In addition, the cabinet also controls a number of motors and valves such as feeding in and ash screws, dust sluices, soot blowing valves, etc. A hard threaded safety circuit is also included in the cabinet which contains the A-alarms. There are also a number of B and C alarms in order to provide the operation staff with relevant information about the plant. At temporary power failures there is a UPS power feeding the cabinet in order to start the plant automatically upon shorter power failures (up to 15 seconds).

Quality assurance

CE-marked, safety circuits in accordance with FBEA, following the low voltage standard (73/235/EU), the machine standard (89/392/EU) and the EMC standard (89/336/EU).



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Installation

The cabinet is delivered with a finished internal connection. A certified electrician should then connect the cables between the control cabinet and motors, sensors, etc. After the connection a check should be conducted to clarify that all motors rotate in the correct direction, that all sensors provide correct information to the cabinet, etc. Usually, the major part of this control is conducted in presence of one of ABioNova AB:s authorized service technicians.

Operation & Attention

The cabinet should be located in a ventilated space. The maximum allowed temperature in the cabinet is 40°C. If the ambient temperature is expected to exceed 30°C, a fresh air line should be connected to the intake fan in the cabinet in order to extend the electronics lifetime. Make sure that the doors are closed under operation in order to prevent that dust and particles enters the cabinet. Clean the air filter at the intake and outlet when necessary. Please observe that the cabinet is under tension during operation and that no unauthorized persons may open the cabinet when it is under tension.

Maintenance & Spare parts

All parts can be ordered as spare parts. Many components are also standard electrical components. For identification, please state the number of the wiring diagram and the marking of the component for us to be able to offer correct replacement parts.

Technical Data

The normal main fuse to a plant is 20 A, 25 A or 35 A and depends on the amount of motors in the plant. Above all, the fuse should be bigger upon pump feeding. The normal power load is approximately 30 – 40 % of the maximum installed capacity. This means that the plants have a very high energy exchange in terms of heating unit / electricity unit.



Accessories & Variety

There are a number of accessories to the standard application.

Component / Function	Standard	Accessory 1	Accessory 2
Sensor, silo	Capacitive	Ultrasound	Temperature
Sensor, intermediate store	Capacitive	Paddle	Ultrasound
O ₂ measurement	Controls fuel feeding	x	x
O ₂ regulation	Controls the secondary air	x	x
Back fire protection	Sprinkler	Powder extinguisher	x
Ash extraction	Ash box	Ash screws	x
Soot from cyclone	Soot box	Dust sluice	Ash transport
Pump control boiler circuit	x	On/off	Analogue, pressure or temp.
Pump control distribution	x	On/off	Analogue, pressure or temp.
Boiler selector central	x	Boiler 1 + 2	Several boilers
Valve control, water side	x	On/off	Analogue
Alarm via GSM (sms)	x	GSM modem	x
Communication	Pot. free contacts 4 pcs	ModBus	ModBus + Firewall
Soot blowing	x	Control of soot blowing	x
Measuring of heat amount	x	Pulse entrance from measurer	x
Entered fuel / effect measuring	x	Pulse transducer stoker	x
Logging, operation data	x	8 values to USB-memory	x
Measuring of oil amount	x	Pulse entrance from measurer	x
Agitator intermediate store for chips	x	Control agitator	Control of bar feeder

If an accessory is chosen it is presented on the text display inside the cabinet. For heat measuring, the value is presented on the display. It is also presented when entering via a web server or a modem.