



WYDZIAŁ MECHATRONIKI
POLITECHNIKI WARSZAWSKIEJ

Returning gas pressure stabilization system in ToF detector using membrane pumps.

Grzegorz Załęski

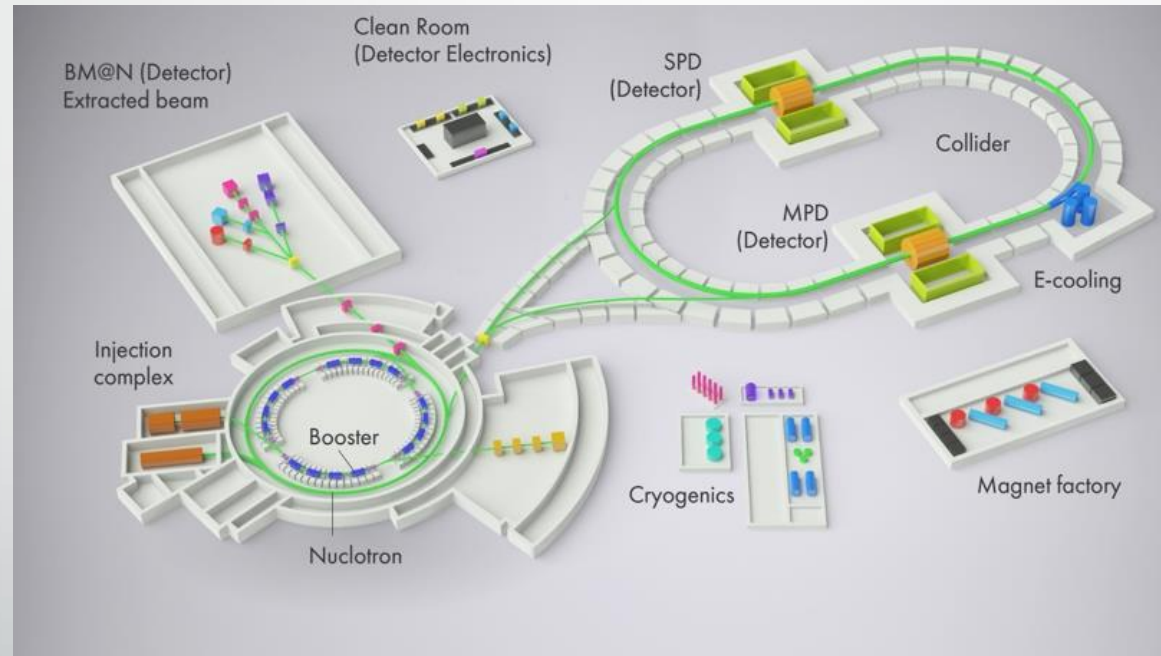


Contents:

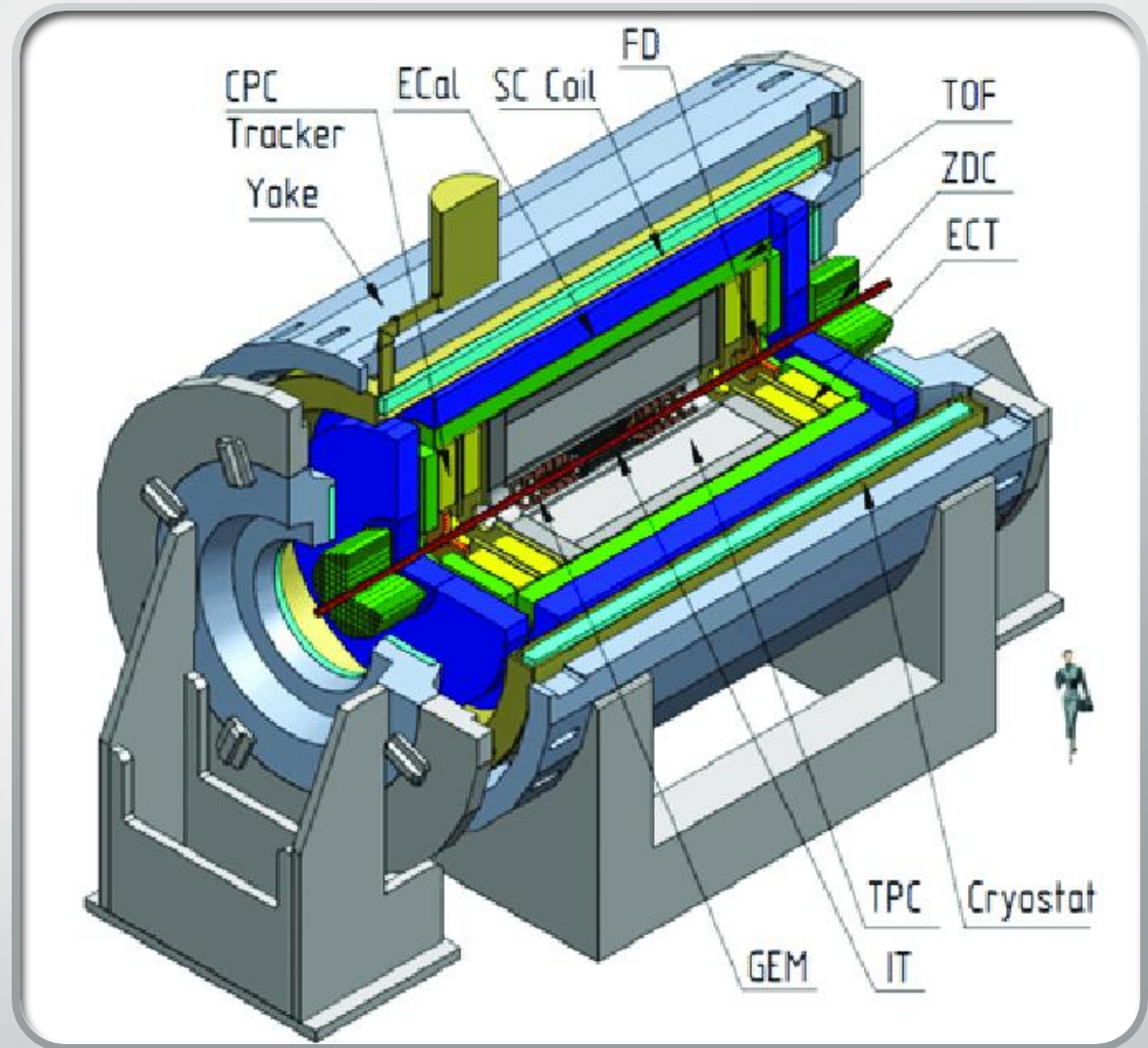
- Introduction
- Manual part
- Regulation
- Encountered problems and future development

Introduction

NICA project

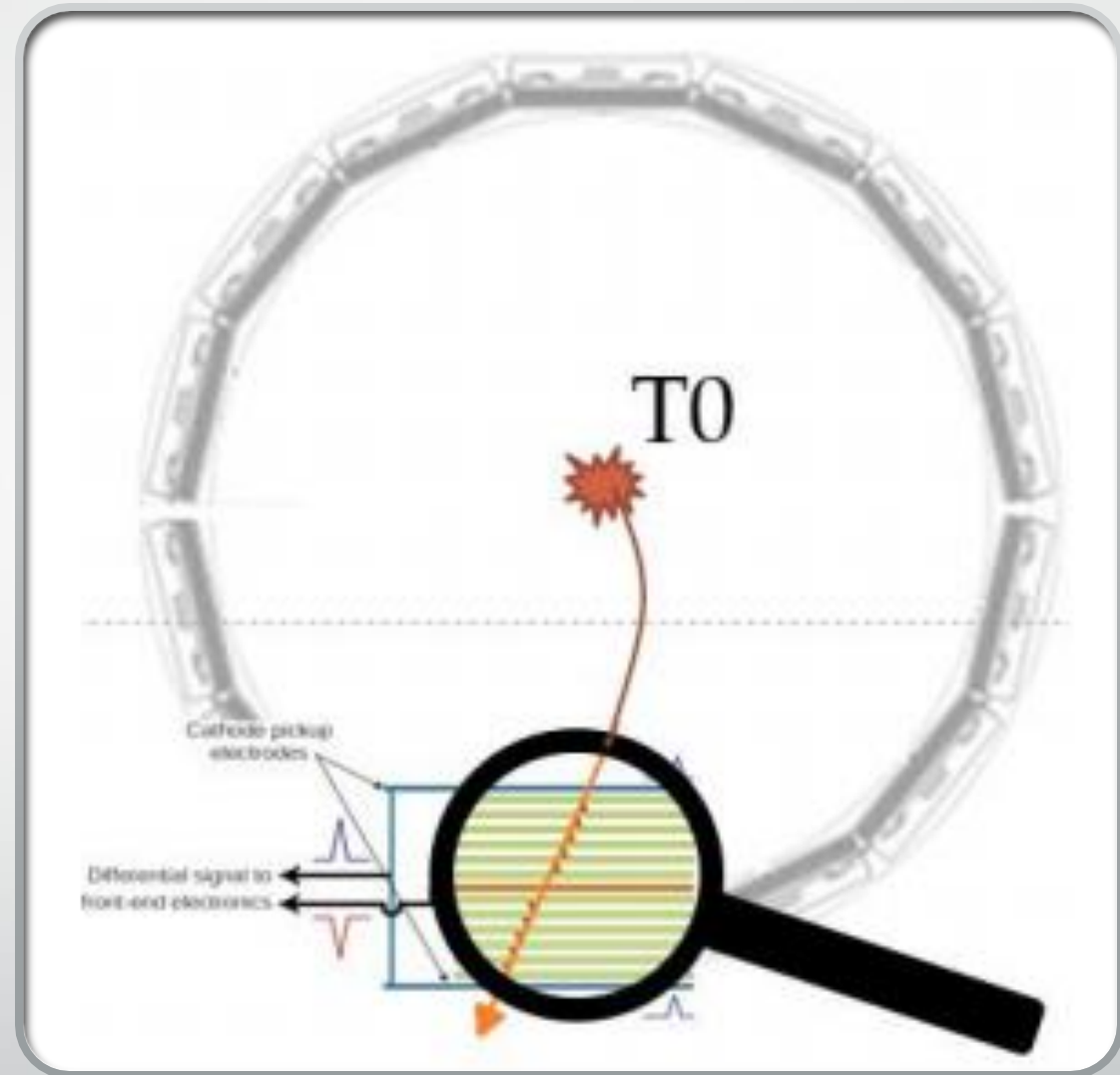


Multi Purpose Detector (MPD)




Time of Flight detector

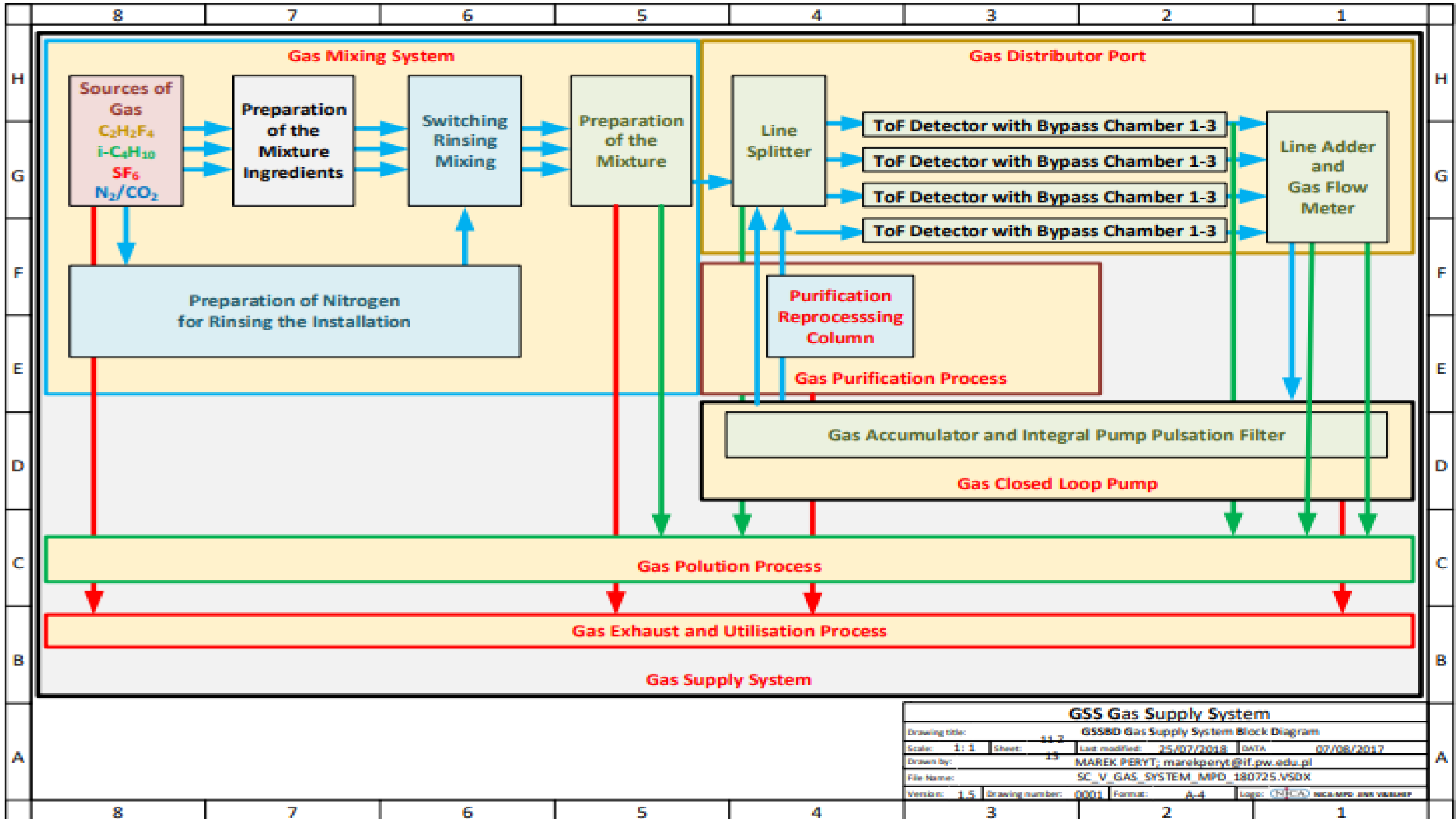
Signal 'start' is being send from FFD detector in the moment of particils collision. Going through ToF they ionize gas inside which causes electromagnetic avalanche and 'stop' signal which ends the measurement.




D. Dąbrowski "Układ sterowania środowiskiem gazowym dla detektora MPD w ramach kompleksu eksperymentalnego NICA"



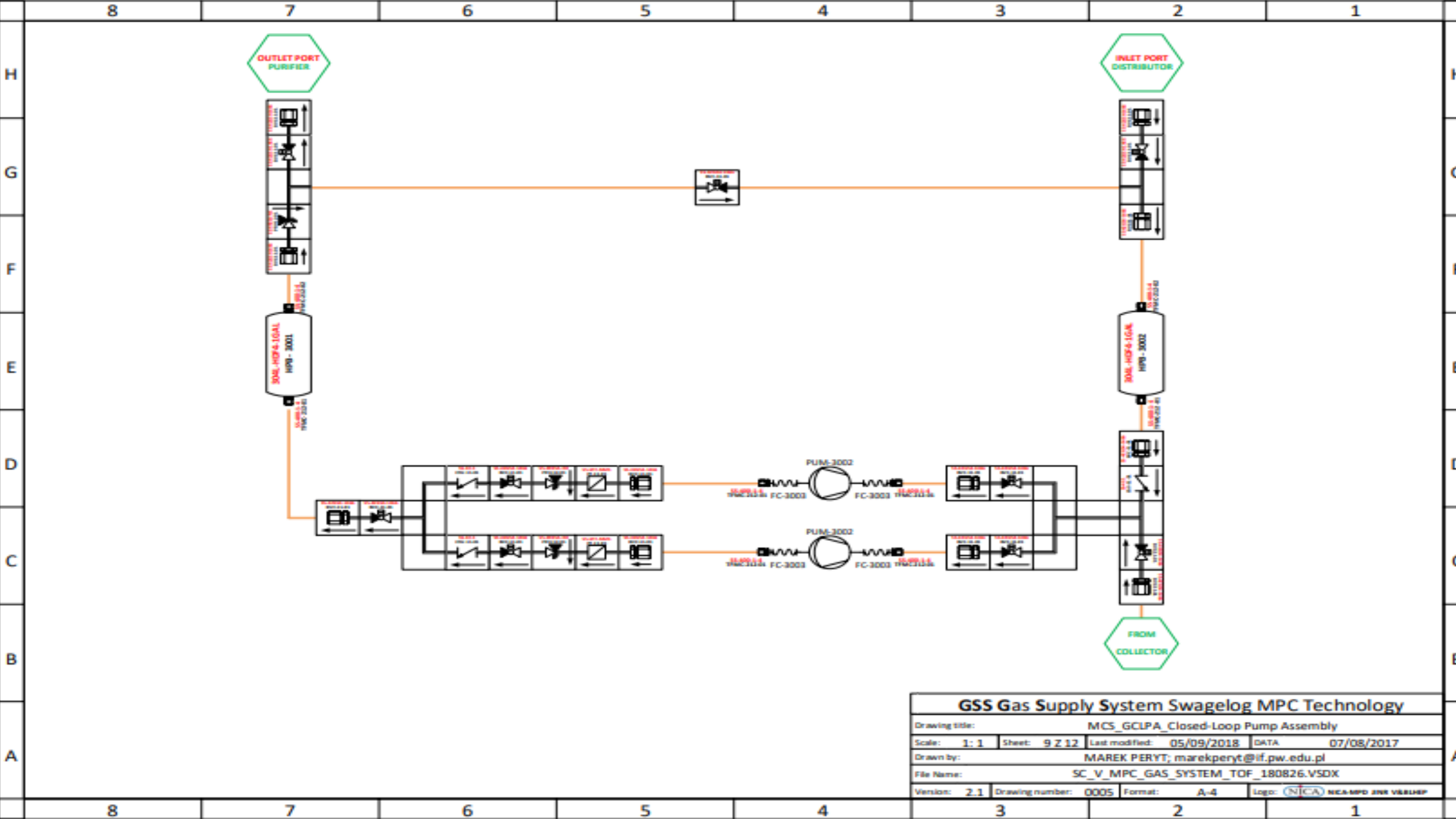
Block diagram of gas system for ToF



GSS Gas Supply System					
Drawing title:	GSS8D Gas Supply System Block Diagram				
Scale:	1:1	Sheet:	15	Last modified:	25/07/2018 DATA 07/08/2017
Drawn by:	MAREK PERYT; marekperyt@if.pw.edu.pl				
File Name:	SC_V_GAS_SYSTEM_MPD_180725.VSDX				
Version:	1.5	Drawing number:	0001	Format:	A-4 Logo:



Scheme of gas returning module itself



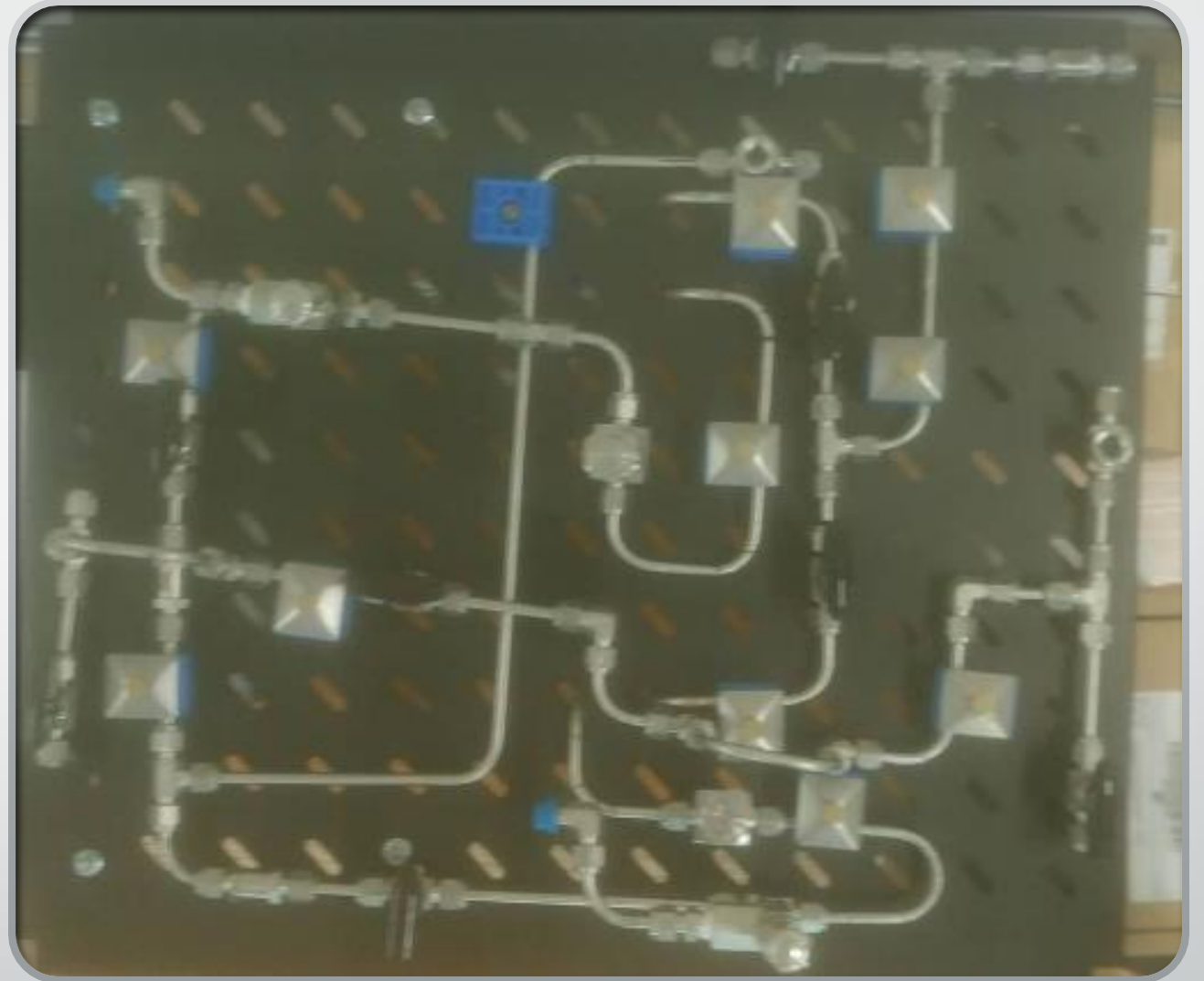
GSS Gas Supply System Swagelok MPC Technology


Drawing title: MCS_GCLPA_Closed-Loop Pump Assembly			
Scale: 1: 1	Sheet: 9 Z 12	Last modified: 05/09/2018	DATA 07/08/2017
Drawn by: MAREK PERYT; marekperyt@if.pw.edu.pl			
File Name: SC_V_MPC_GAS_SYSTEM_TOF_180826.VSDX			
Version: 2.1	Drawing number: 0005	Format: A-4	Logo: NICA-MPD JNR VSB&HP



Assembly of the real setup

First version of the
setup – before
assembling into
RACK





Ready system in RACK



Projection onto the
main system's
platform





Pump control

Main program panel

Cisnienie zadane [bar]

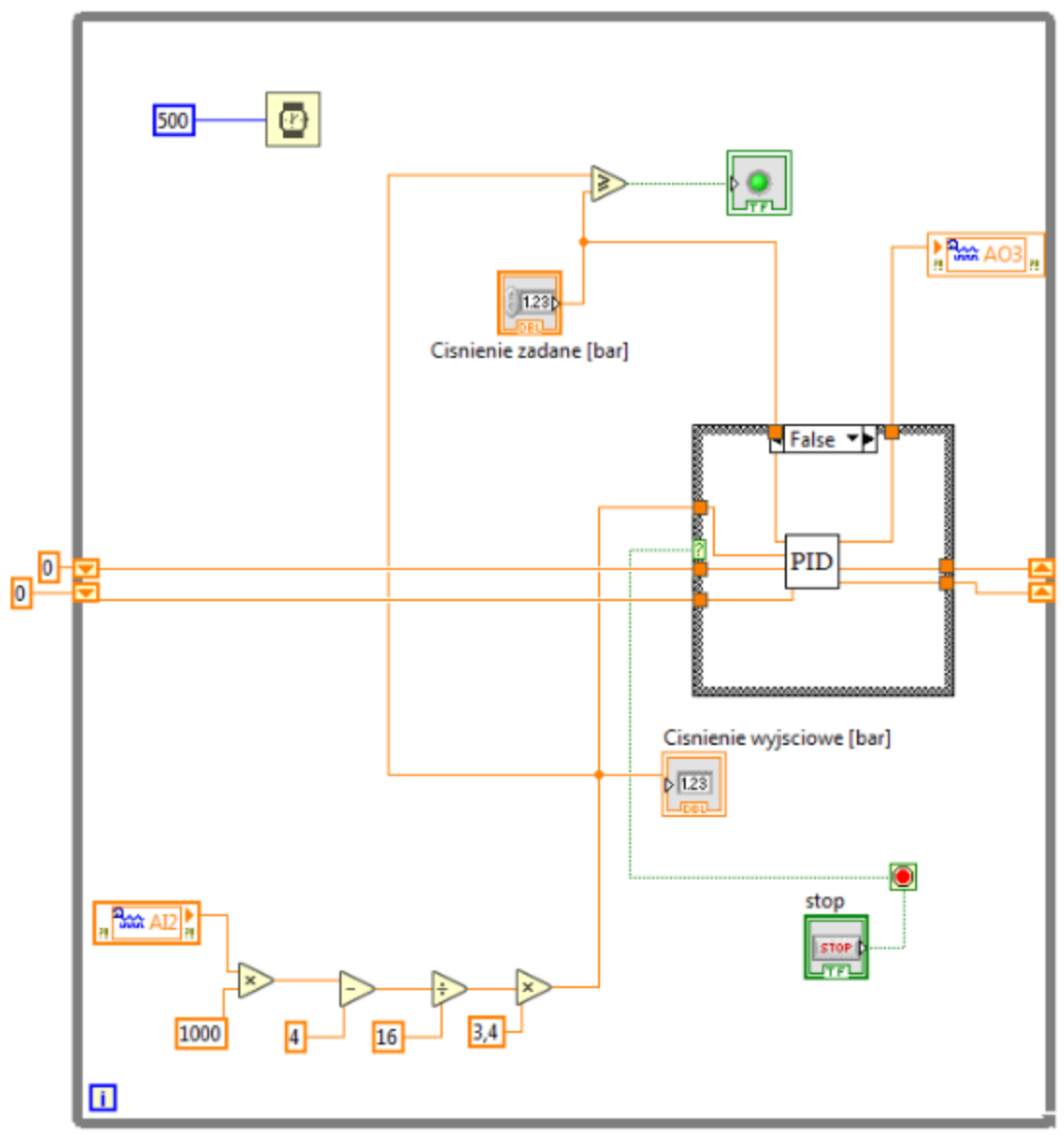
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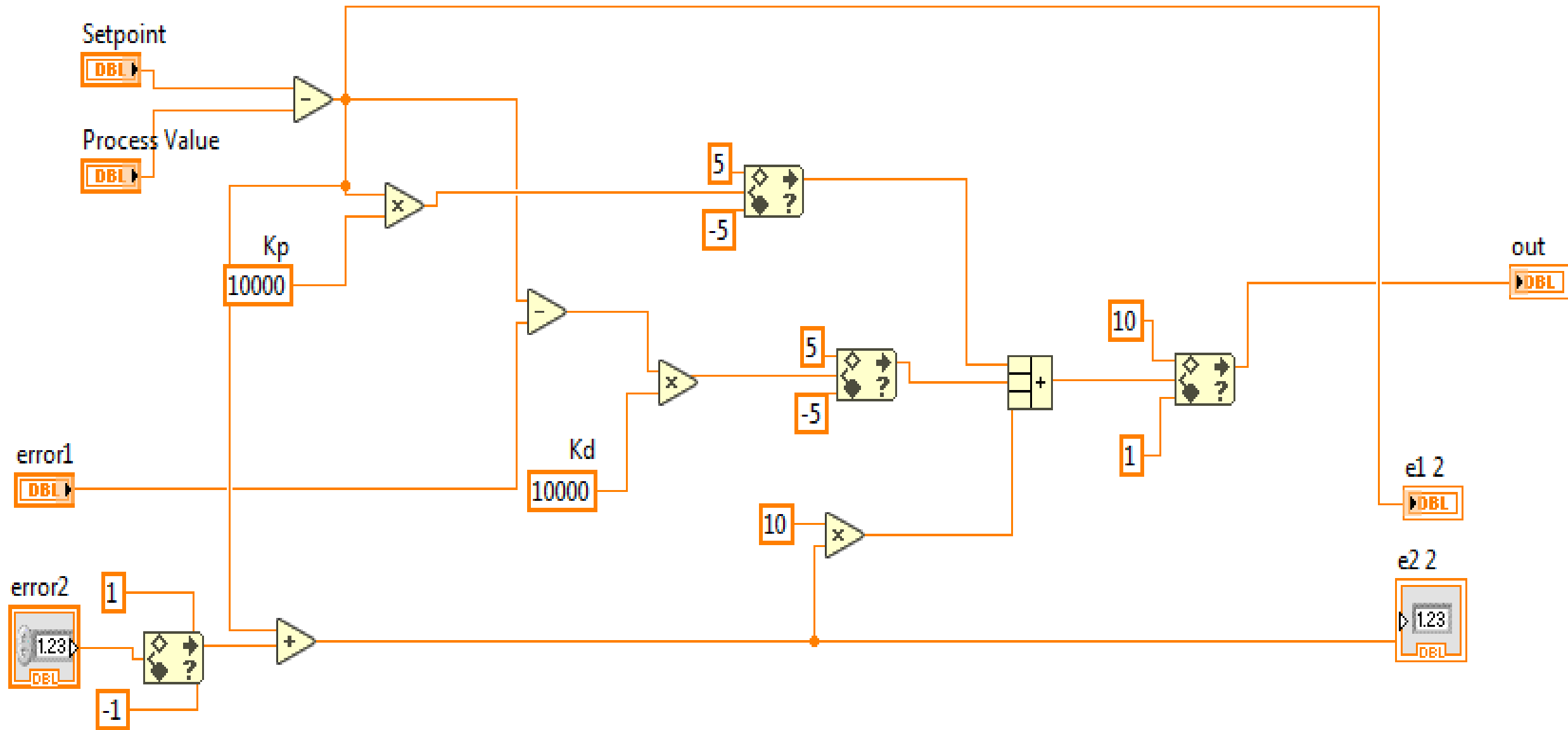
Cisnienie wyjsciowe [bar]

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stop

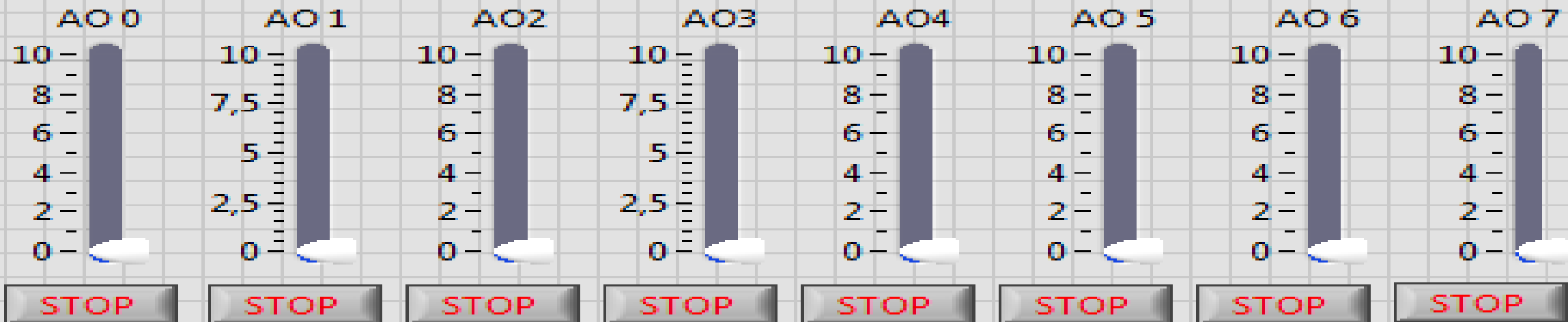
STOP







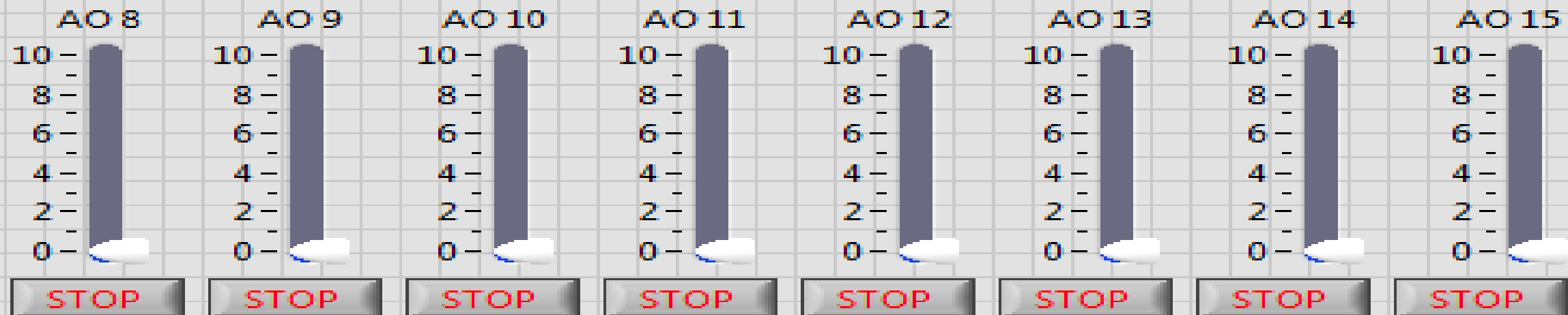
Program to test output cRIO module

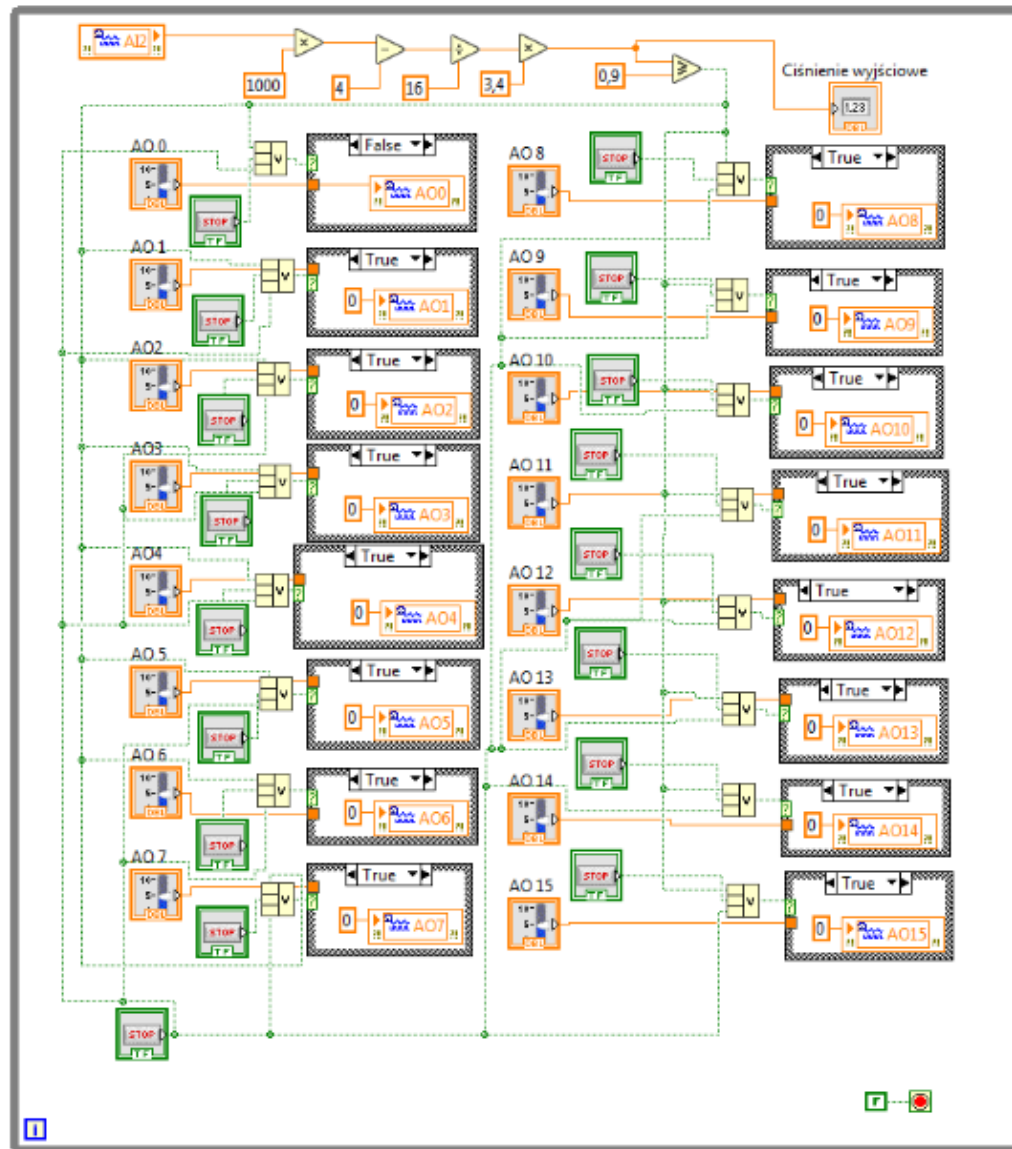


Ciśnienie wyjściowe

0

STOP ALL





Problems encountered during work

- Placement of individual components
- Wiring of pumps into cRIO output module

Future development

- Control algorithm improvement
- Testing program development into service panel



Thank you for your attention

TeFeNICA 2018
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