ifm electronic

Water/wastewater technology

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How to use

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Bath water treatment

Bath concept with AS-i
Filtration system
Splash / rinse water
Compr. air system/ water penetration
Legionella prevention
Water heating
Schem. illustration Wastewater treatm.
Activated sludge plant
Digestion plant
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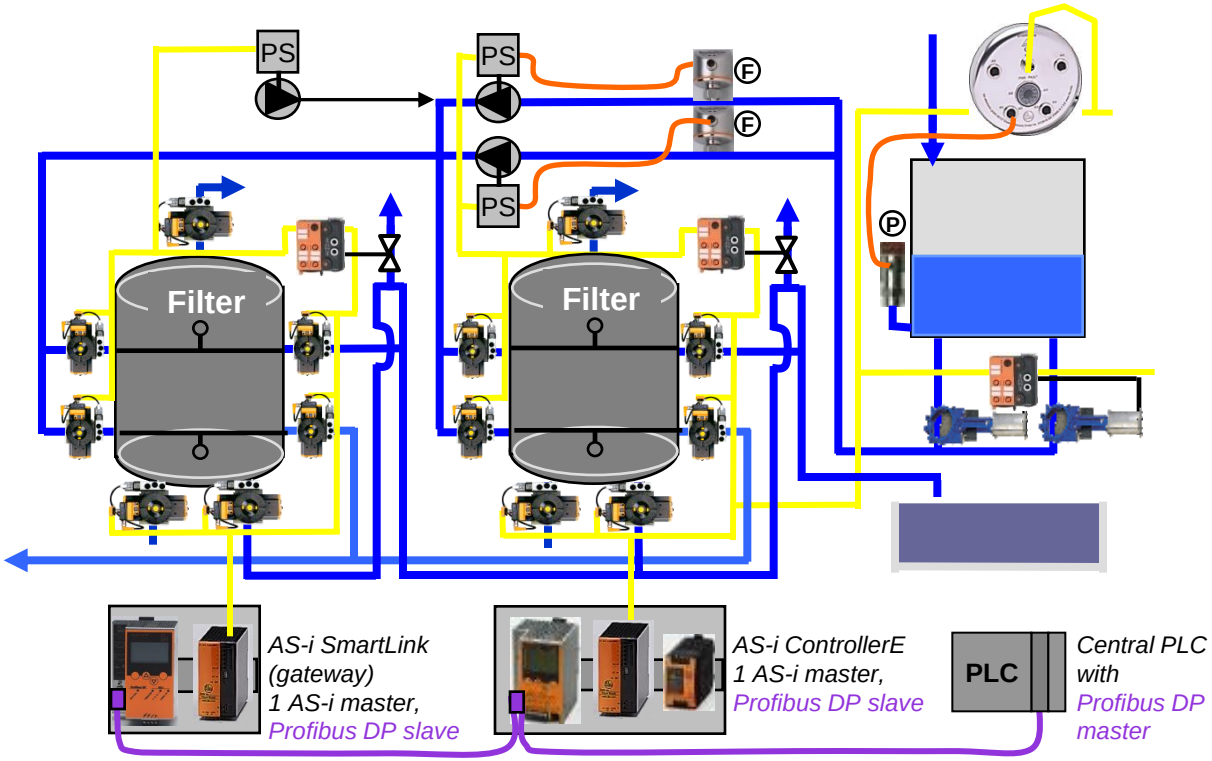
General overview by taking the example of a swimming pool

Intelligent AS-Interface wiring system (AS-i)

- Open, decentralised and intelligent wiring system
- Fast installation and set-up, high diagnostic capabilities
- Manufacturer-independent, a sensible extension of higher-level systems such as Profibus DP, Ethernet…
- Relieves higher-level systems including considerable cost savings of up to 30 %



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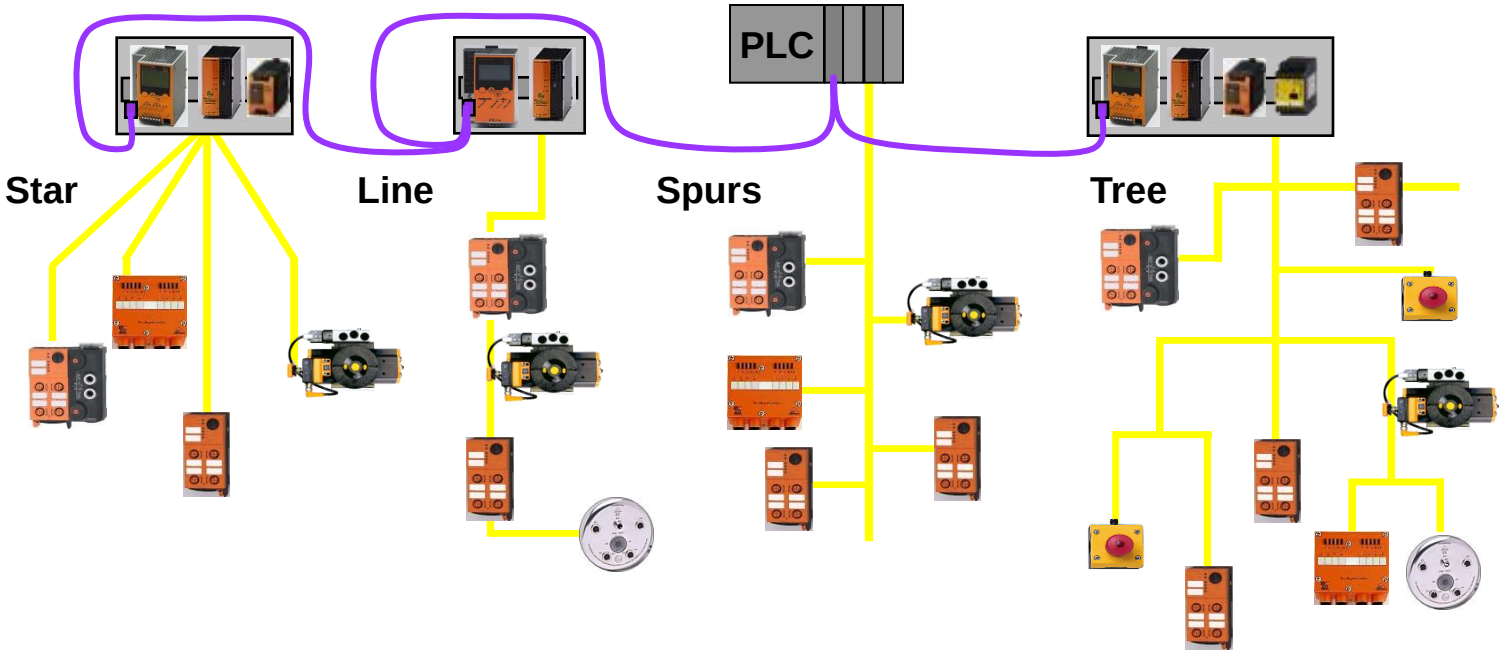
Intelligent AS-Interface wiring system (AS-i)

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 (in- or outputs) per AS-i line
- Error detection: identification and repetition of corrupted messages



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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).

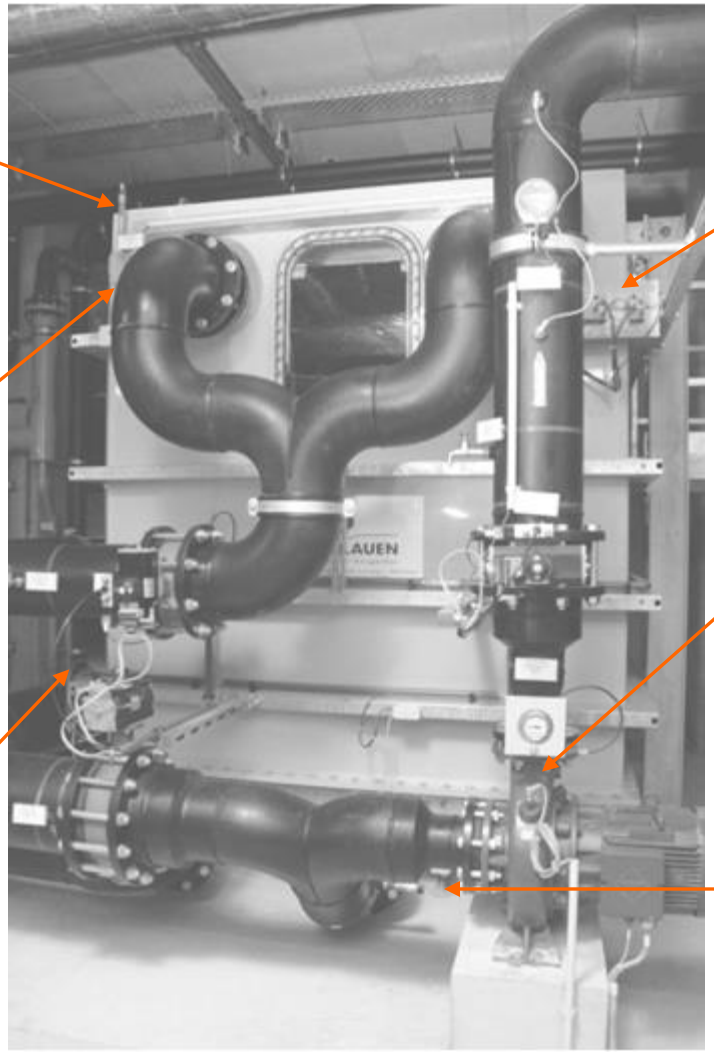
Time & costs for troubleshooting, wiring diagrams, components and commissioning times have not yet been included !!!

Filtration system

Point level monitoring with level sensor e.g. LI5141

Hydrostatic Level sensor e.g. PL2658

Position feedback and valve control via AS-i e.g. AC0019



AS-i field modules transmit digital and analogue signals e.g. AC5223 and AC5290

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

Combined pressure sensor e.g. PE3004

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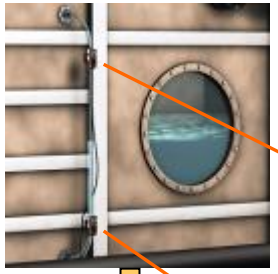
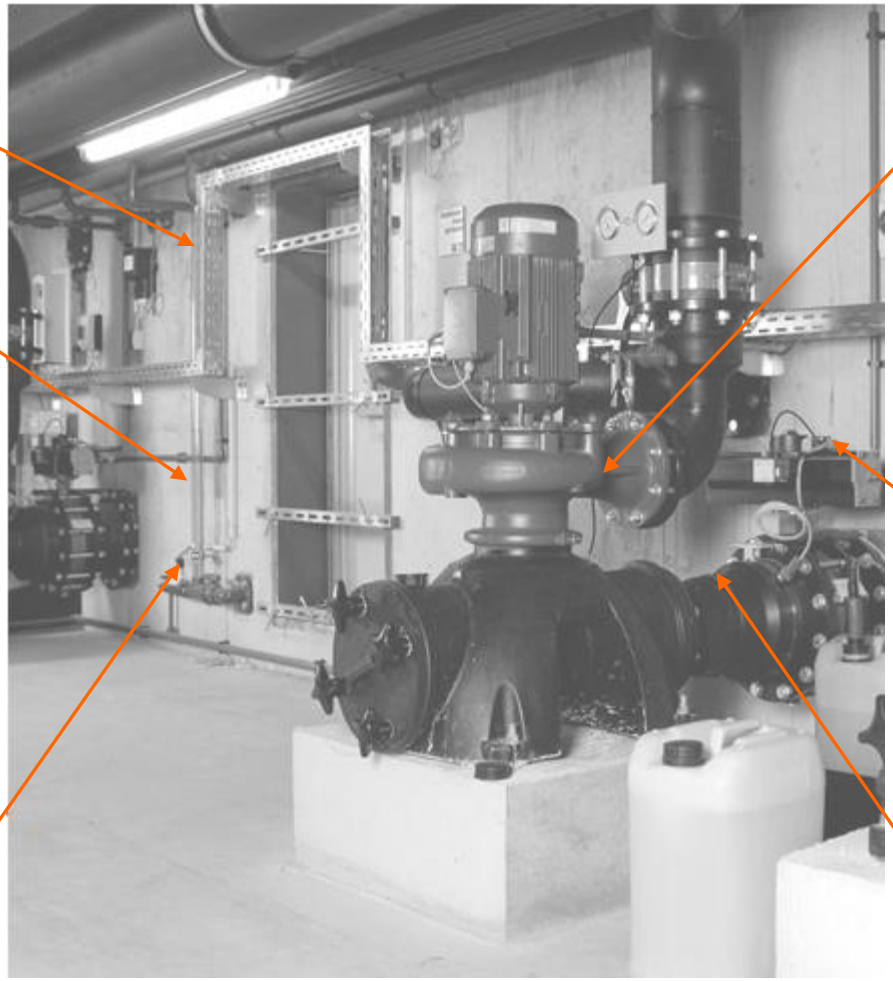
Splash / rinse water





Vibration diagnosis
e.g. VSE002 + VSA001

Capacitive level sensor
e.g. KQ6001

Position feedback and valve control via AS-i
e.g. AC0019

Hydrostatic level sensor
e.g. PL2658

Flow Sensor
e.g. SI5000

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Compressed air generation & detection of water penetration

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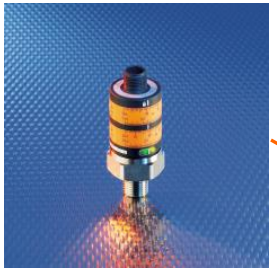
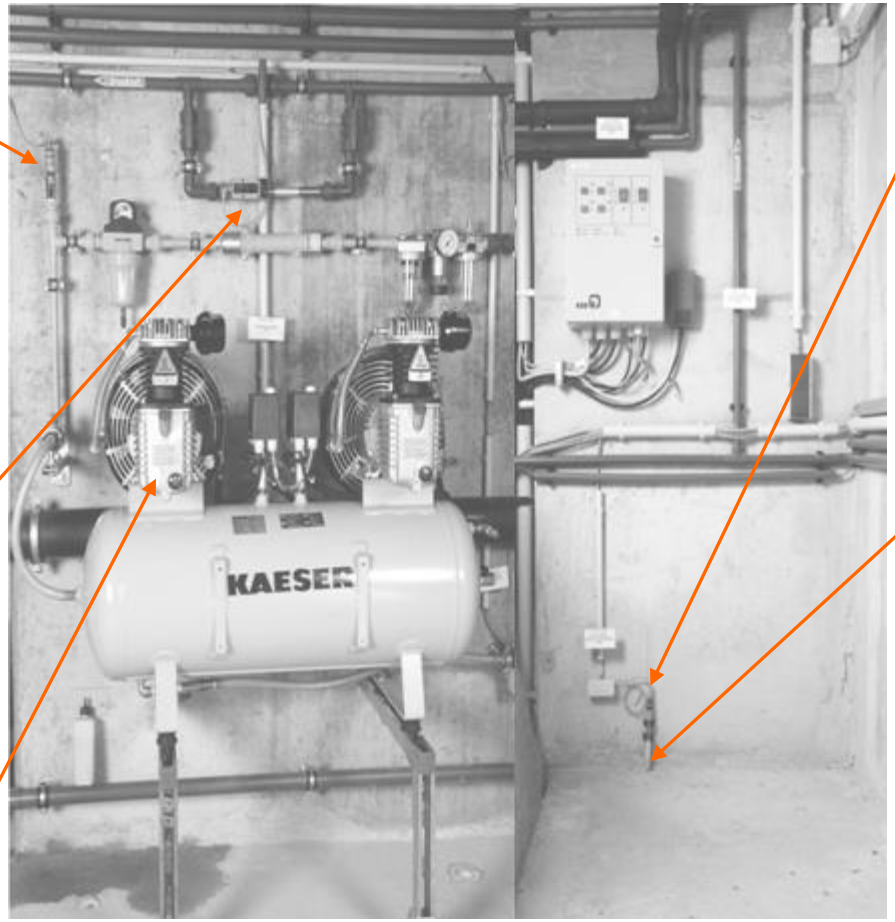


Compressed air monitoring with electr. pressure sensor e.g. PK6524

Consumption measurement & leakage monitoring e.g. SD6000

Vibration monitor for standard vibration characteristic values e.g. VKV022



Sockets for the connection of sensors Socket e.g. EVT067

Detection of water penetration with capacitive level sensor e.g. LI5141

Legionella prevention

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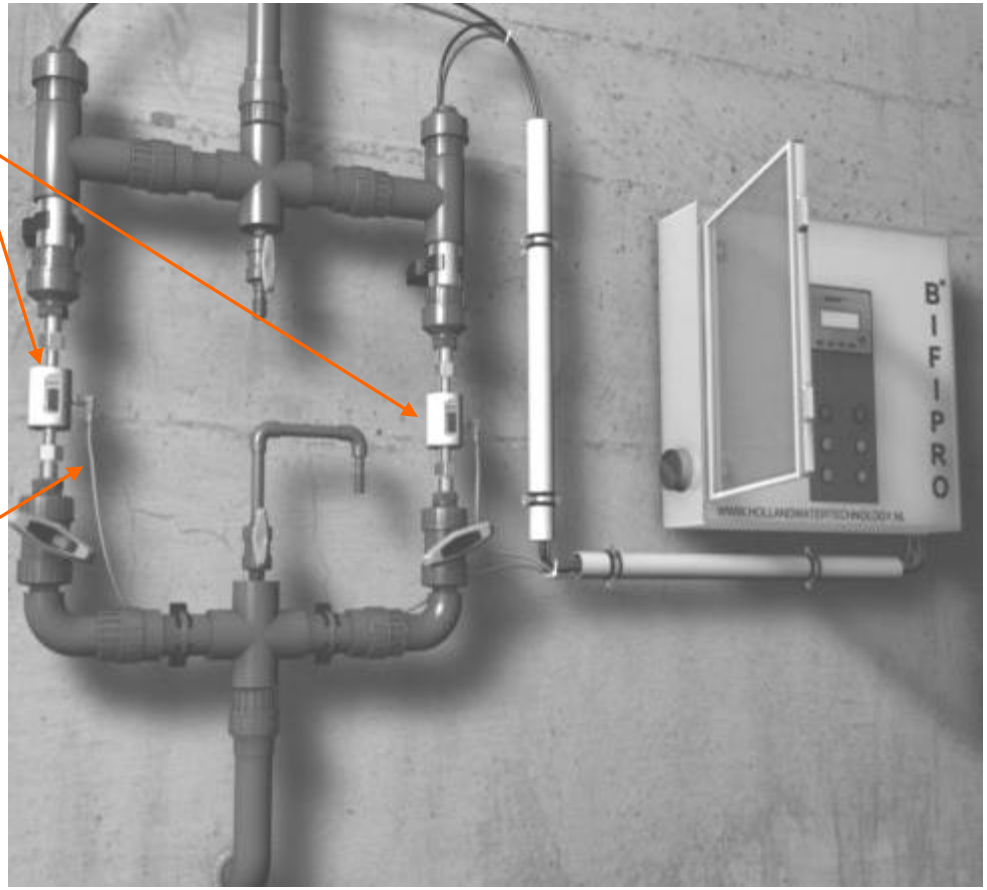
Flow rate measurement
Magnetic-inductive flow sensor
e.g. SM6100

Sockets for the connection of sensors
Socket e.g. EVT067

Switched-mode power supplies for sensor supply e.g. DN3012



Water heating

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Pressure measurement with electronic manometer
e.g. PG2454

Sockets for the connection of sensors
Socket e.g. EVT067

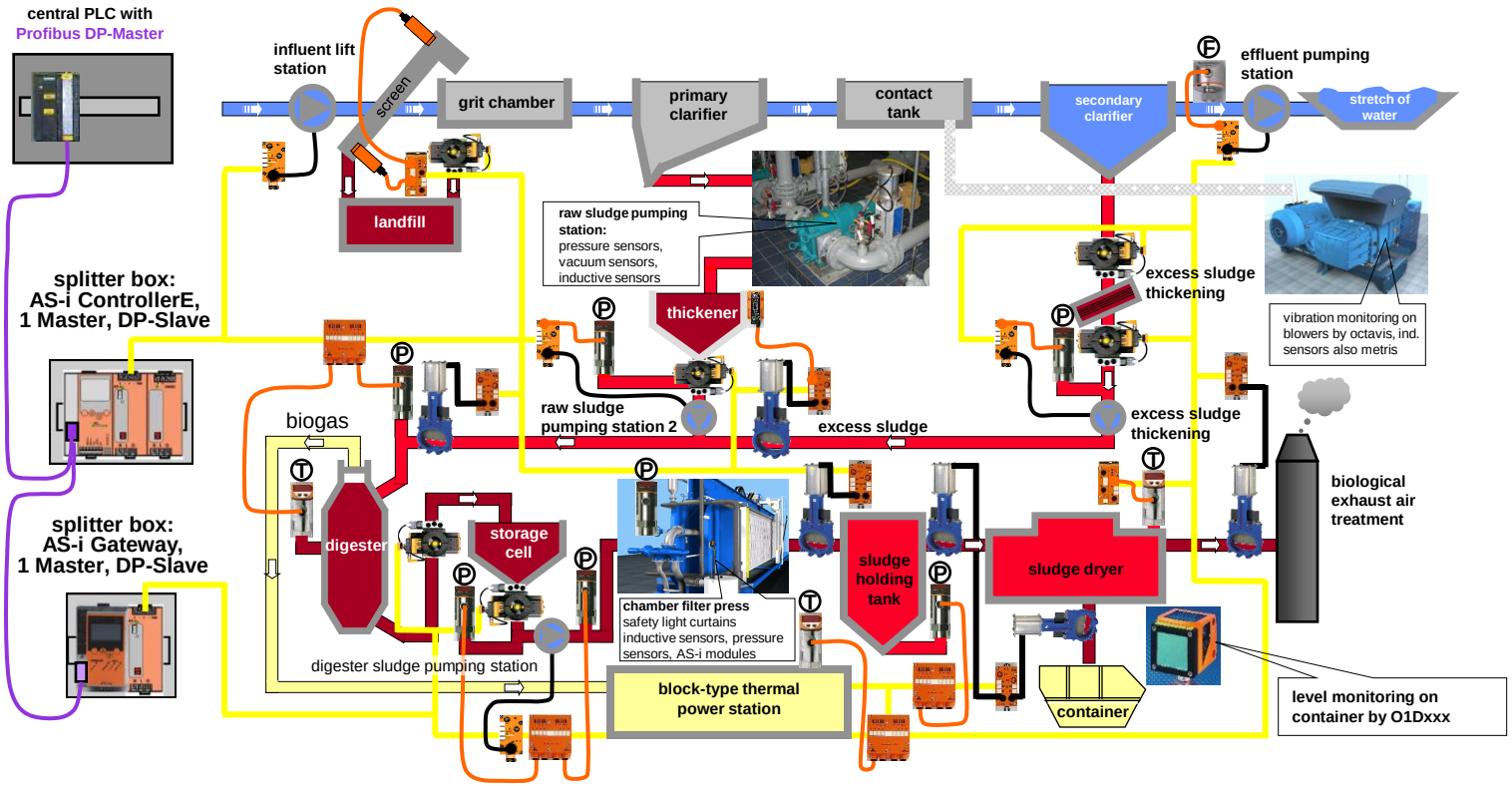
Temperature measurement with local display
e.g. TN2531

Flow Sensor
e.g. SI5000

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

Schematic illustration wastewater treatment technology

Sewage Treatment Plant in general



This is only a scheme. Since the size of the plant and the local conditions are not exactly known the system must be set up according to the requirements on site.

ifm electronic gmbh essen Projektservice	Projekt: Sewage Treatment	Plan: Sensors und AS-i in sewage treatment	date: 12.03.2013 resp.: KI-gn plan no.: SC_sewage treatment plant

Activated sludge plant

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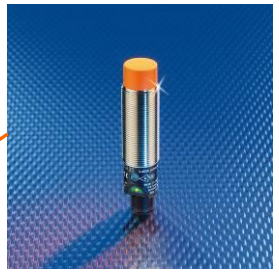
End position monitoring with inductive sensors

Pressure measurement with electronic manometer e.g. PG28xx

Vibration diagnosis e.g. VSE002 + VSA001



Speed monitors Compact e.g. DI6001

Temperature measurement with integrated display e.g. TN2531

Flow Sensor e.g. SI5000

Digestion plant

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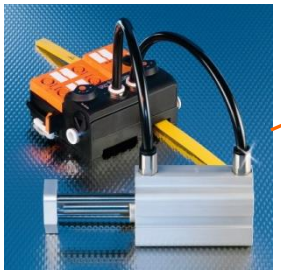
Vibration diagnosis
e.g. VSE002 + VSA001

Pressure measurement with electronic manometer
e.g. PG28xx

Flow sensor as run-dry protection e.g. SI5000

Leakage monitoring with capacitive level sensor
e.g. LI5141



Position feedback and valve control via AS-i e.g. AC5227

End position monitoring with inductive sensors

Industrial waste water

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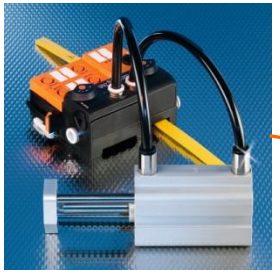

Position feedback and valve control via AS-i e.g. AC5227

Vibration diagnosis
e.g. VSE002 + VSA001

Level and leakage monitoring e.g. KI5087

Temperature measurement with integrated display
e.g. TN2531

Flow Sensor
e.g. SI5000

Pressure measurement with electronic manometer
e.g. PG28xx