



ifm electronic



Biogas plants

How to use



- ▶ Select the requested subject by mouse click on the buttons on the left side of the screen
- ▶ Simply click to page forward within a subject
- ▶ Product names are displayed when moving the cursor over the product
- ▶ Detailed information on the products can be viewed on the internet by clicking on the individual products (active internet connection required)

- ▶ You will find this file in the internet under: www.ifm.com/gb/planning_tools

- ▶ For questions please contact:
 - ▶ ifm electronic gmbh
 - ▶ Special sales engineering offices
 - ▶ Seestr. 5/1
 - ▶ D-74232 Abstatt
 - ▶ Tel.: +49 (0) 70 62 / 95 95 - 0





General overview at the example of a biogas plant

Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator

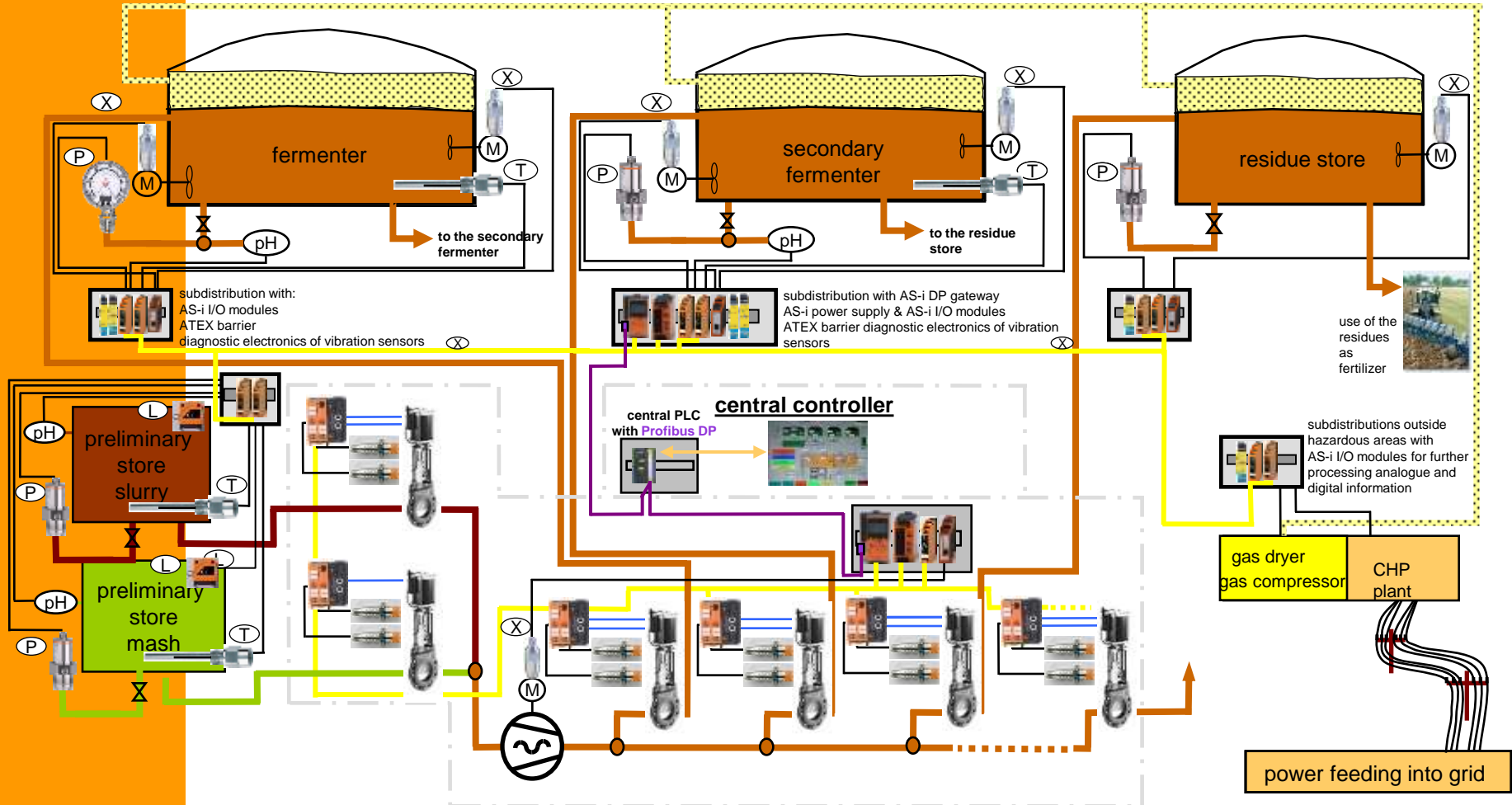


Start page



Schematic illustrations

Biogas plant wet fermentation





Schematic illustrations

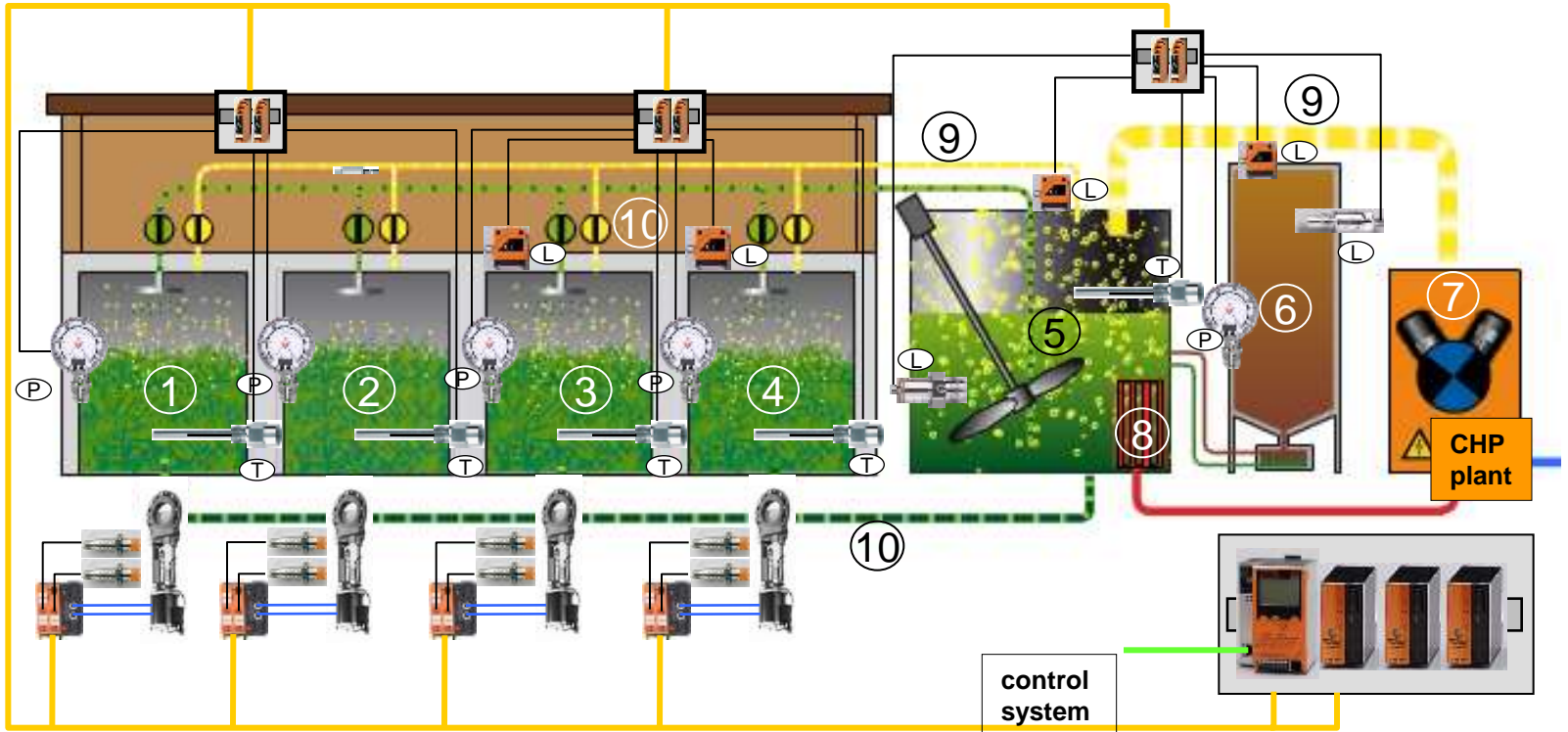
Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator

Biogas plant dry fermentation



① ... ④ : fermentation boxes with pressure-monitored gate impermeability

⑤ : percolate tank

⑥ : residue store

⑦ : CHP plant

⑧ : heat exchanger

⑨ : biogas pipe

⑩ : percolate pipe

intelligent wiring system

Source: BAL Biogas-Anlagenbau Langenau GmbH



Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

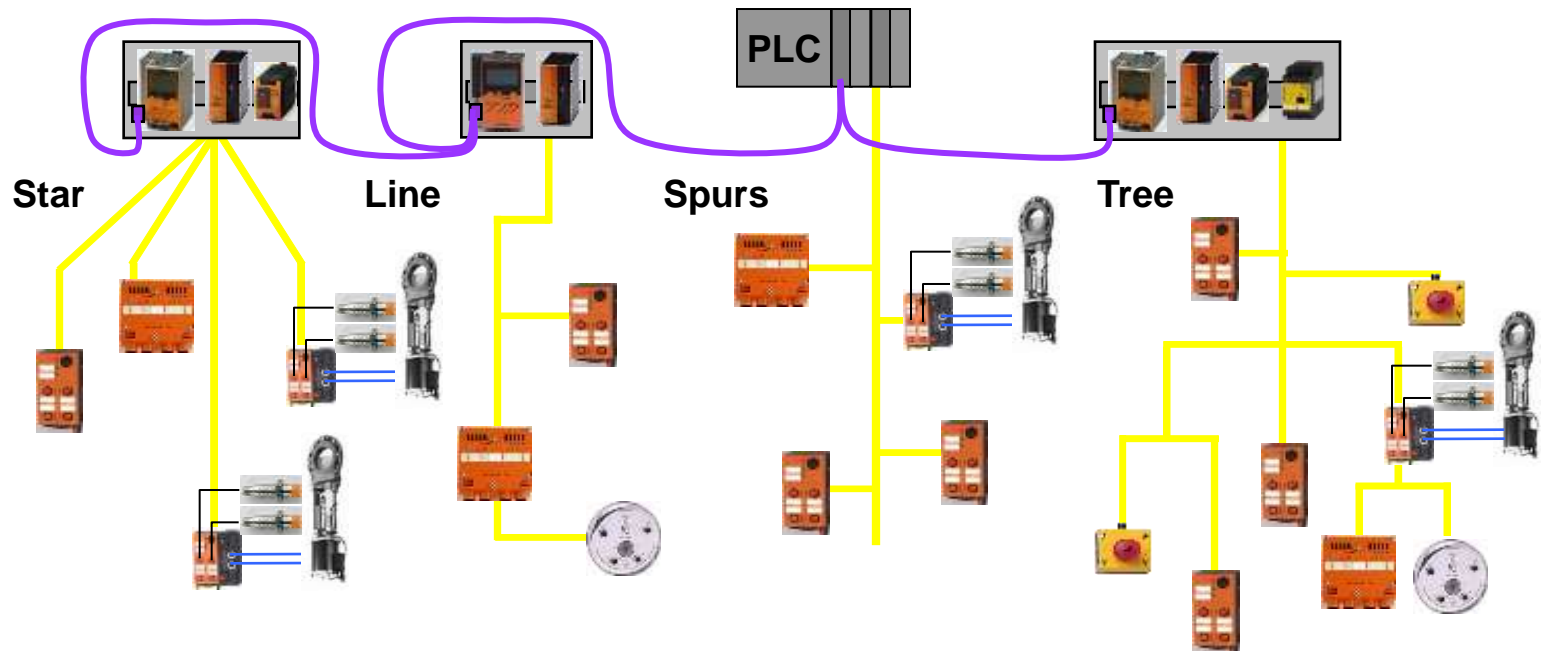
Exhaust air cleaning / drying system

CHP PLANT / generator

Intelligent AS-Interface wiring system (AS-i)

Technical key data:

- ▶ Topology: flexible tree structure
- ▶ Bus cable: unscreened two-wire cable for data and energy
- ▶ Cable length: 100 m - 600 m possible through extension via AS-i repeater
- ▶ Number of slaves: 31 single slaves or 62 A/B slaves per AS-i line
- ▶ Number of binary I/Os: 248 binary sensors and 186 actuators per AS-i line
- ▶ Number of analogue I/Os: 31 x 4 channels (inputs or outputs) per AS-i line
- ▶ Fault detection: identification and repetition of corrupted messages





Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator

Back

Cost comparison intelligent wiring system AS-Interface

As of 2011 - please ensure up-to-dateness -		
Number of actuators	29,00	Push the button to modify values
Total AS-i cable length	100,00	
Average cable length (conventional):	15,00	
Hourly wage in euros:	29,11	
Services	AS-i	Conventional
Laying of cables: cable with PVC sheath DIN VDE 0250 supplied and laid incl. fixing:		
Time required per metre of cable		
AS-i cable	2,90 min	-
End position detection	-	2,90 min
Costs per metre of cable		
AS-i cable	1,25 euros	-
End position detection	-	0,70 euros
Calculation of time expenditure for project	2,9 min/m x 100 m	2,9 min/m x 15m x 29 pieces =
Time expenditure for the project	5 h	21 h
Calculation of costs for the project:	1,25 € /m x 100m =	0,70 € /m x 15m x 29 pieces =
Costs for project	125,00 euros	304,50 euros
Terminal connection: stripping of the cable, insertion and connection according to wiring plan:		
Time expenditure per actuator		
AS-i cable	5,00 min	-
End position detection	-	13,30 min
Costs per actuator		
AS-i cable	2,43 euros	-
End position detection	-	6,45 euros
End position detection	5 min/piece x 29 pieces =	13,30 min/piece x 29 pieces =
Time for project	2 h	6 h
Calculation of costs for project:	2,43 euros/piece x 29 pieces =	6,45 euros/piece x 29 pieces =
Costs for project	70,47 euros	187,05 euros
Connection in the control cabinet: stripping of the cable, insertion and connection according to wiring plan:		
Time expenditure		
AS-i cable	10,00 min	-
End position detection	-	13,30 min (per actuator)
Costs		
(AS-i cable)	4,85 euros	-
End position detection	-	6,45 euros (per actuator)
Calculation of time expenditure for project:	10min =	13,3 min/piece x 29 pieces =
Time for project	10 min	6 h
Calculation of costs for project:	4,85 euros =	6,45 euros/piece x 29 pieces =
Costs for project	4,85 euros	187,05 euros
Total time services	7 h	34 h
Total costs services	200,32 euros	678,60 euros
Cable material	AS-i	Conventional
AS-i cable per metre	1,25 euros	-
End position detection per metre	-	0,70 euros
Total costs cable material	125,00 €	304,50 €
Total costs laying of cables	325,32 €	983,10 €

Explanation of the calculation:

The pure "wiring times" and the resulting costs are compared (figures from the association Zentralverband der Deutschen Elektro- und Informationstechnischen Handwerke).

Time & costs for troubleshooting, wiring diagrams, components and commissioning times have not yet been included !!!



Preliminary tank / supply tanks

Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator



Pressure measurement with electronic manometer e.g. PG2457



Adjustable point level sensor e.g. LMT121



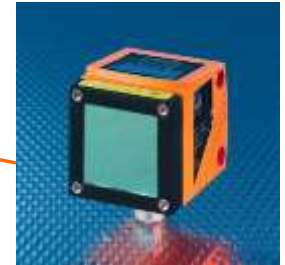
Vibration diagnosis & run-dry protection e.g. VSE002 + VSA001



Modular temperature transmitter for connection to PT elements, e.g. TP3237



Position feedback and valve control via AS-i



Optical level detection, e.g. O1D300

Back



Feeding systems / substrate pipes

Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator



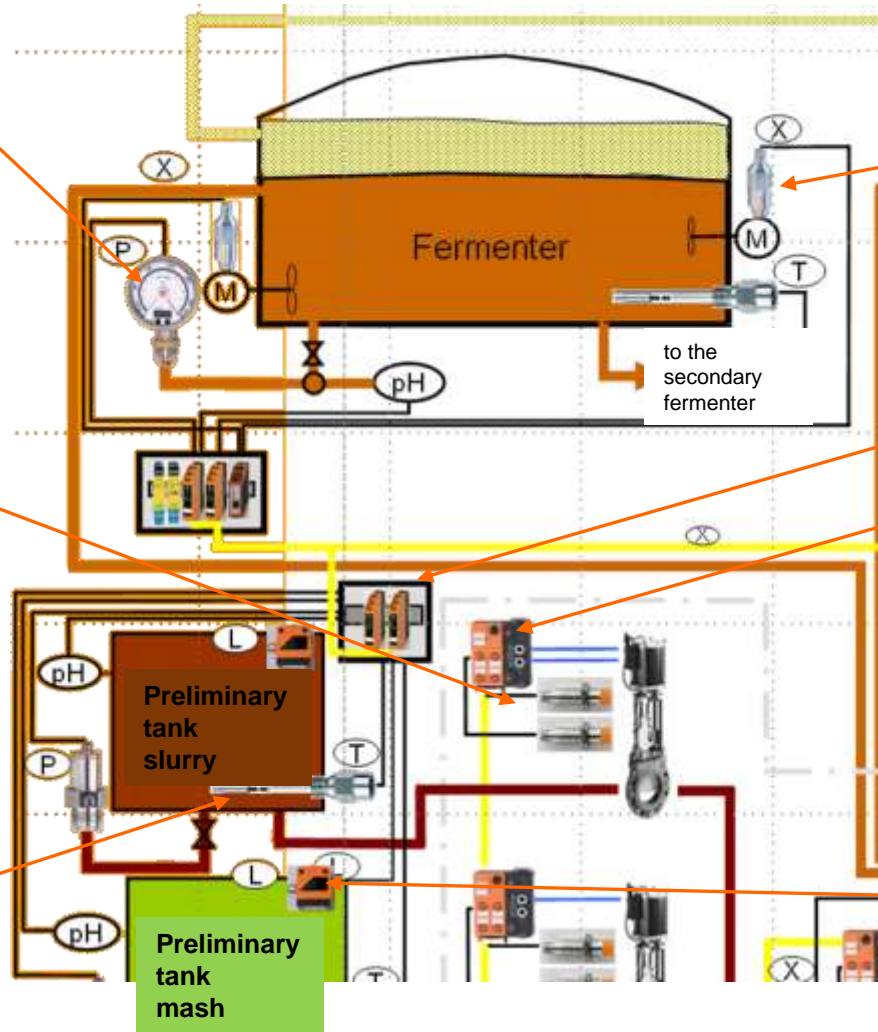
Pressure measurement with electronic manometer e.g. PG2457



End position monitoring with inductive sensors



Modular temperature transmitter for connection to PT elements, e.g. TP3237
© ifm electronic gmbh



Vibration diagnosis & run-dry protection e.g. VSE002 + VSA001



Position feedback and valve control via AS-i



Run-dry protection e.g. LMT121

Back



Exhaust air cleaning / drying system

Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator



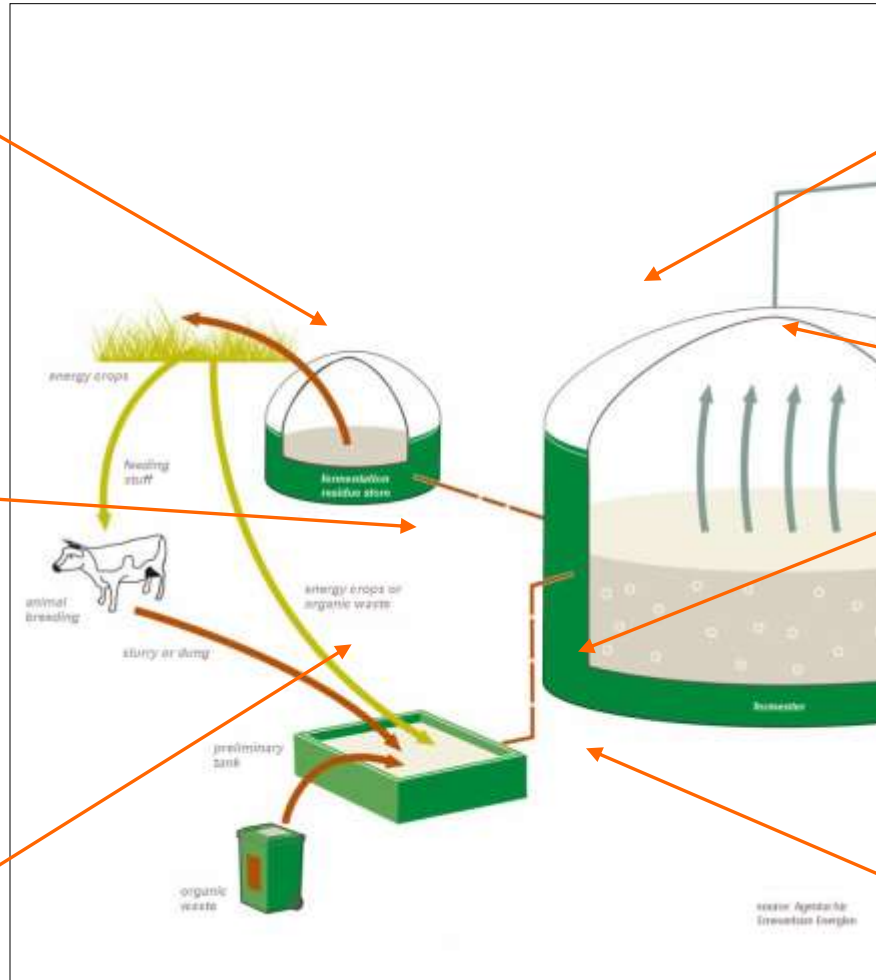
Level monitoring e.g. LMT121



End position monitoring with inductive sensors



Modular temperature transmitter for connection to PT elements, e.g. TP3237
© ifm electronic gmbh



Vibration diagnosis & run-dry protection e.g. VSE002 + VSA001



Airflow monitoring e.g. SFxxx + SN2301



Position feedback and valve control via AS-i

Back



CHP plant / generator

Schematic illustrations

Preliminary tank / supply tanks

Feeding systems / substrate pipes

Exhaust air cleaning / drying system

CHP PLANT / generator

Back



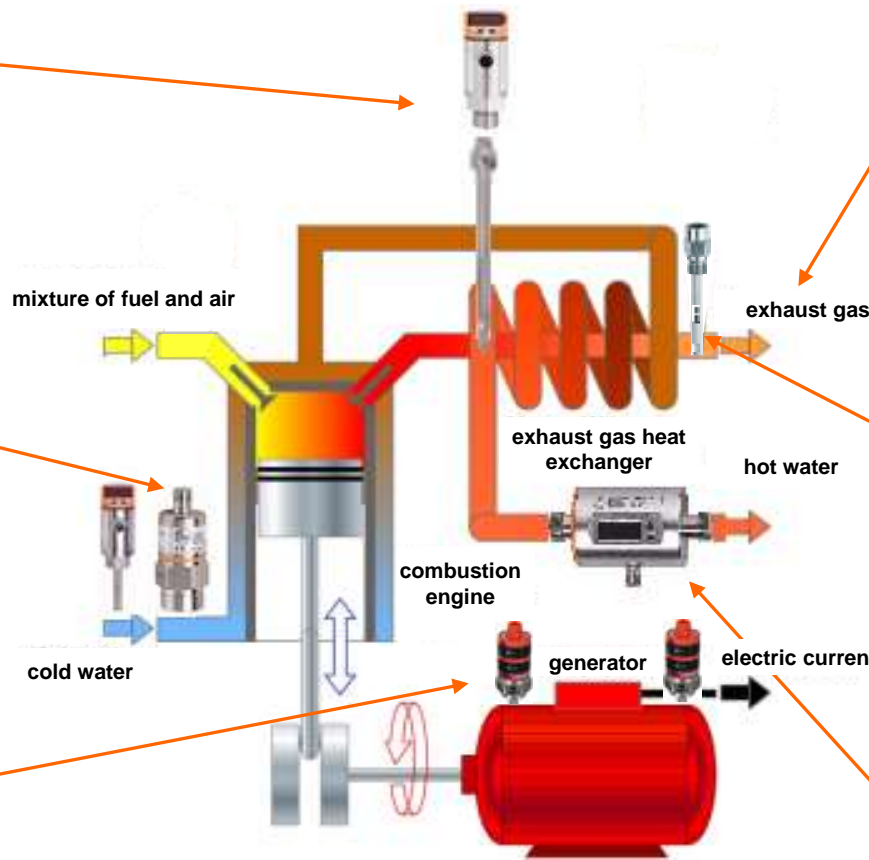
Temperature measurement with local display e.g. TN2531



Hydrostatic level sensor e.g. PL2654



Vibration diagnosis e.g. VSE002 + VSA001



Air flow sensor e.g. SL5101



Modular temperature transmitter for connection to PT elements, e.g. TP3237



Magnetic-inductive flow sensor e.g. SM6100