Faculty
of Physics
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Development of analysis module software for the gas system of the TOF/MPD detector

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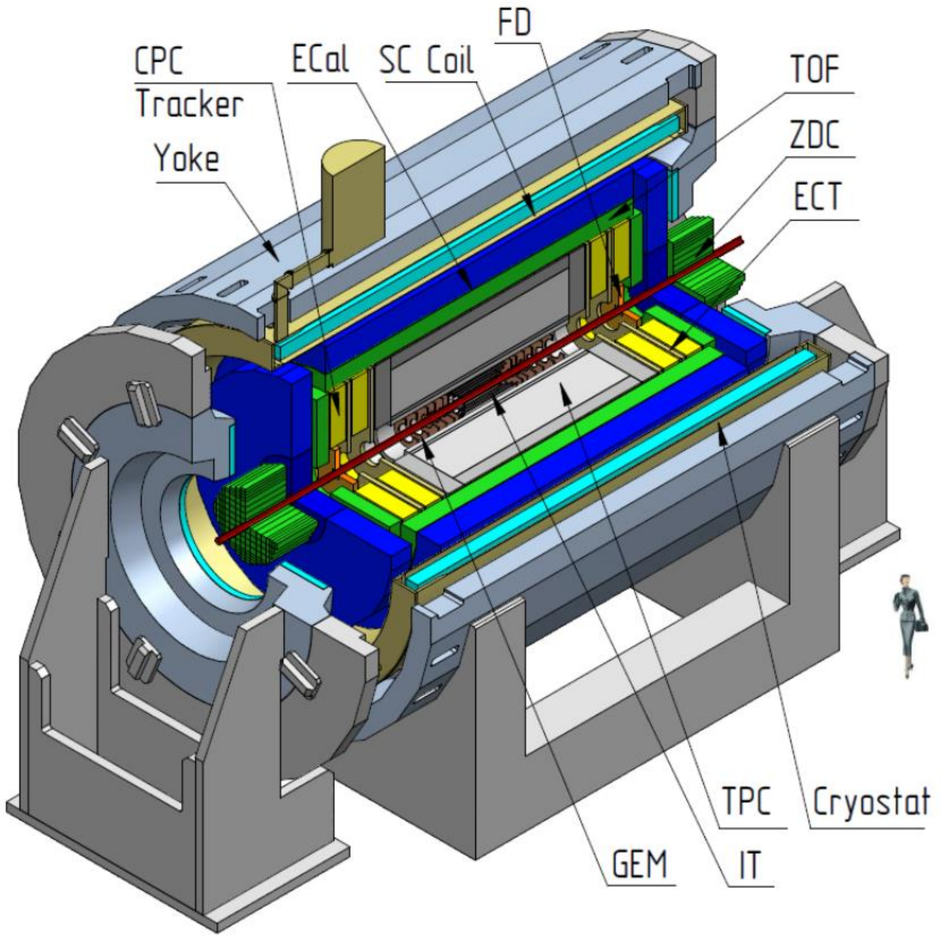
Multi Purpose Detector (MPD)

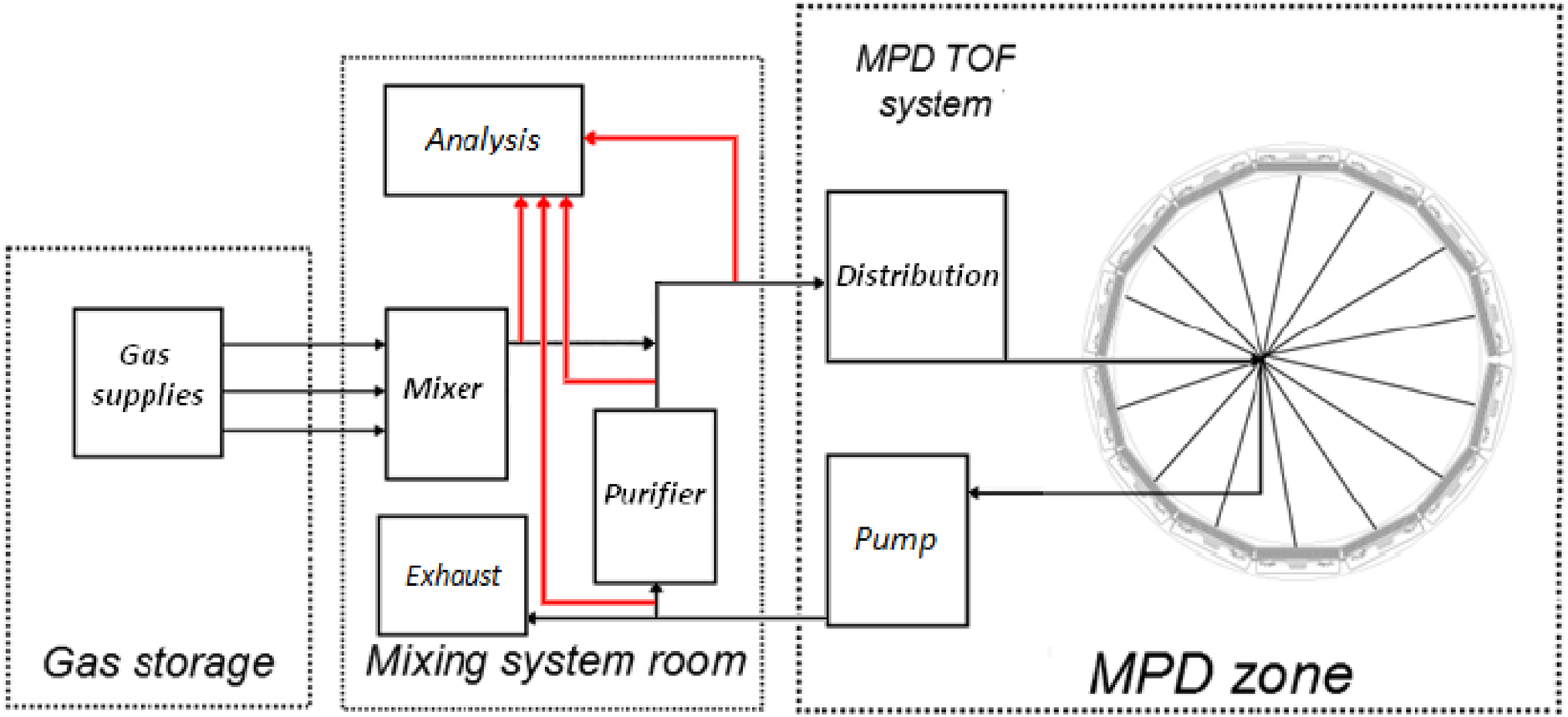
MPD has four group of detections systems:

- Reconstruction of particle flight path
- Particle identification
- Determination of the moment of collision
- Determination of the centrality and plane of the collision

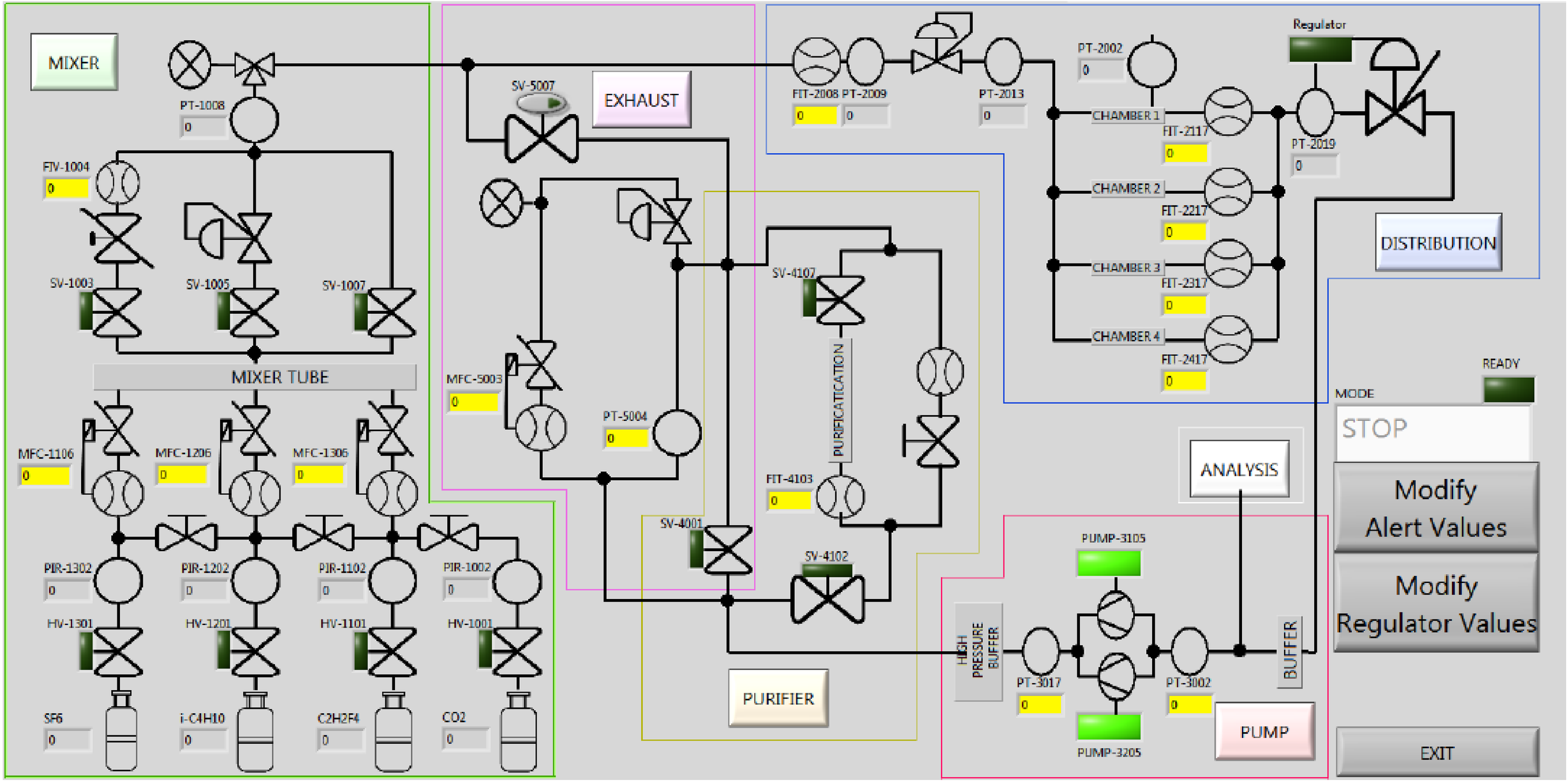


http://nica.jinr.ru/images/ssinfo/mpd-1.png

Gas System



Daniel D., Gas control system for MPD detector at JINR accelerator complex NICA, MSc thesis



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Software for analysis module control

The aplication consists of:

- Interface for Service Panel.
- Develop drivers for HygroPro, Oxy.IQ and pressure transmitter.
- Prepare drivers for the electromagnetic valves.
- Save data to a file and display it in the form of graphs.

System description

- 3-way valves, ball valves, needle valves
- Particulate filter

- Pressure transmitter
- HygroPro
- Oxy.IQ
- Pressure indicator
- Flow indicator

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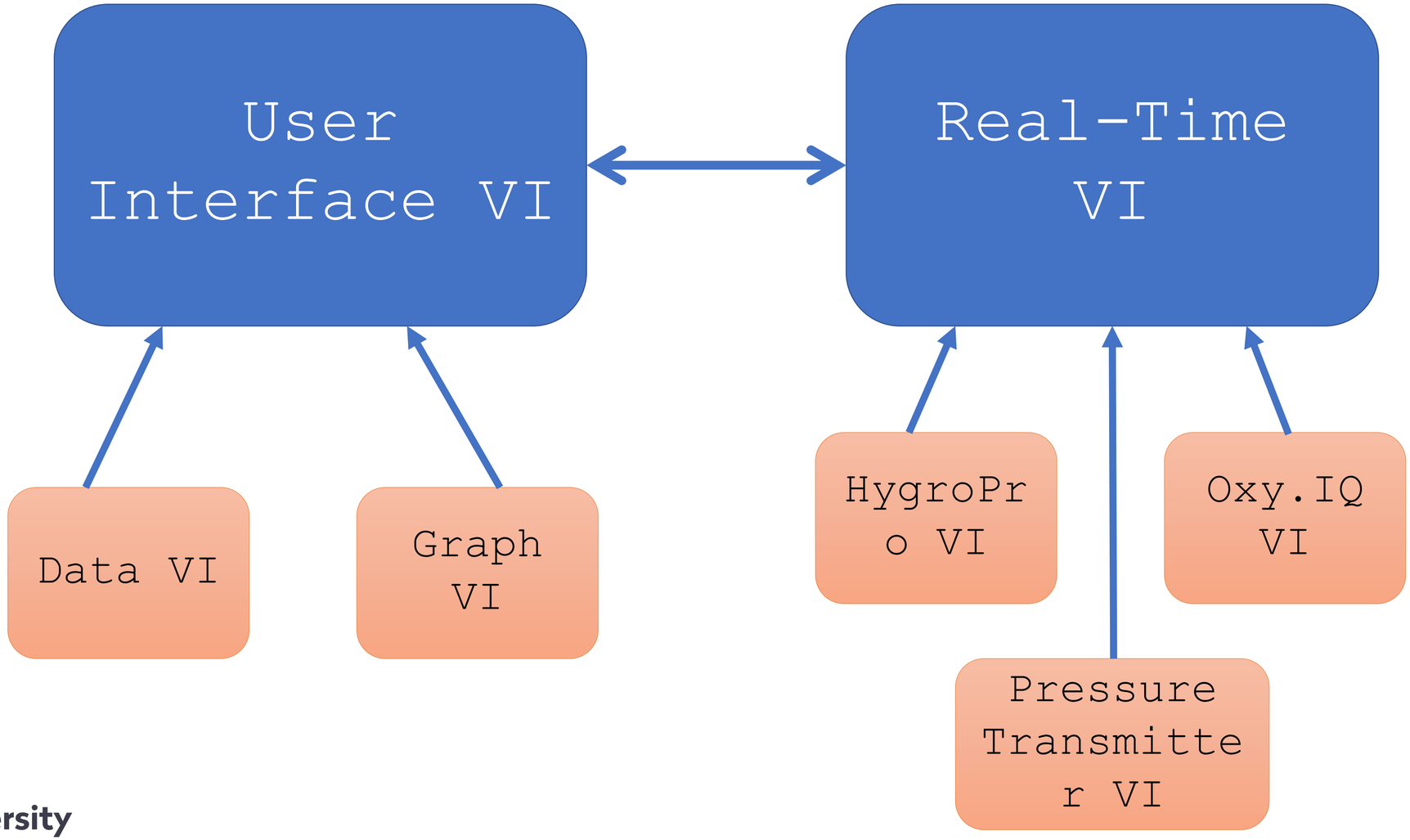
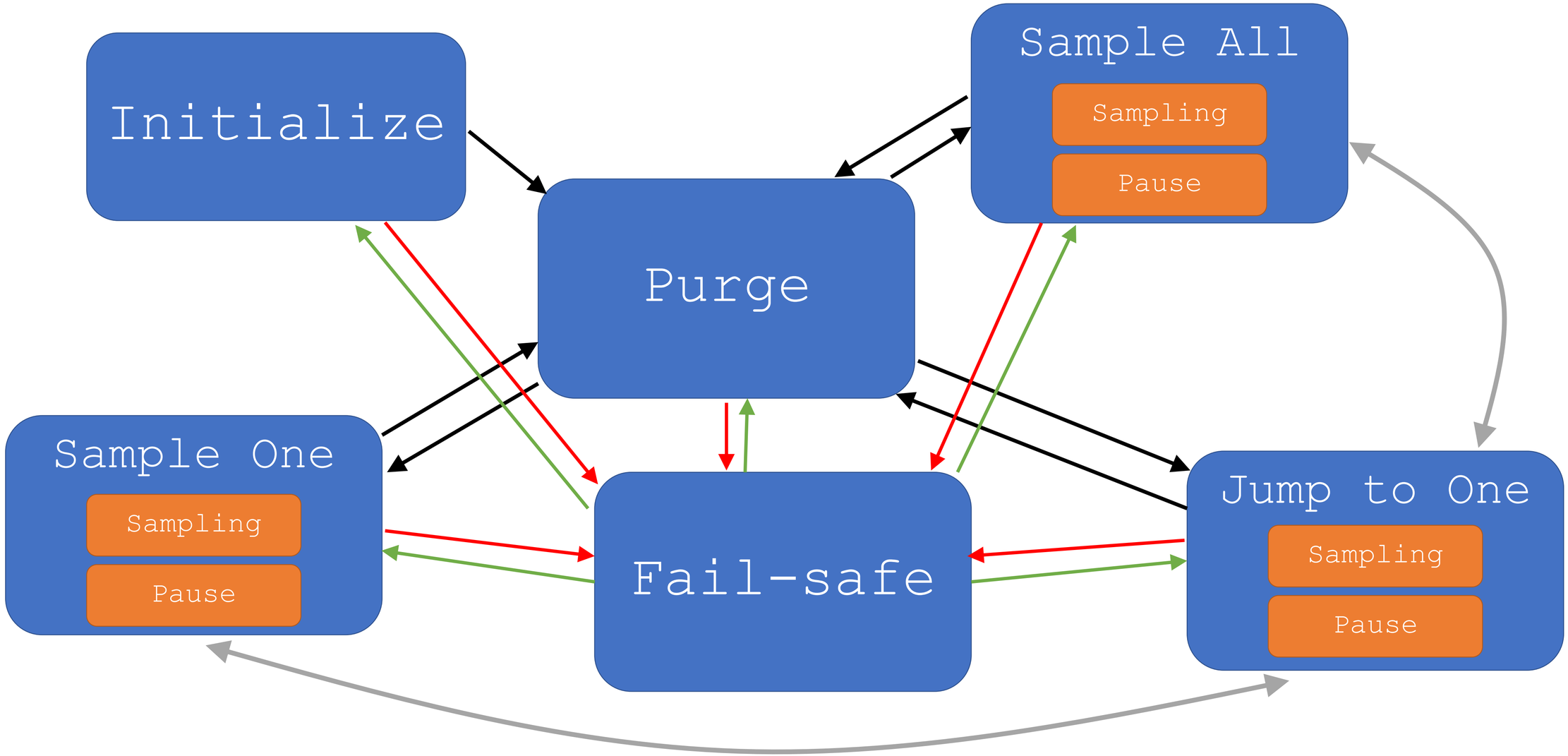
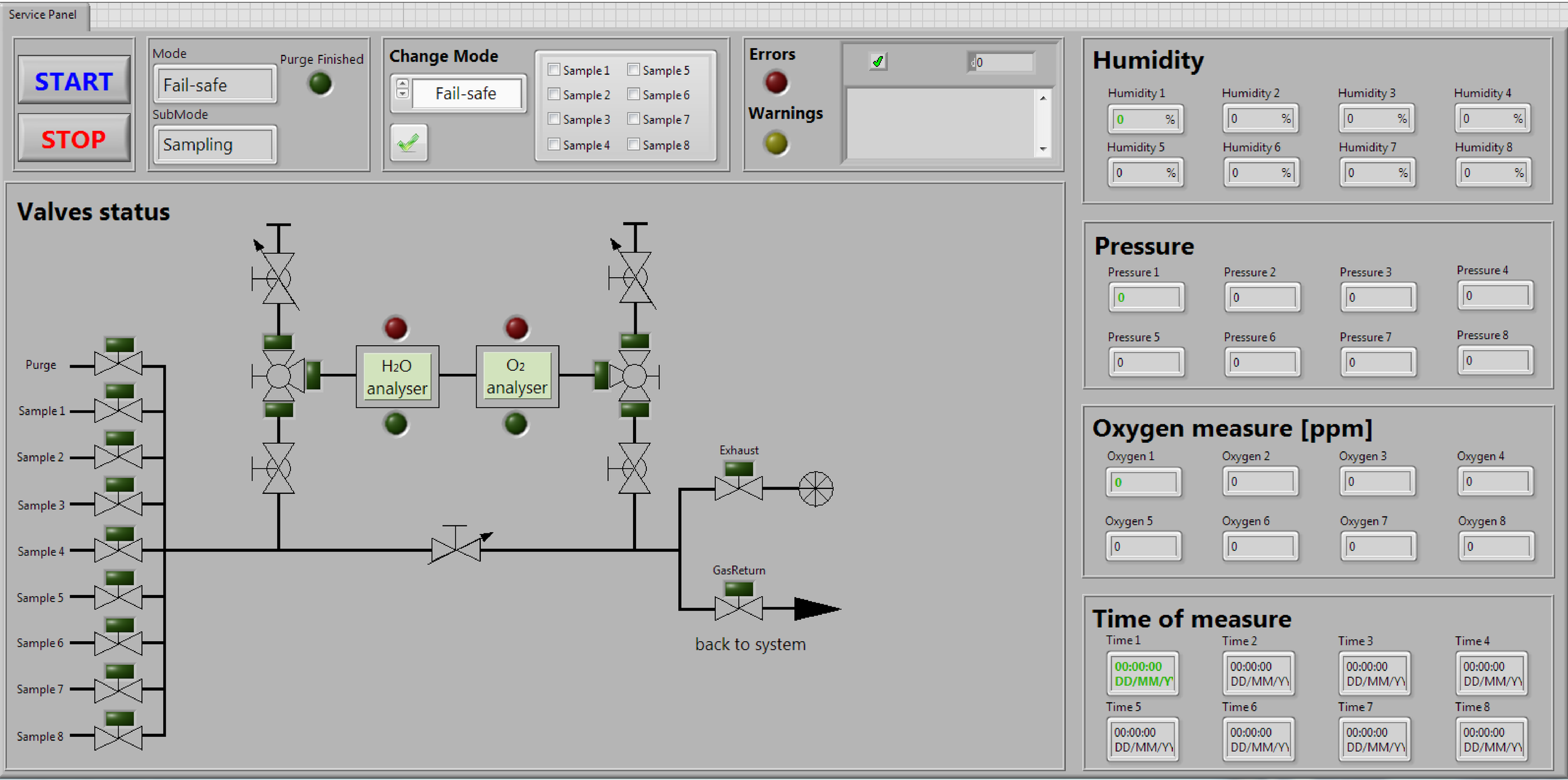
Program Structure



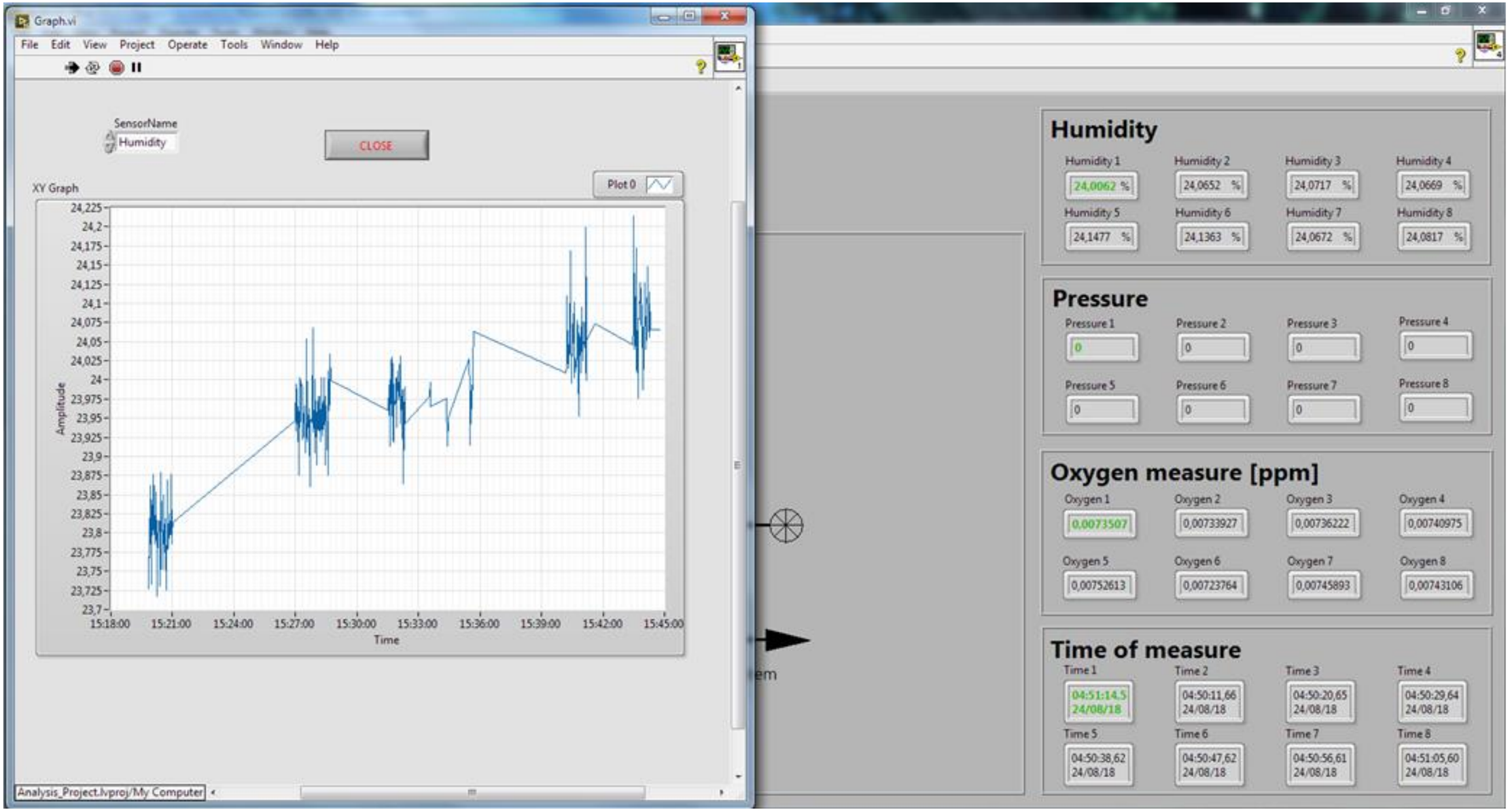
Modes and Submodes



Interface


Service Panel
START
STOP
Mode
Fail-safe
SubMode
Sampling
Purge Finished
Change Mode
Fail-safe
Sample 1
Sample 2
Sample 3
Sample 4
Sample 5
Sample 6
Sample 7
Sample 8
Errors
Warnings
Valves status
Purge
Sample 1
Sample 2
Sample 3
Sample 4
Sample 5
Sample 6
Sample 7
Sample 8
H2O analyser
O2 analyser
Exhaust
GasReturn
back to system
Humidity
Humidity 1
Humidity 2
Humidity 3
Humidity 4
Humidity 5
Humidity 6
Humidity 7
Humidity 8
Pressure
Pressure 1
Pressure 2
Pressure 3
Pressure 4
Pressure 5
Pressure 6
Pressure 7
Pressure 8
Oxygen measure [ppm]
Oxygen 1
Oxygen 2
Oxygen 3
Oxygen 4
Oxygen 5
Oxygen 6
Oxygen 7
Oxygen 8
Time of measure
Time 1
Time 2
Time 3
Time 4
Time 5
Time 6
Time 7
Time 8
00:00:00
DD/MM/YY

Graph


Graph.vi
File Edit View Project Operate Tools Window Help
SensorName
Humidity
CLOSE
XY Graph
Plot 0
Amplitude
Time
Analysis_Project.lvproj/My Computer
Humidity
Humidity 1
24,0062 %
Humidity 2
24,0652 %
Humidity 3
24,0717 %
Humidity 4
24,0669 %
Humidity 5
24,1477 %
Humidity 6
24,1363 %
Humidity 7
24,0672 %
Humidity 8
24,0817 %
Pressure
Pressure 1
0
Pressure 2
0
Pressure 3
0
Pressure 4
0
Pressure 5
0
Pressure 6
0
Pressure 7
0
Pressure 8
0
Oxygen measure [ppm]
Oxygen 1
0,0073507
Oxygen 2
0,00733927
Oxygen 3
0,00736222
Oxygen 4
0,00740975
Oxygen 5
0,00752613
Oxygen 6
0,00723764
Oxygen 7
0,00745893
Oxygen 8
0,00743106
Time of measure
Time 1
04:51:14,5
24/08/18
Time 2
04:50:11,66
24/08/18
Time 3
04:50:20,65
24/08/18
Time 4
04:50:29,64
24/08/18
Time 5
04:50:38,62
24/08/18
Time 6
04:50:47,62
24/08/18
Time 7
04:50:56,61
24/08/18
Time 8
04:51:05,60
24/08/18

Data

Time[h/m/s]	Mode	SubMode	Humidity[%]	Oxygen[ppm]	Pressure	Purge	Exhaust
11:12:52	Purge	Sampling	23,385071	1002,515197	0,005370	0	0
11:12:53	Purge	Sampling	23,344658	1002,538964	0,005399	0	0
11:12:54	Purge	Sampling	23,325185	1002,515361	0,005333	0	0
11:12:55	Purge	Sampling	23,377424	1002,548307	0,005379	0	0
11:12:56	Purge	Sampling	23,471207	1002,534375	0,005385	0	0
11:12:57	Purge	Sampling	23,361886	1002,538309	0,005360	0	0
11:12:58	Purge	Sampling	23,366582	1002,530441	0,005366	0	0
11:12:59	Purge	Sampling	23,223076	1002,508804	0,005364	0	0
11:13:00	Purge	Sampling	23,350903	1002,545029	0,005364	0	0
11:13:01	Purge	Sampling	23,299541	1002,517983	0,005367	1	0
11:13:02	Purge	Sampling	23,392193	1002,548799	0,005379	1	1
11:13:03	Purge	Sampling	23,442252	1002,539784	0,005379	1	1
11:13:04	Sample All	Sampling	23,388480	1002,516016	0,005382	0	1
11:13:05	Sample All	Pause	23,323891	1002,519950	0,005389	0	0

Thank you for attention ☺

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