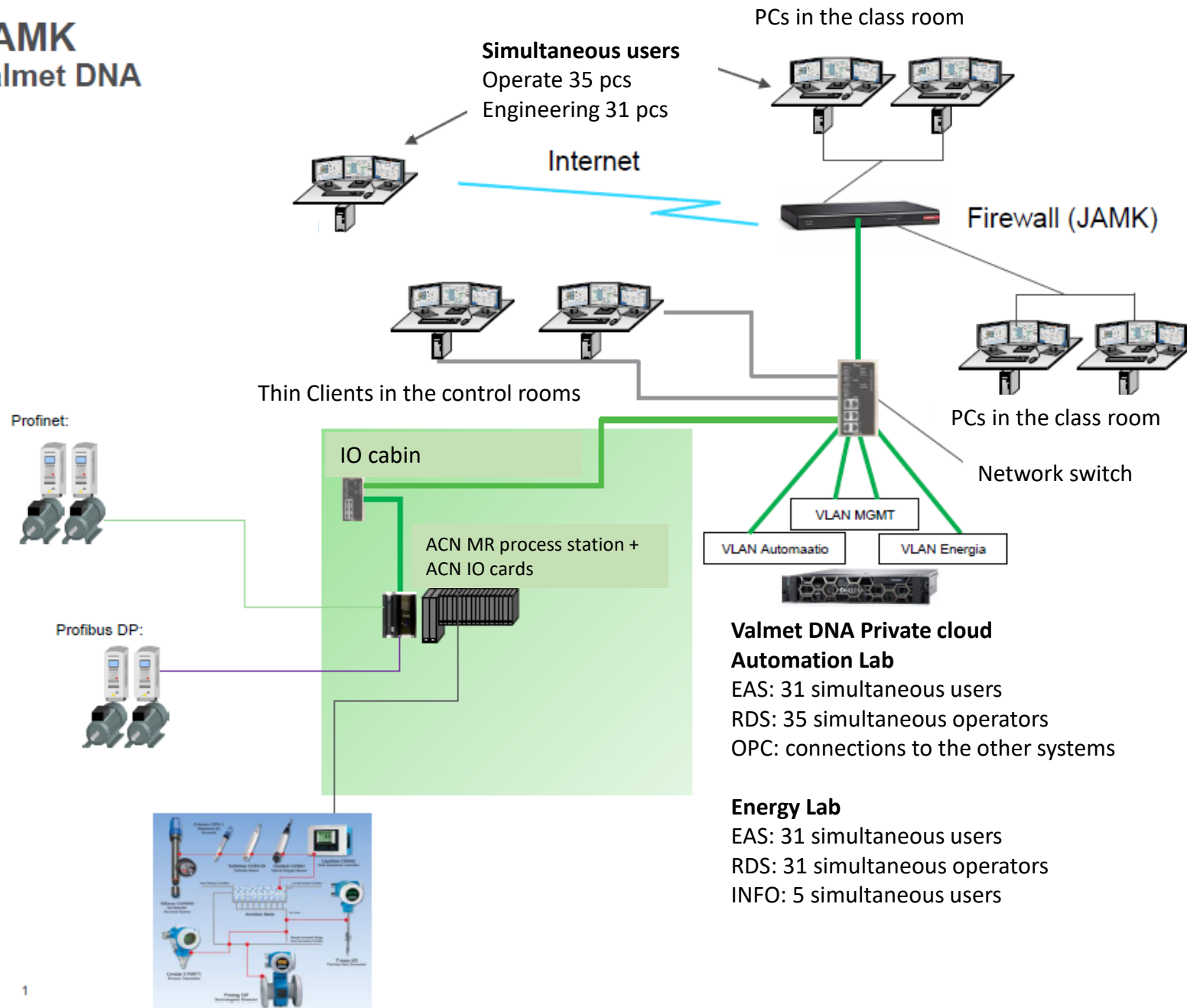


Automation systems 1

TSAA0400 5 cr

JAMK Valmet DNA



Valmet DNA

ACN MR proces station and ACN IO

FBC 2

Process Control Station
PCS

ACN MR

FBC slots 4,5, and 6
Profibus DP

Profinet

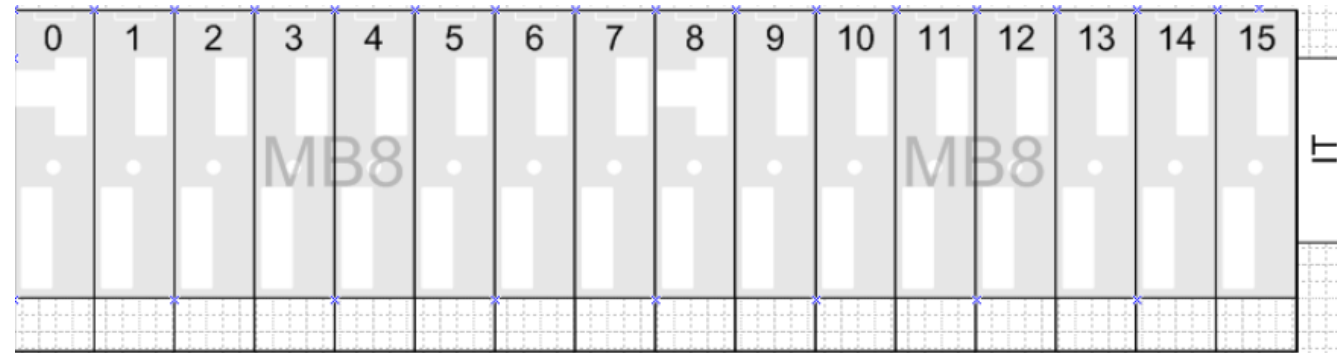


Valmet DNA ACN IO

ACN MR



ACN IO



16 I/O cards in one unit

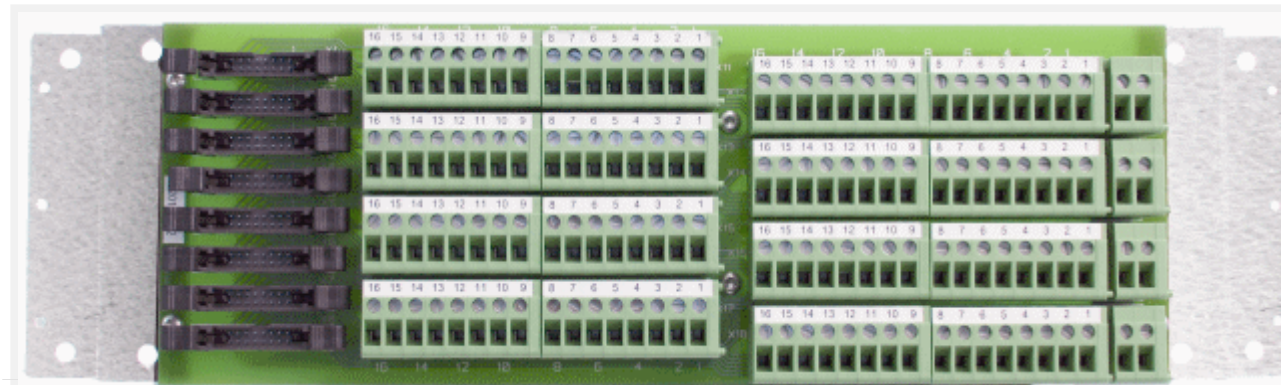
DI8: 8 channels

DO8: 8 channels

AI8: 8 channels

AO8: 8 channels

TI4: 4 channels

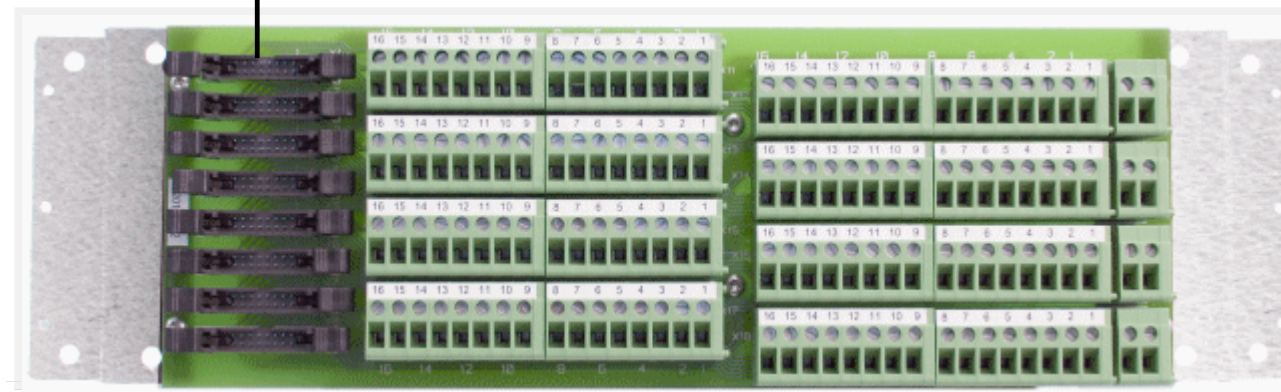


CXR cross connection board

Valmet DNA MIO IO

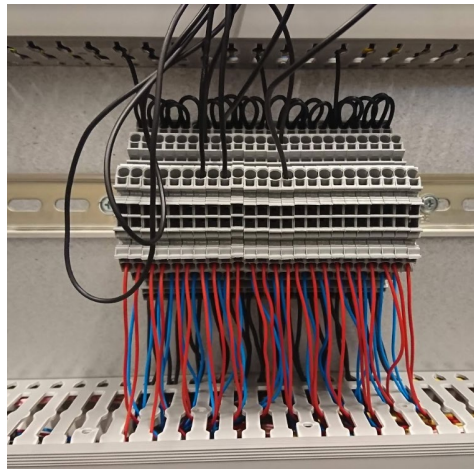


AI8C card



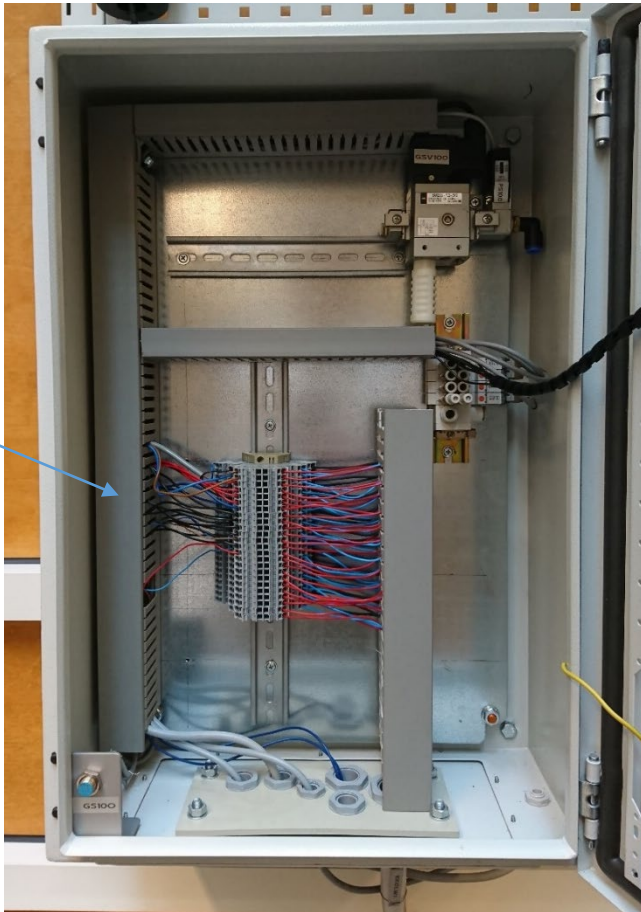
CXR cross connection board

Valmet DNA MIO IO, cross connection



Field box and multi pair cable

Device cables

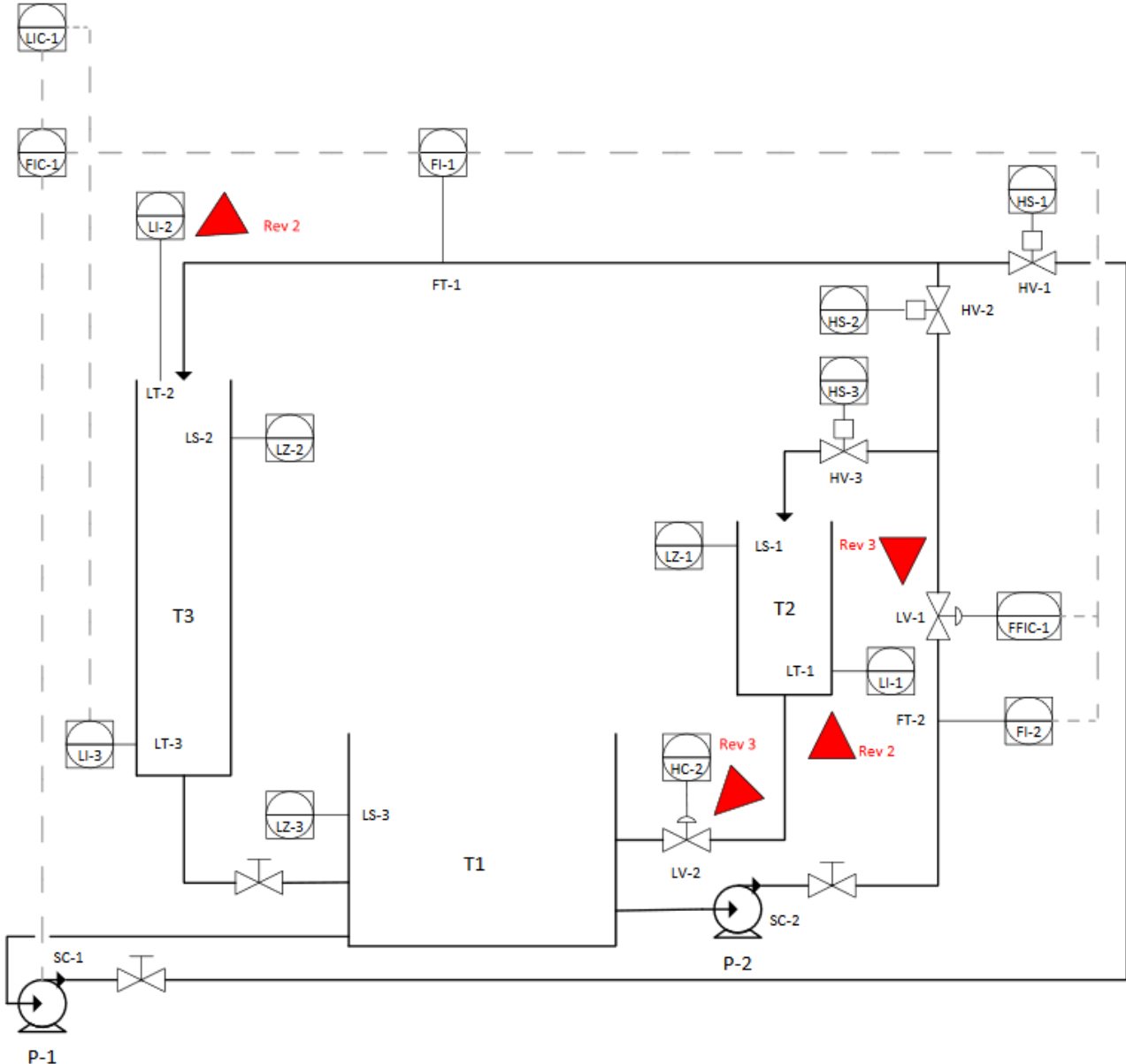


HW design

Where to start?

- We need an initial data!
- There might be done some basic engineering. The output of basic engineering is process diagrams, PI diagrams, system descriptions, etc.
- Choosing field devices, pumps, frequency converters, etc.
- Prepare the loop list and the IO list.

PI diagram: Water process



Field device and IO list

Examples of needed information

- Shut off valves 3 pcs , control 24 VDC, Burkert, type, minimum of pressurized air 2,5 bar, needed current max. xxx mA
- ND9103 positioner, Metso Endress, 4..20mA (0...100%), power supply?
- Frequency converter Vacon NXL 1 kW, control 4...20 mA (0...50Hz) , power (kW)
- Level measurements with pressure transmitter, Cerabar S, 4..20mA (0...150mbar)

Field device and IO list

Examples of needed information

- Volume flow Promag 53, MetsoEndress, 4...20mA (0...200 l/min), power for coil, voltage supply
- Level switch LIQUIPHANT-M-FTL, MetsoEndress, 24VDC, potential free, current xxx mA
- Temperature measurement 4...20mA Pt100 (-40 ... +60 C)
- The foundation of engineering is the detail information of the field devices. The data can be found from the device manuals and specifications.

PI diagram: Water process

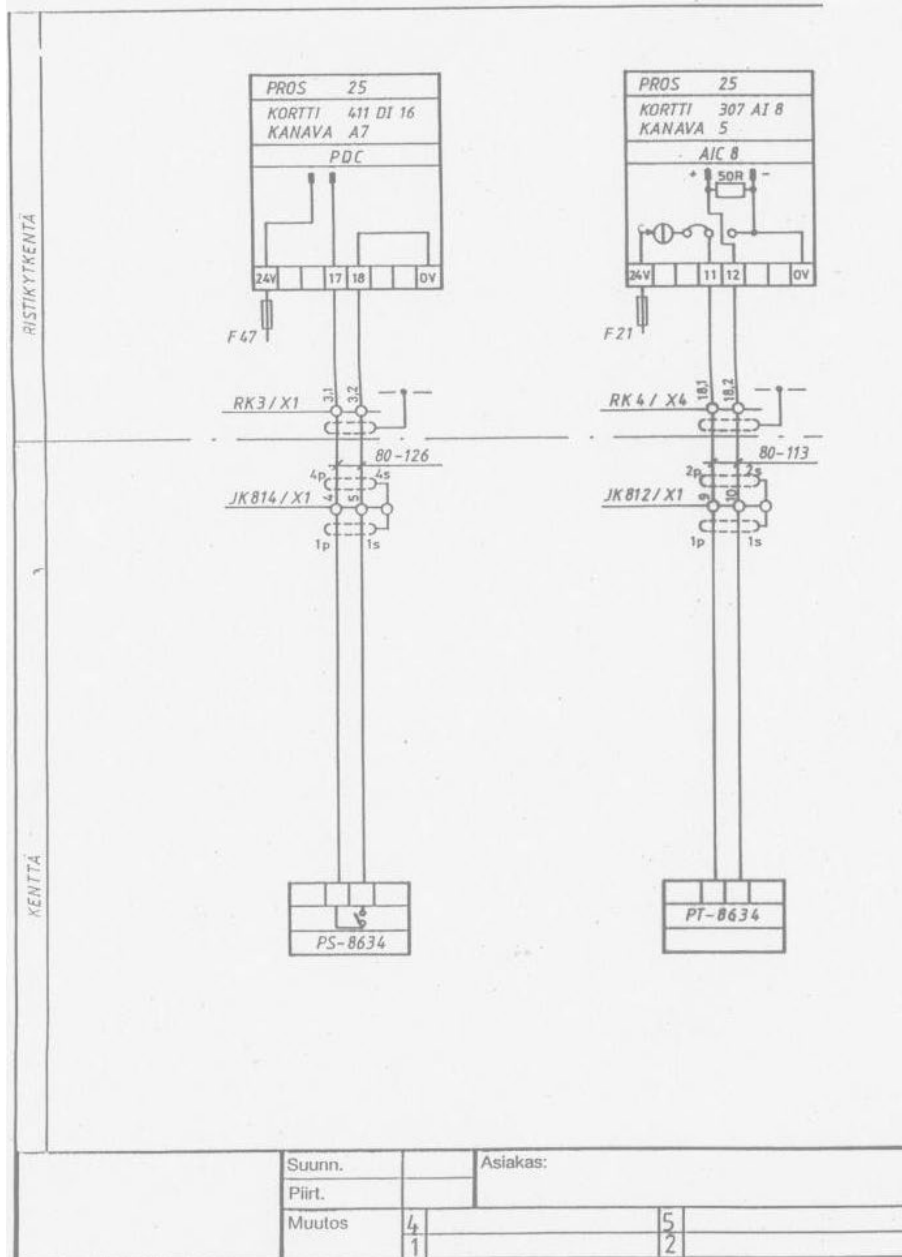
Prosessi- asema	FBC #	I/O yksikkö	Kortti	Korttipaikka	kanava	Laitetunnus	Positiotunnus*	Signaali	Toiminto
GP02	2	PIC # 0	AOU4	7	0	LV-1	LIC-1	4...20mA	pinnankork. säätö
GP02	2	PIC # 0	BIU8	6	0	LS-1	LZ-1	kytkin	ylitäyttö- suoja
GP02	2	PIC # 0	AOU4	7	1	SC-1	SIC-1	4...20mA	P-1 kierrosluvun säätö
GP02	2	PIC # 0	BIU8	6	1	SC-1		24 VDC	P-1 käyntitieto
GP02	2	PIC # 0	AOU4/2	8	0	LV-2	LIC-2	4...20mA	pinnankork. säätö

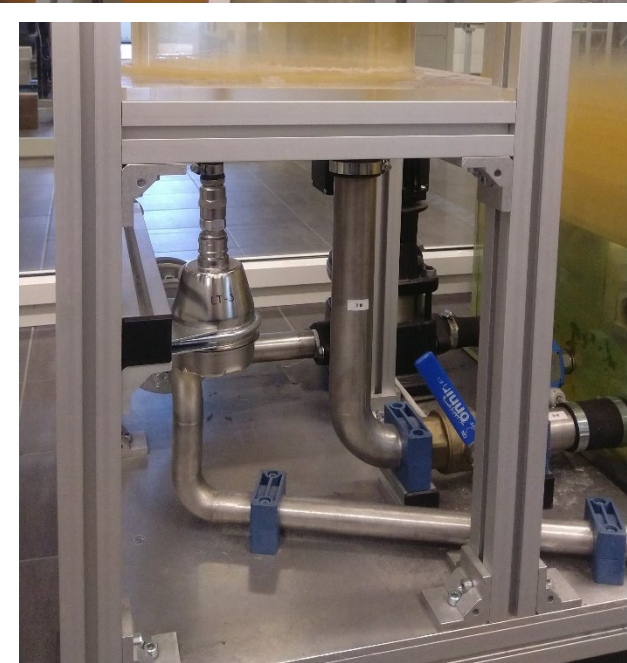
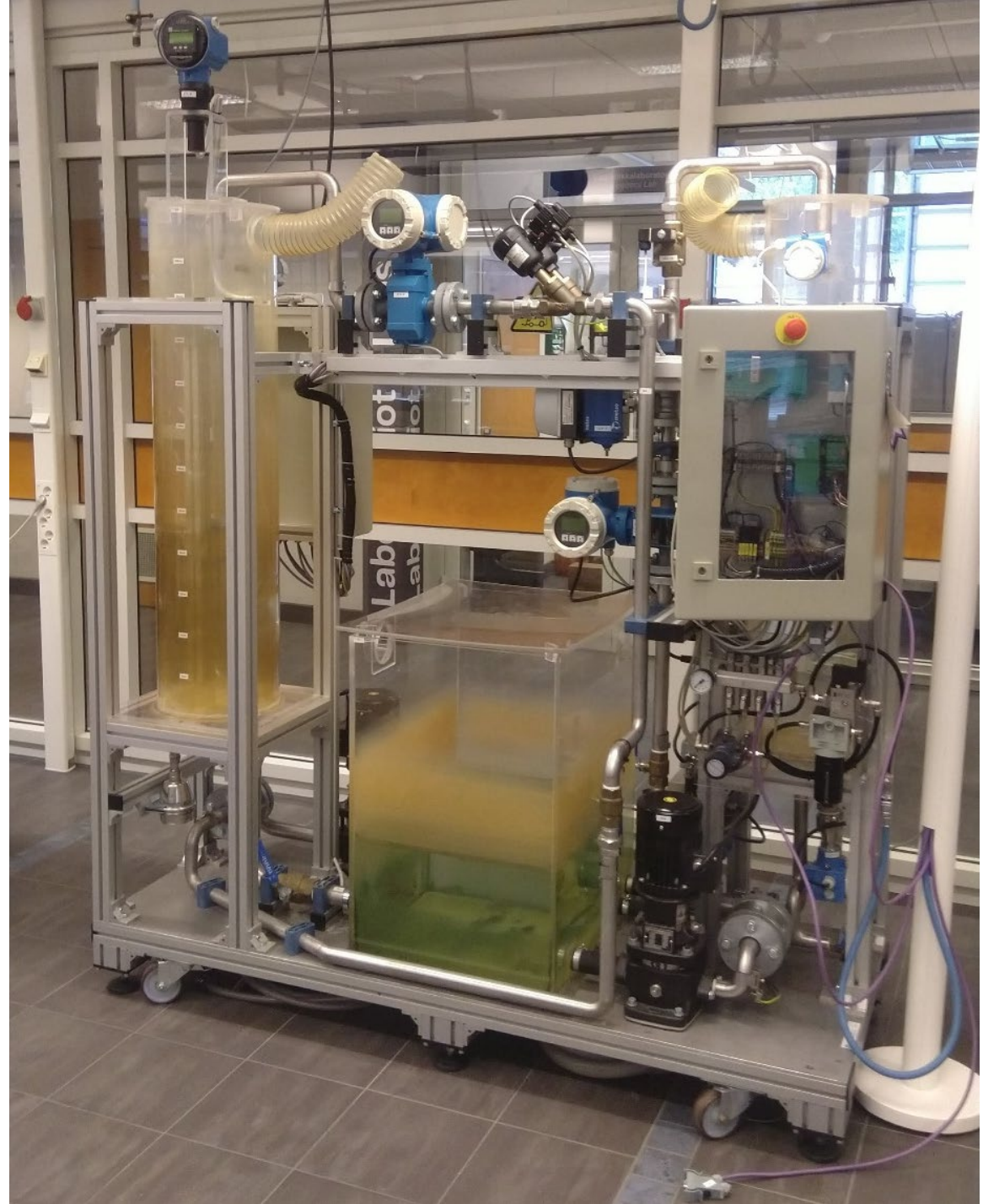
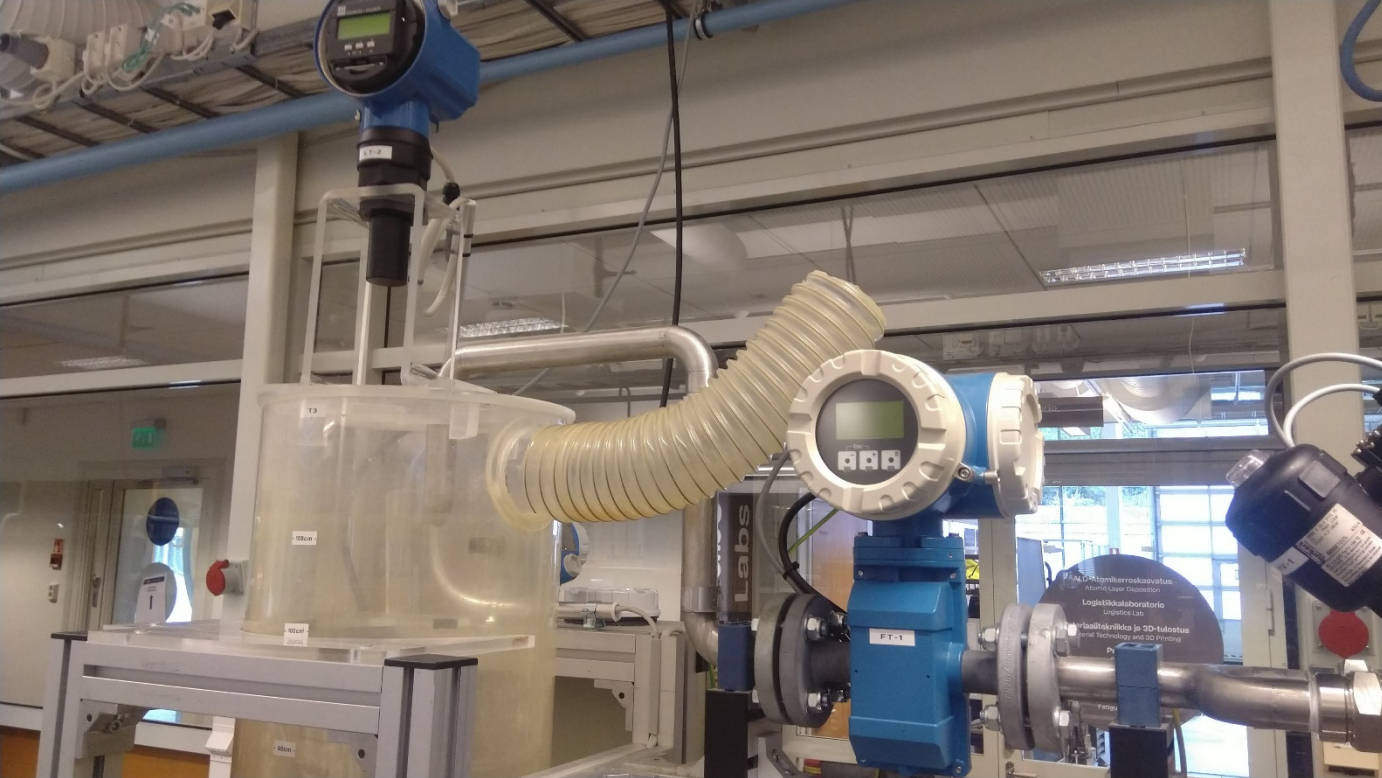
Instrumentation loop diagram

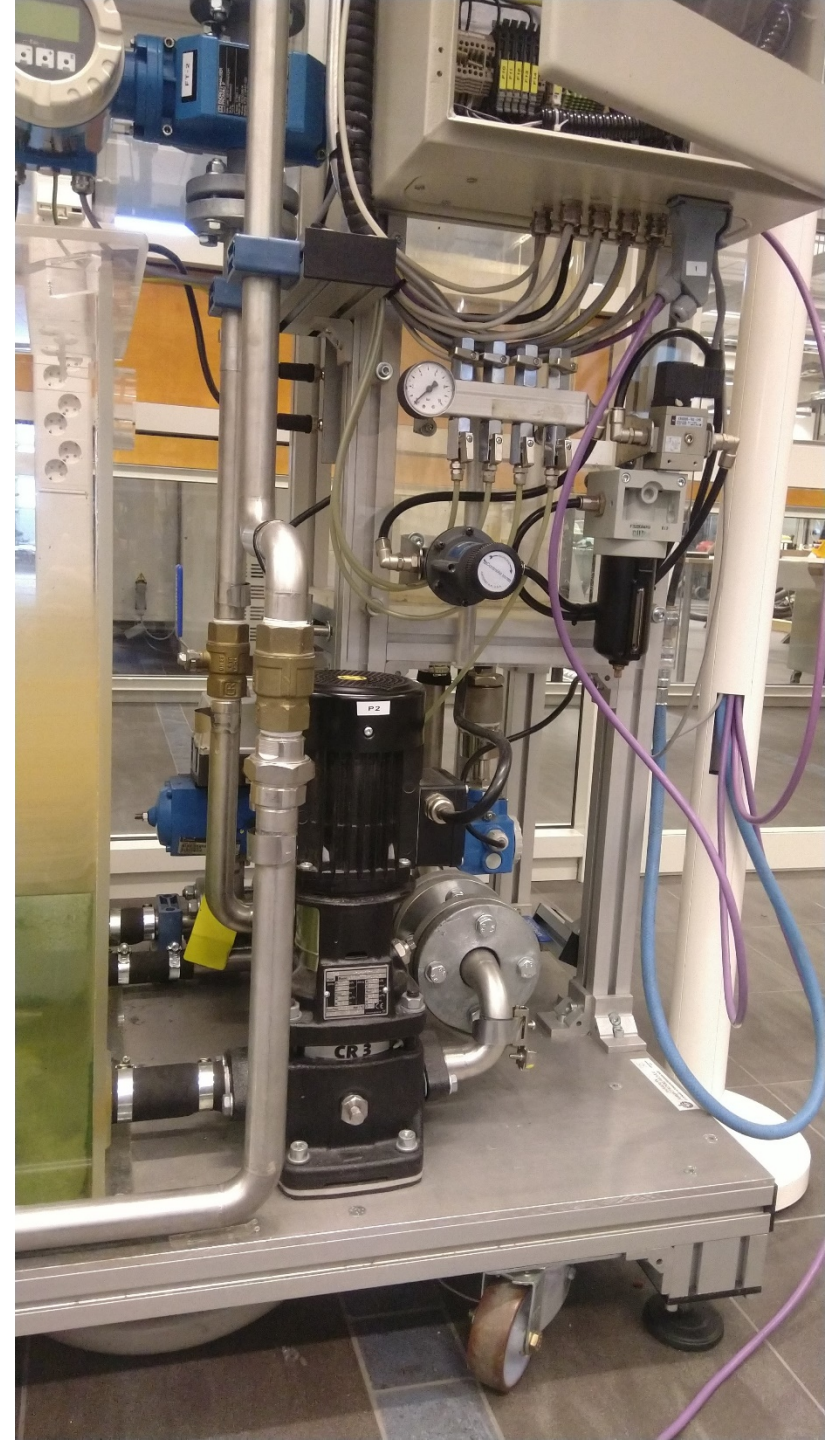
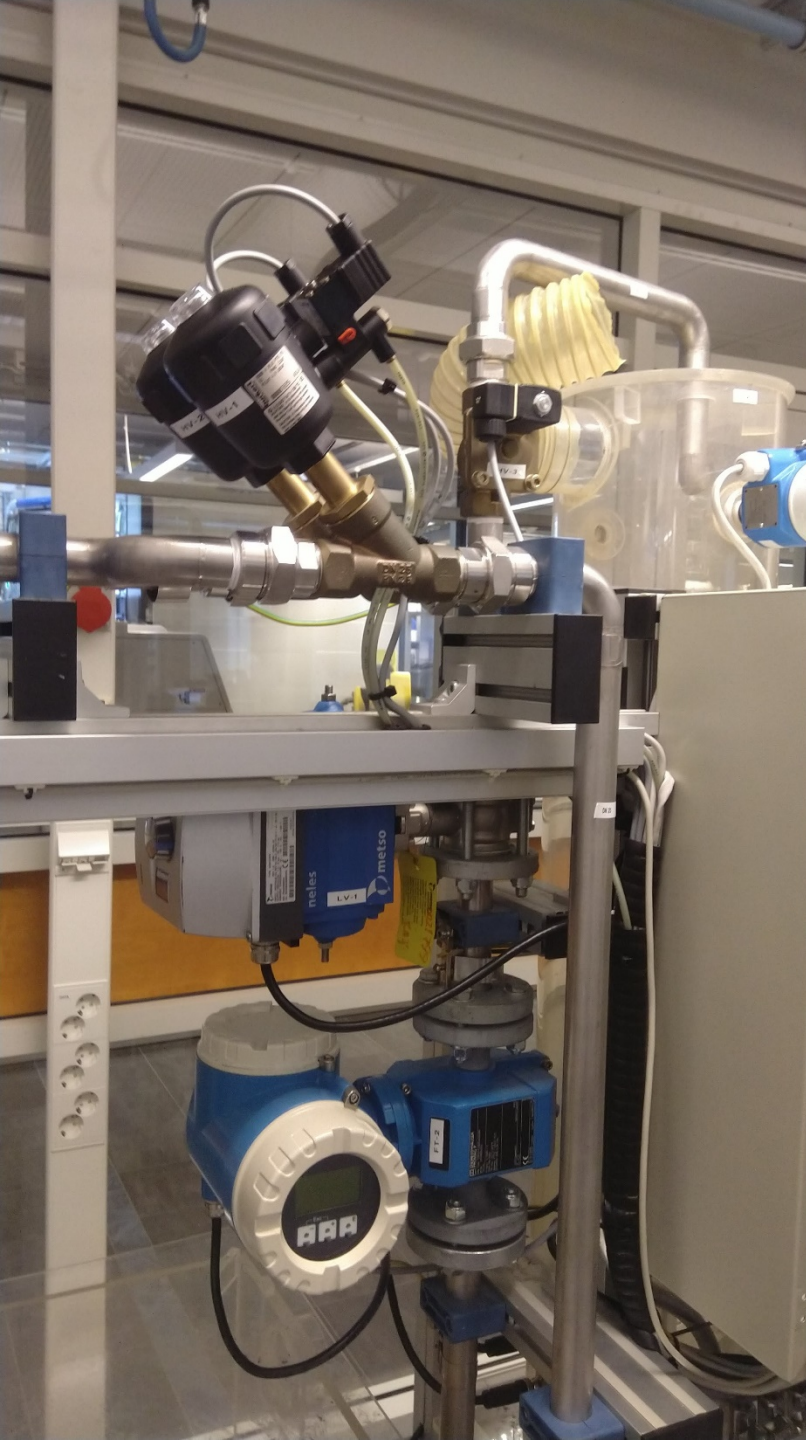
The loop diagramn

- Connections in the field device and in the field box
- Cabling
- Cross connection
- Connections to the IO cards.

Loop diagram







Pictures from behind

