IGNEIS 05

AUTING CONTROL

Automation and Energy Optimization

www.auting-control.com

IGNEIS 05

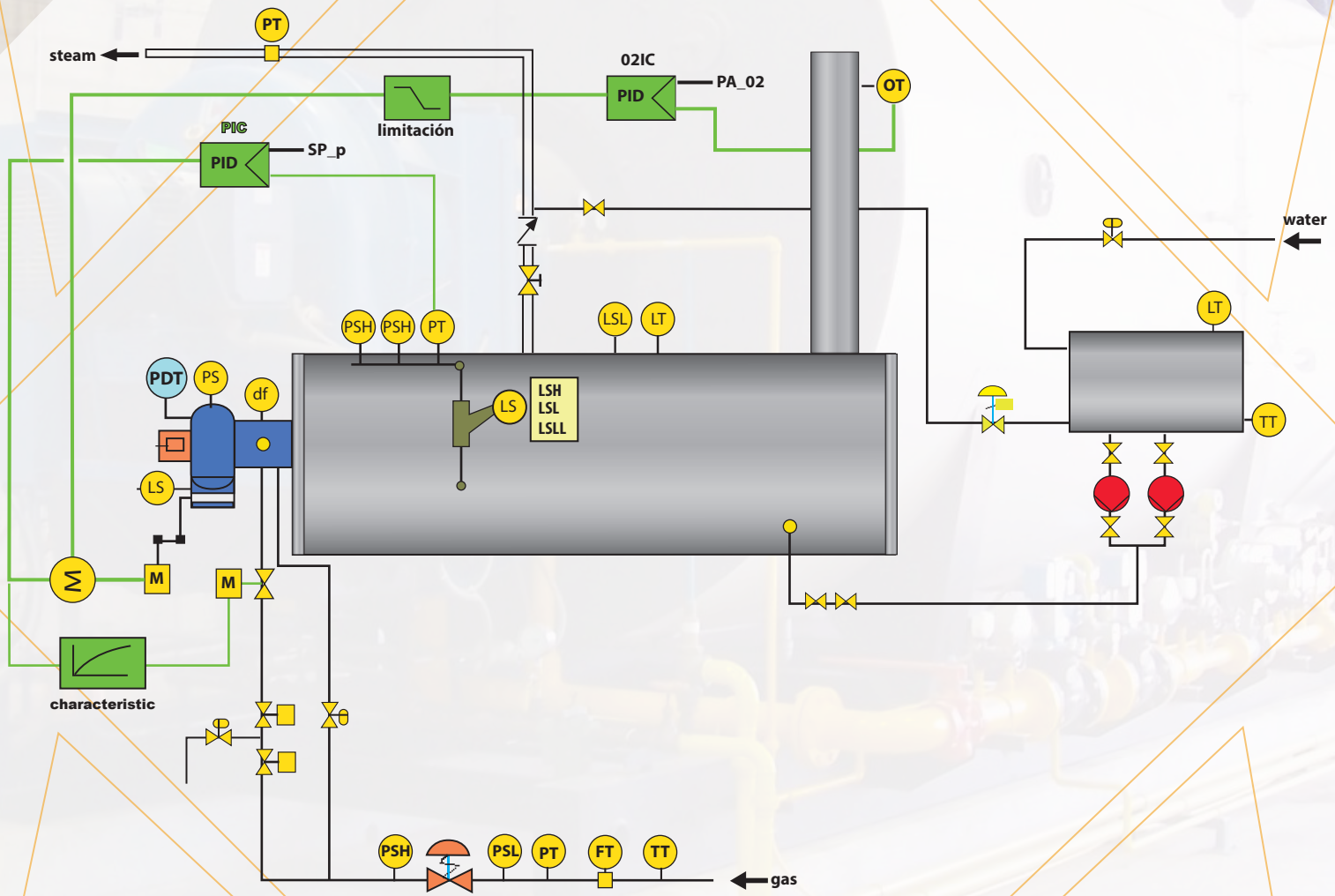
ADVANTAGES

¡A STEP FORWARD IN BOILER CONTROL AND ENERGY SAVINGS!

- *Controls boiler pressure with PID algorithm.*
- *Air-to-fuel characterization with up to 30 software points, for two fuels (i.e.:gas-diesel, gas-bunker, diesel-bunker)*
- *Separate modulating actuators for the air damper and 2 fuel valves.*
- *Stack excess oxygen is measured directly from the ZrO2 sensor. Evaluation and calibration functions are built-in .*
- *Fine-tunes combustion automatically, keeping excess air at optimum value. Fuel savings of 4...6% and higher are attained.*
- *An operator terminal is built-in, with menu-guided, color touch-screen, dust and splash water proof.*
- *An Ethernet port at 100 MBit/s enables bidirectional data transfer with remote PCs, based on Windows , from which boilers can be monitored and operated.*
- *Built around a modular advanced, multitasking controller, with enormous computing capacity and memory.*
- *Measures and totalizes steam and fuel flow (for 2 fuels) and calculates real boiler efficiency as the quotient of produced energy and consumed energy.*
- *Can start/stop boiler automatically following a programmed weekly schedule*

IGNEIS 05

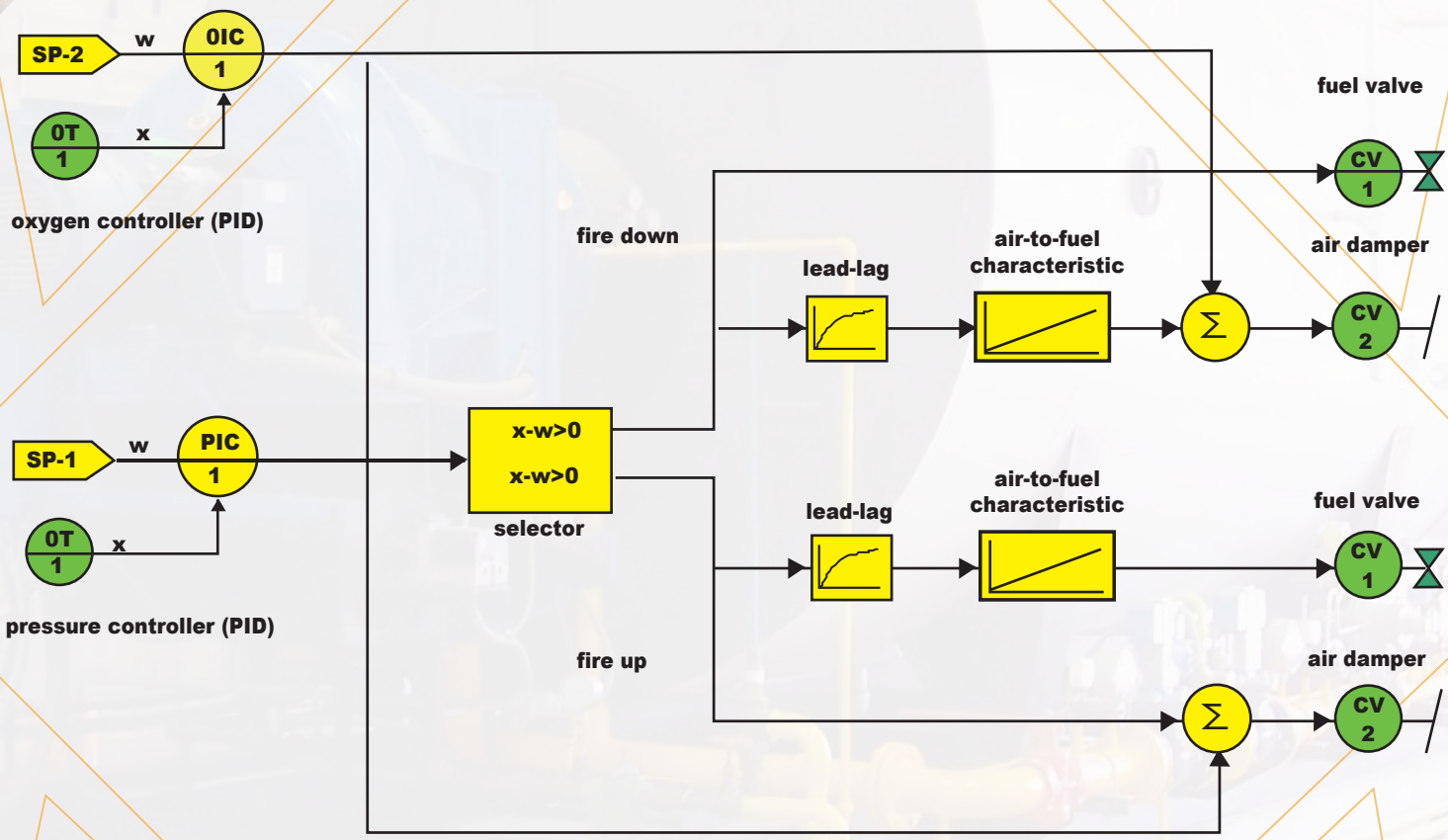
Combustion control schematics for a gas fired bolier



AUTING CONTROL
Automation and Optimization of Energy

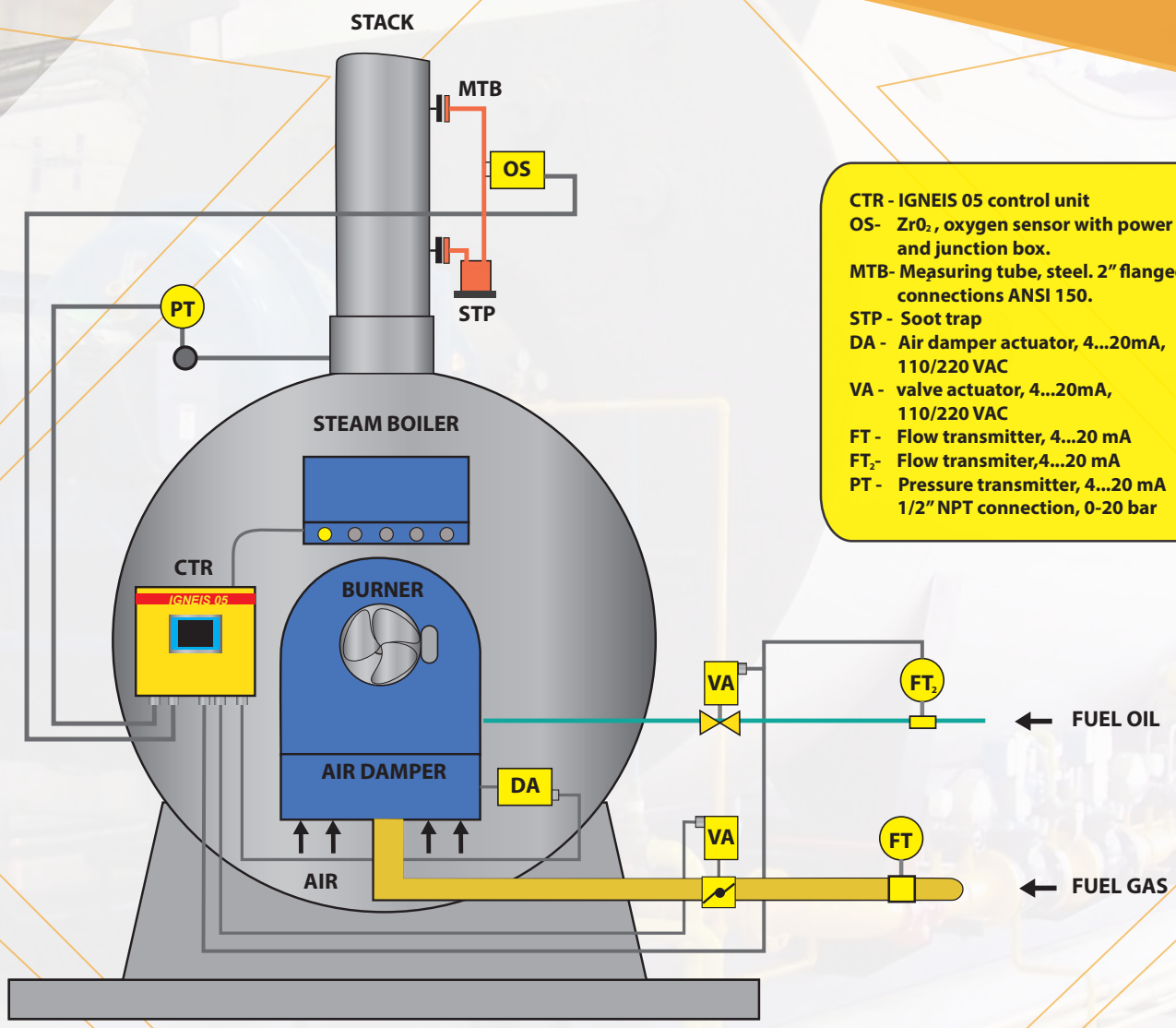
IGNEIS 05

Combustion control flow chart



IGNEIS 05

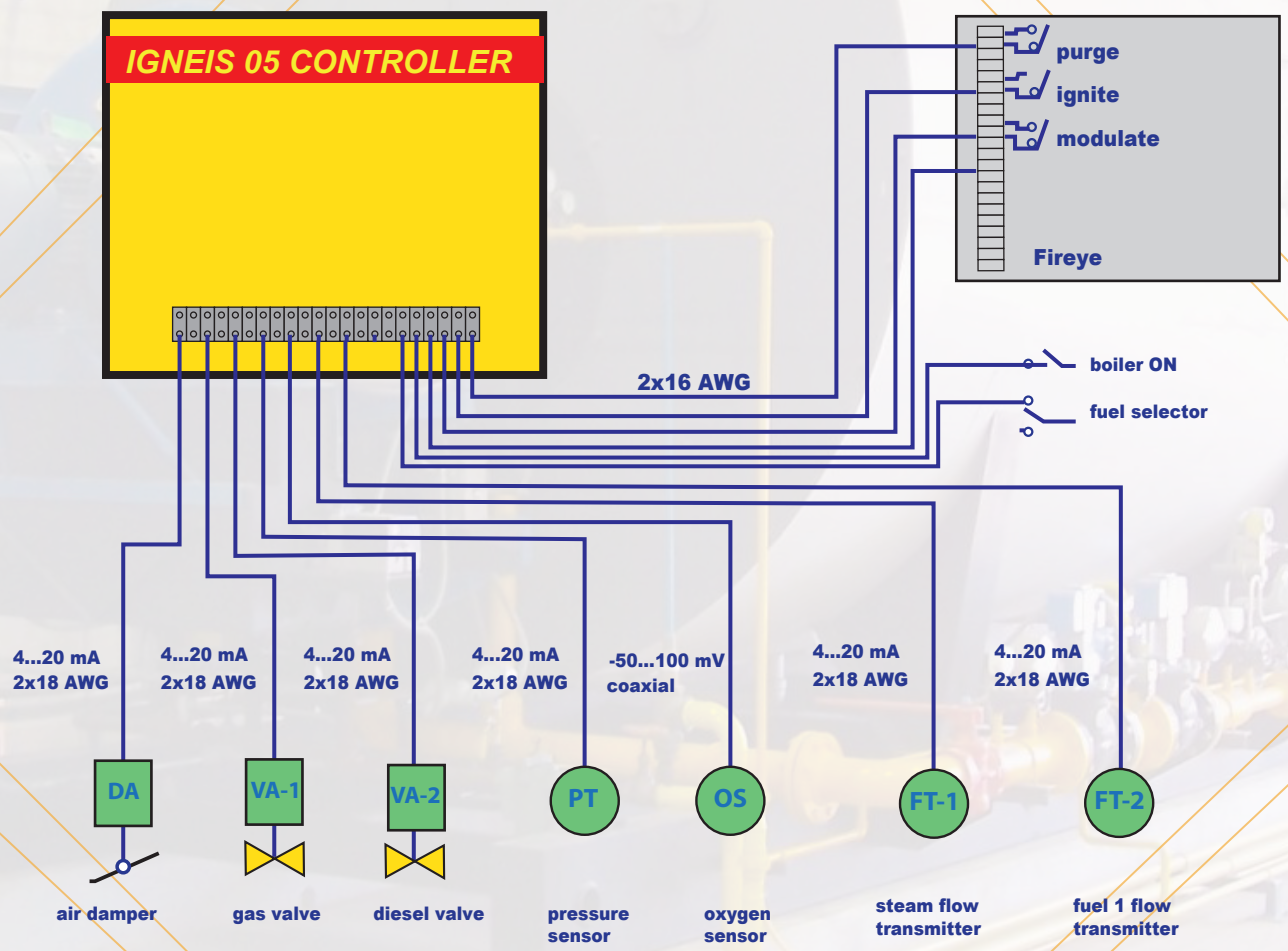
Instrumentation Diagram



CTR - IGNEIS 05 control unit
OS- ZrO_2 , oxygen sensor with power supply and junction box.
MTB- Measuring tube, steel. 2" flanged connections ANSI 150.
STP - Soot trap
DA - Air damper actuator, 4...20mA, 110/220 VAC
VA - valve actuator, 4...20mA, 110/220 VAC
FT - Flow transmitter, 4...20 mA
FT_2- Flow transmiter,4...20 mA
PT - Pressure transmitter, 4...20 mA 1/2" NPT connection, 0-20 bar

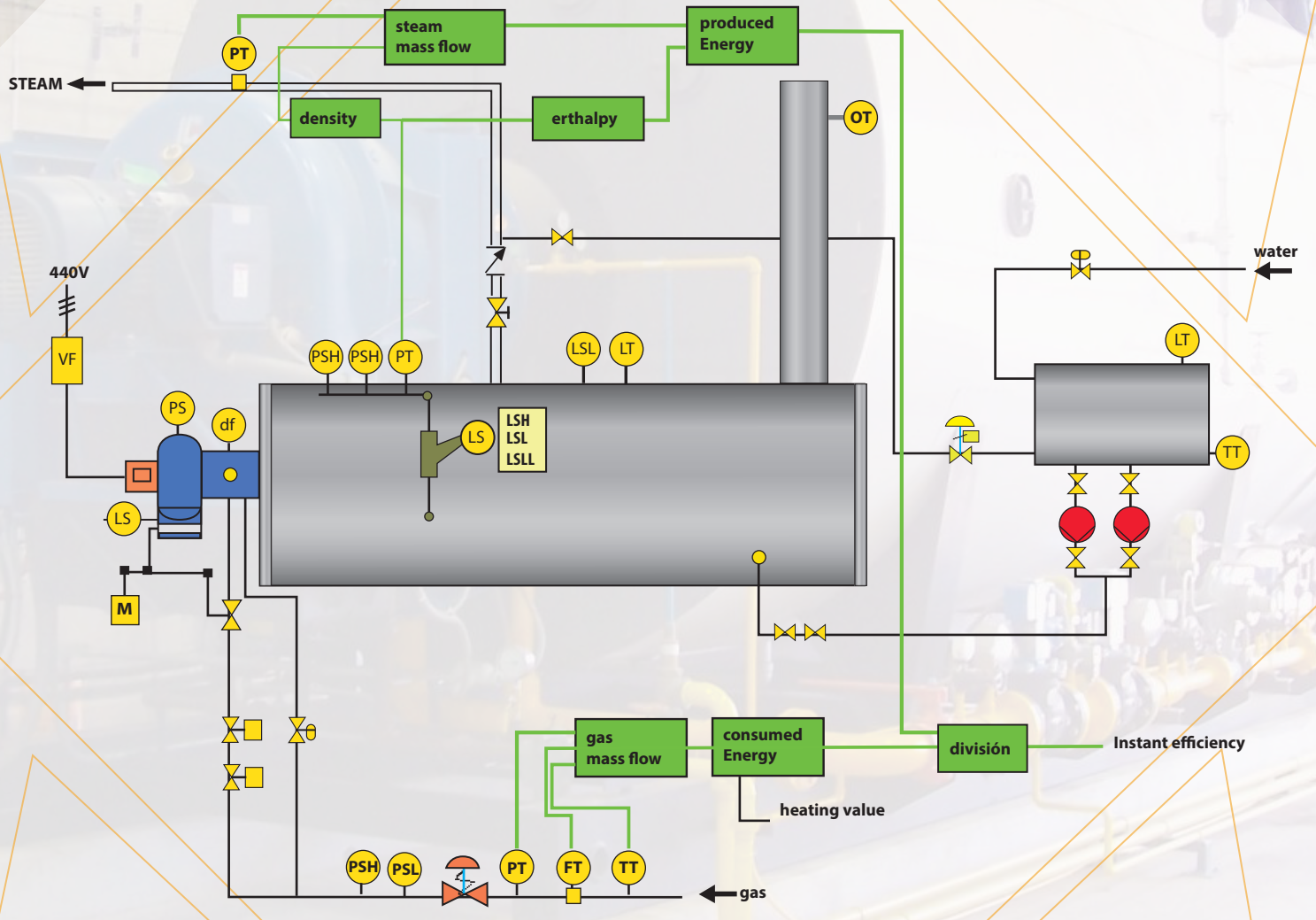
IGNEIS 05

Wiring schematics



IGNEIS 05

Efficiency calculation



AUTING CONTROL
Automation and Optimization of Energy

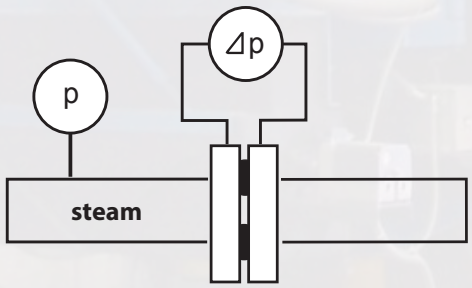
IGNEIS 05

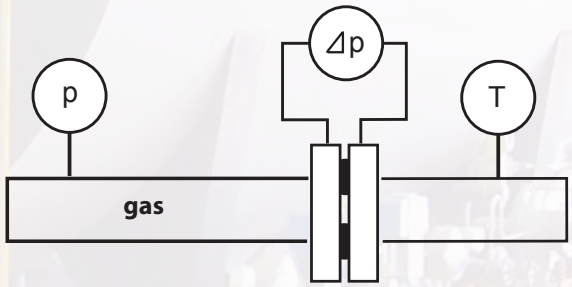
Accummulated efficiency calculation

$$\text{accummulated efficiency} = \frac{\text{total produced energy}}{\text{total consumed energy}}$$

$$= \frac{\text{total steam mass x (steam enthalpy - water enthalpy)}}{\text{total consumed fuel x heating value}}$$

$$= \frac{\sum m_v \times (h_v - h_a)}{\sum m_c \times H_c}$$





$$\sum m_v = \sum \text{const.} \sqrt{\rho \, \Delta p}$$

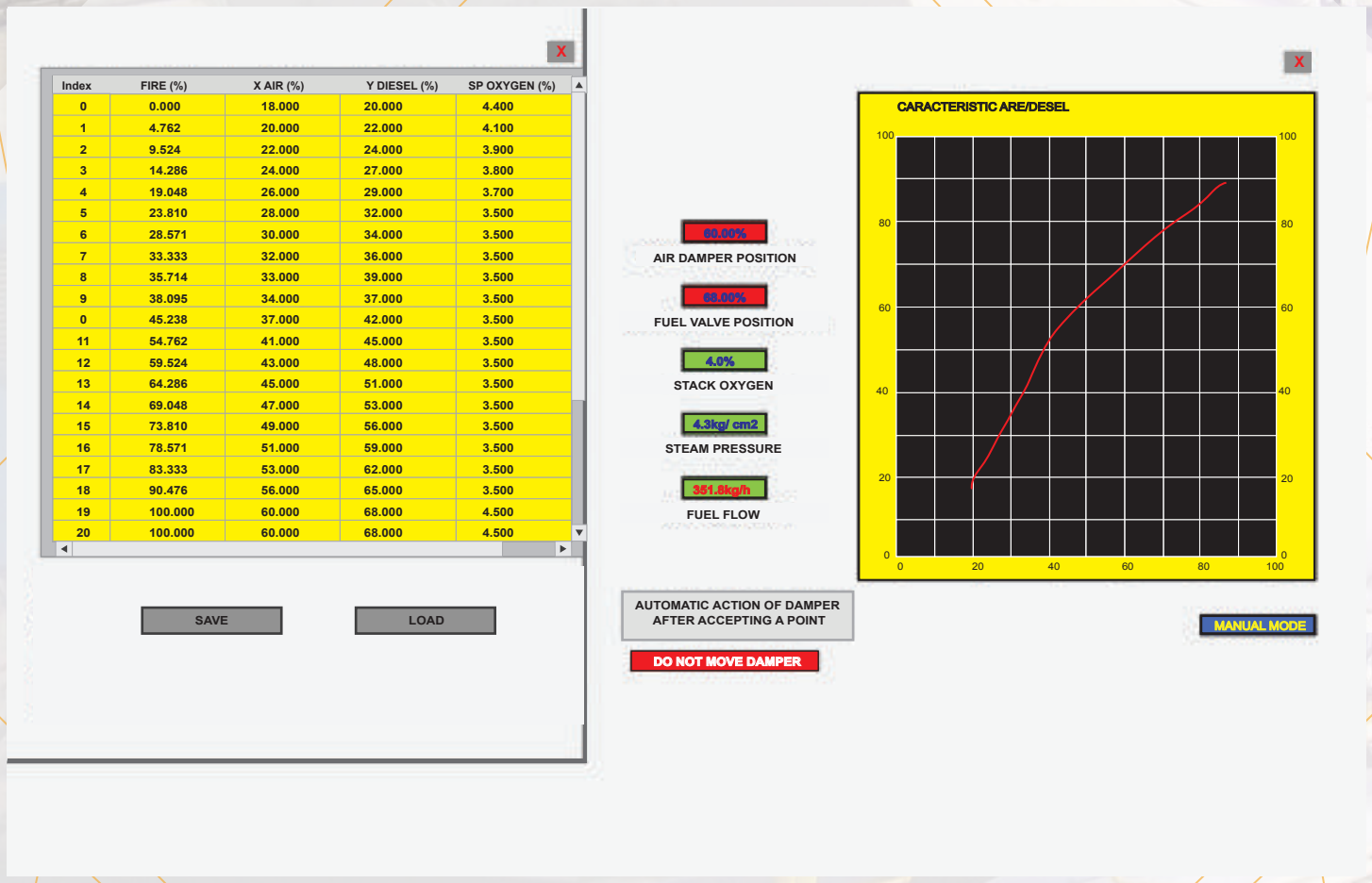
$$\rho = f (p)$$

$$\sum m_c = \sum \text{const.} \sqrt{\rho \, \Delta p}$$

$$\rho = f (p, T)$$

IGNEIS 05

Air - Fuel - Oxygen Characteristic For Maximum Efficiency



IGNEIS 05

Oxygen measurement at stack

- *Zirconium oxide ceramic sensor (Zr02)*
- *External mounting*
- *Very fast response*
- *Long lasting*
- *Easy to replace*
- *Low maintenace cost*
- *Soot trap included*
- *Range: 0...25% O2*

IGNEIS 05

Pressure Sensor

- Resistive metall cell
- Accuracy ± 0.5%
- Drift: < 0.15% per year
- Signal output 4...20 mA, 2 wire
- Process connection: 1/2” NPT - M
- Low maintenance cost
- SS 316L diaphragm and thread
- Ranges: 0... 10 bar, 0...16 bar,0...25bar, 0...40 bar

IGNEIS 05

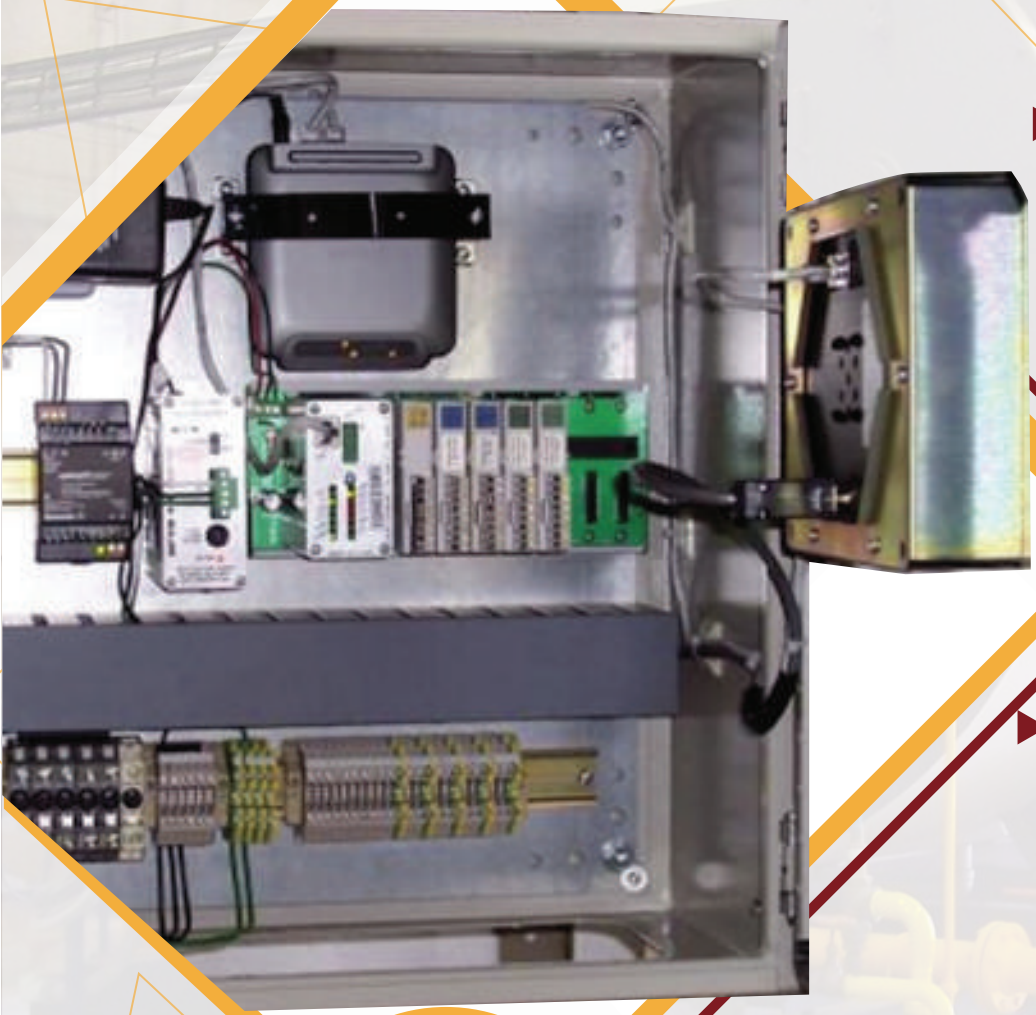
Operator Interface

- Color touch screen, 6” diagonal, NEMA 4
- Menu buttons
- Displays all measured and calculated values
- Alarms and status displays
- Quick access to setpoints
- Work screen for air-to-fuel characterization,
- Work screen for tuning of pressure and oxygen controllers
- Access to critical parameters protected through password

AUTING CONTROL
Automation and Optimization of Energy

IGNEIS 05

Control Unit



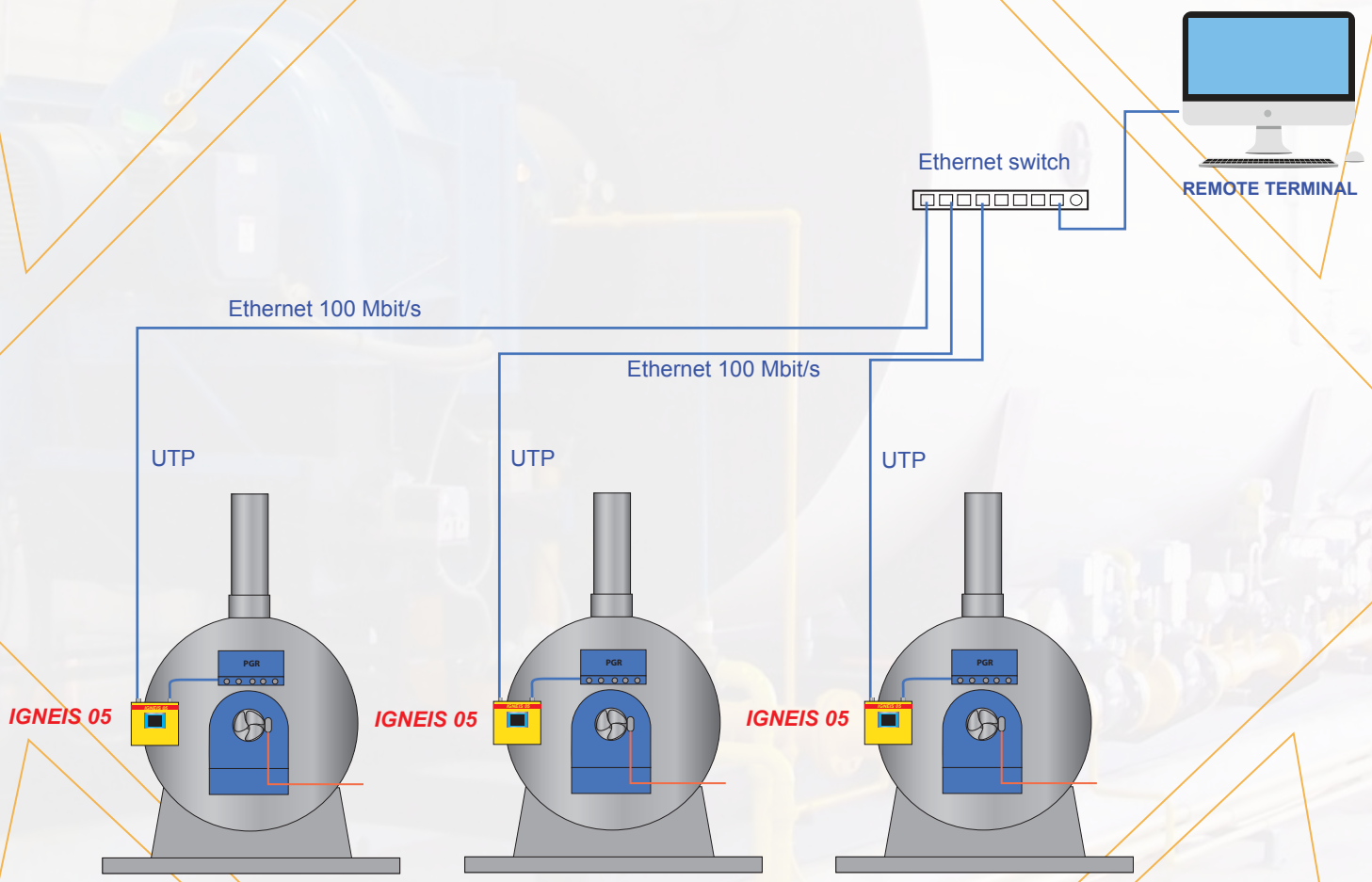
- 32 bit, 200 MHz NEMA 4, with 8 MB flash
- Exchangeable I/O modules
- Optoisolated I/O channels, to 4 kV
- 5 VDC/4A power supply
- 24 VDC/1A power supply
- Ethernet communication port, 100 Mbit/s
- 4 channel Ethernet Switch
- Rail mounted field terminals
- NEMA 4 metal cabinet 800x600x300mm
- Control unit power supply at a 120 VAC or 220 VAC

IGNEIS 05

Remote Terminal Option

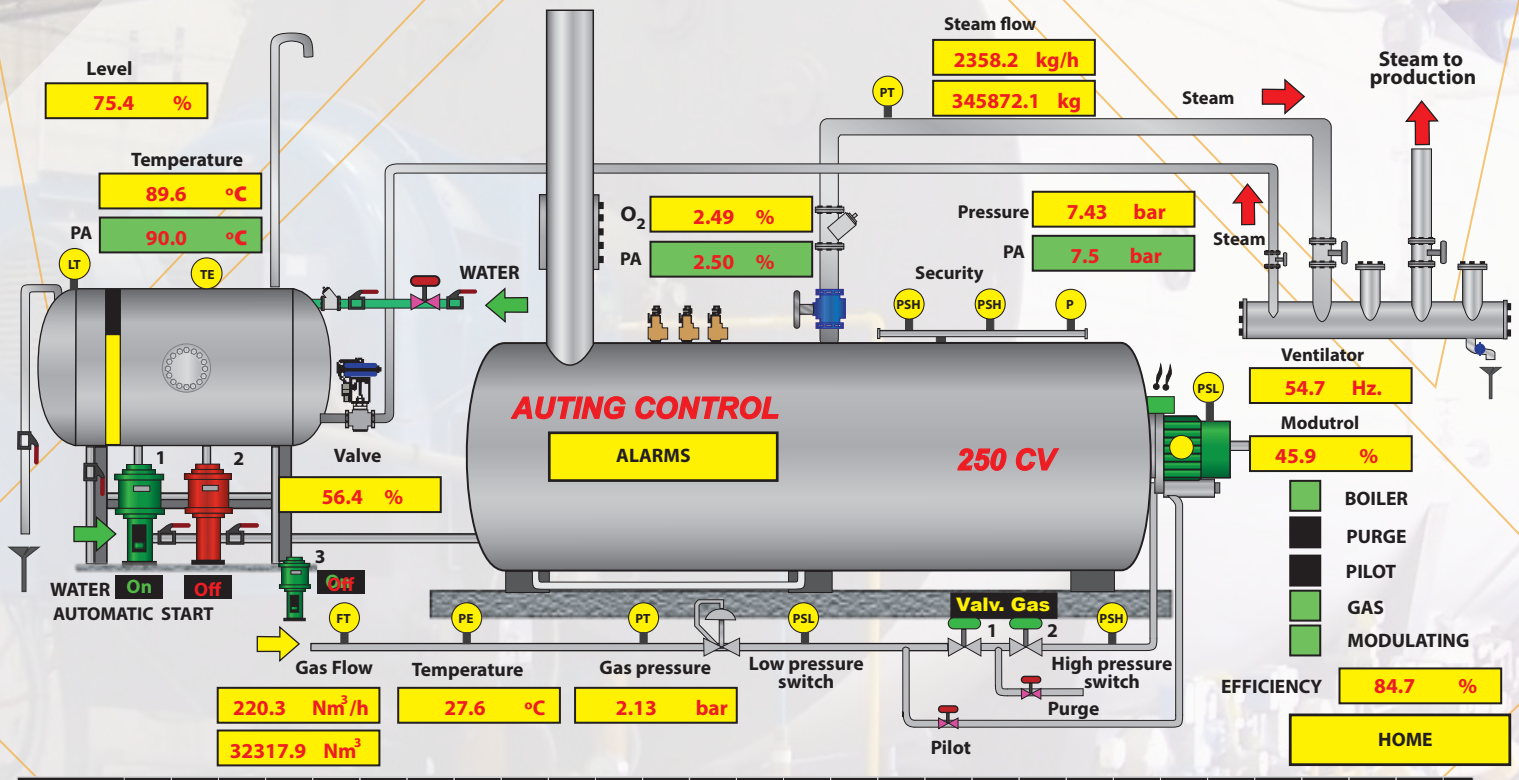
REMOTE TERMINAL FUNCTIONS:

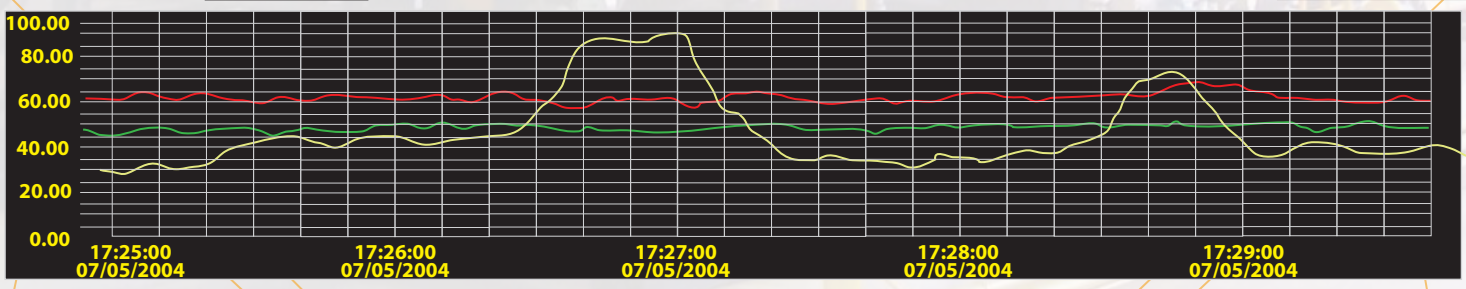
- Display, trending and archiving of measured values
- Display and archiving of status and alarms
- Remote setpoint adjustment
- Remote tuning of pressure and oxygen controls
- Downloading of air-to-fuel characteristic
- Remote boiler start/stop



IGNEIS 05

¿What can be seen on a Remote Terminal?





AUTING CONTROL
Automation and Optimization of Energy


AUTING CONTROL
Automation and Optimization of Energy
www.auting-control.com