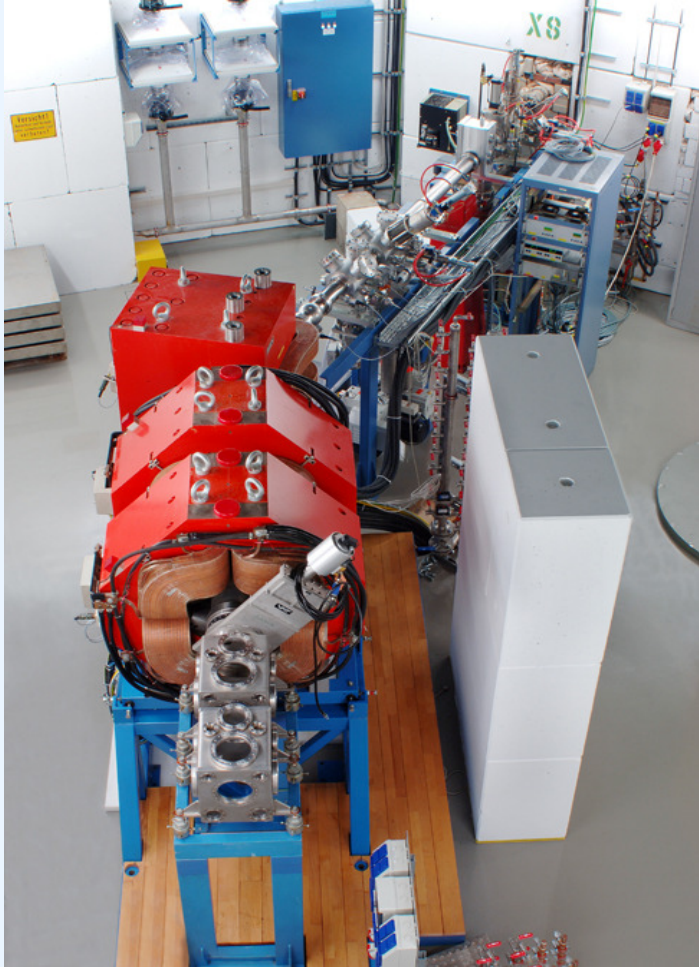


# TASCA Computer Control System (present status and future developments)



TASCA home page: <http://www.gsi.de/tasca/>

# Main parts of TASCAs Control System:

## Existing now:

1. Magnet control – High Level (PC)
2. Beam current reading and control – High level
3. TASCAs gas filling control – High level
4. RTC gas control – High level
5. Moving devices control – High level

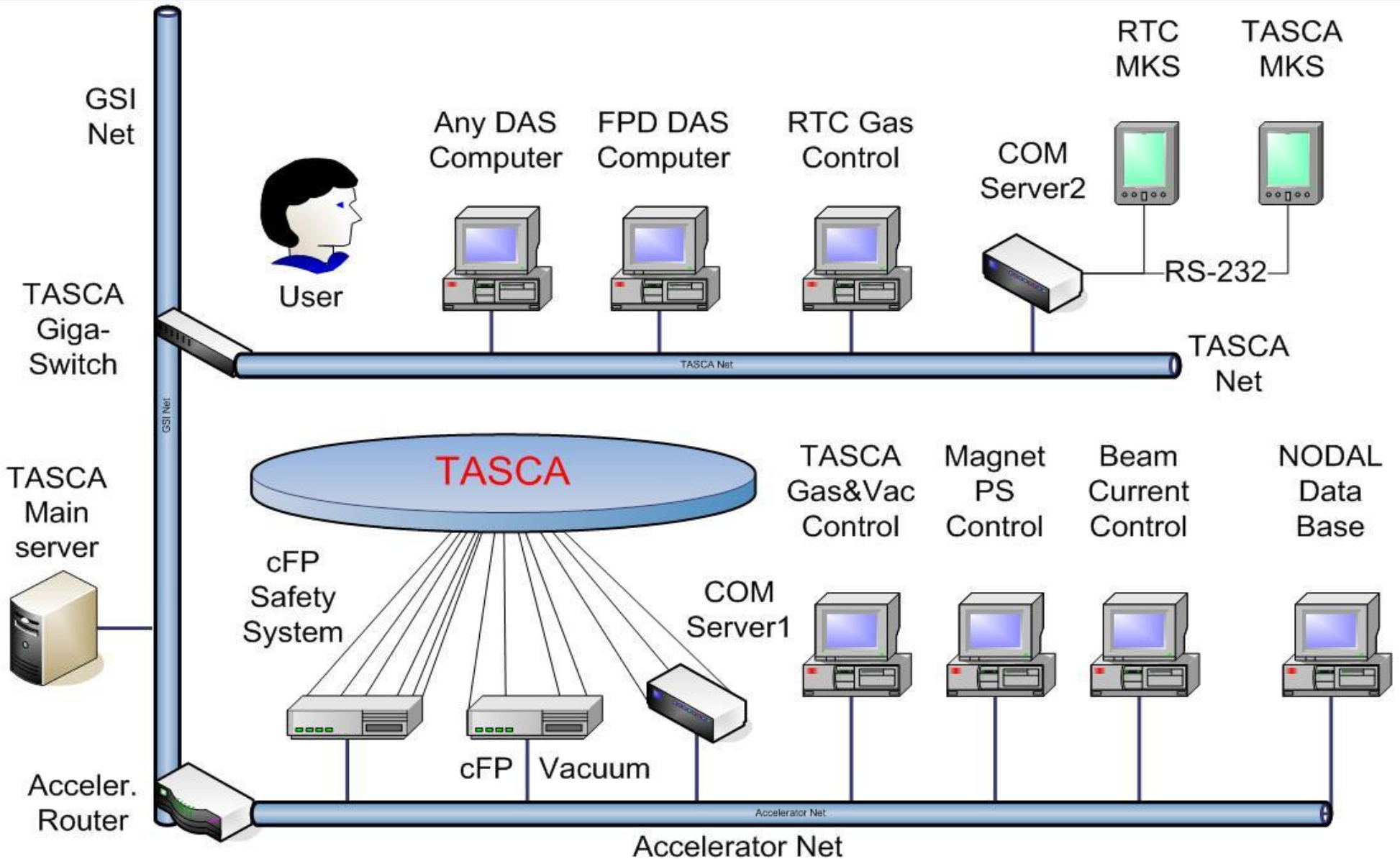
## Future developments:

6. Vacuum system control – High and Low level (cFP)
7. Safety control – High and Low level
8. Teslameter readout – Low level

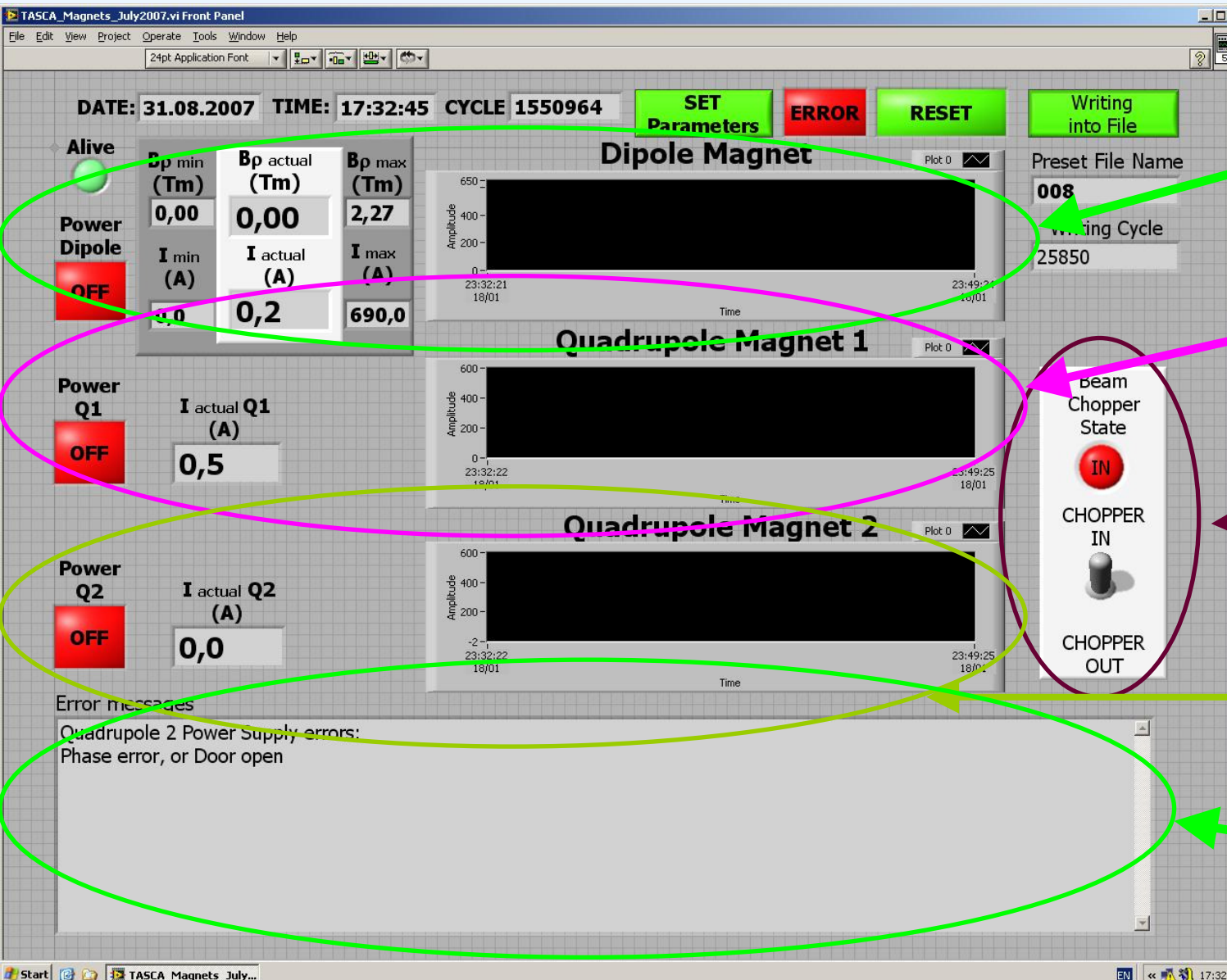
All written in LabVIEW



# TASCA Control System (network connections)



# Magnet Currents Control System



Dipole Magnet Control

Quad 1 Control

Chopper Control

Quad 2 Control

ERROR Message Field



# Beam Current Control System

TASCA\_BEAM\_CONTROL\_10\_August\_2007.vi

Date: 8/31/2007 Time: 5:08:18 VrtAcc: 3 Charge: 10 Ca48

Detector Count Rate / Hz  
Actual: 0 Preset Max: 1000

CURRENT DC electric /  $\mu$ A: 0.00

MacroPuls length / ms: 0.00

Freq / Hz: 0

MacroPuls length minim/ms: 1.00

Freq minim/Hz: 1

Cycle num: 14

Experiment File Name: T000\_B\_XXX

START Accumul. in file & reset

STOP file & close

Chopper: OUT

Trafo UXADT2

Trafo UX8DT3

INTEGRAL DC partic. /  $\mu$ A: UXADT2\_pi: 0.00E+0 UXADT2\_p: 8.062

CURRENT DC partic. /  $\mu$ A: UXADT2\_e: 80.620

UXIDC6\_e: 0.000

UX8DC2\_e: 0.048

UX8DC4\_e: 0.000

UX8DC5\_pi: 0.00E+0 UX8DC5\_p: 0.000 UX8DC5\_e: 0.000

UX8DT3\_e\_min: 0.000 UX8DT3\_e\_max: 10.000

UX8DT3\_pi: 0.00E+0 UX8DT3\_p: 0.000 UX8DT3\_e: 0.001

UX8DC4\_pi: 0.00E+0 UX8DC4\_p: 0.00E+0

UX8CC4\_e: 0.000

UT2DCX\_e: 0.000

UX8DC2\_e: 0.048

UX8DC4\_e: 0.000

UX8CC4\_e: 0.000

UX8DC5\_e: 0.000

UT2DCX position: IN

UXADT2 position: 44496

UXIDC6 position: OUT

UXADC2 position: IN

UX8DC4 position: OUT

UX8CC4 position: IN

Counter3: 471004

Counter4: 70

Counter2: 0

MacroPuls: MacroPuls

UT2DCX Tasse

UXADT2 trafo A

UXIDC6 Faraday Cup 6

UX8DC2 Faraday Cup 2

UX8DT3 trafo X8

UX8DC4 Faraday Cup 4

UX8CC4 Collim.

UX8DC5 Beam Dump

Status Summary

Error Messages

Special Parameters Irradiation - Pause: INACTIVE 1.0 1.0

NODAL ERROR

File service field

FPD Counting Rate

Beam Current History Graphs

Special Irradiation - Pause Regime Chopper Control

Macro Puls Control

Integrals of Beam Current Reading

On-line Beam DC Current Readout

Beam Current Devices Position Control



Darmstadt



TU München

A.Semchenkov,  
TASCA-2007, Davos,  
Switzerland, 28.09.2007



TASCA

# Beam Current Control Set parameters

## Window:

## Main Run Parameters Settings:

## Special Irradiation -Pause Regime Chopper Settings

## Thresholds Settings:

The screenshot shows a graphical user interface window titled "Set Show Parameters\_1.vi". At the top left, there is a green "Alive" indicator with a circular button. To its right is a "Set / Show Parameters" button. Below these are three input fields: "Run Name" (T010), "Particle Charge" (Ca48), and "Virt Acc" (3). A blue oval highlights these three fields. Below the "Run Name" field is a section titled "Spezial Parameters Irradiation - Pause:" containing an "INACTIVE" button, and two input fields: "t<sub>irrad</sub> / s" (1.0) and "t<sub>pause</sub> / s" (1.0). A pink oval highlights this section. To the right of the "INACTIVE" button is a "Thresholds:" section with two columns of input fields: "MacroPuls length minim / ms" (1.00) and "Freq minimum / Hz" (1.0), "DC Currents / μA" with "UX8DT3 I<sub>min</sub>" (0.000) and "UX8DT3 I<sub>max</sub>" (10.000), and "Preset Max Count Rate / Hz" (1000). A purple oval highlights the "Thresholds:" section. At the bottom of the window are two buttons: "ACCEPT" and "EXIT".

# Motors Control System

Move Devices Control\_August\_2007

File Edit Operate Tools Browse Window Help

### SLITS OPERATION

Left Slit

Right Slit

Slit Left Positi  
0

Slit Right Positi  
0

Slit Left position  
**OUT**

Slit Right position  
**OUT**

SL\_IN SL\_OUT  
**IN** **OUT**

SR\_IN SR\_OUT  
**IN** **OUT**

Preset Slit  
Left Positi (mm)  
0

Preset Slit  
Right Positi (mm)  
0

Real Slit  
Left Positi (mm)  
0

Real Slit  
Right Positi (mm)  
0

Reset 0 Position SLITL  
RESET zero  
position Slit Left

Reset 0 Position SLITR  
RESET zero  
position Slit Right

**ACCEPT Slit Left**

**ACCEPT Slit Right**

### DEGRADERS OPERATION

Deg 1

Deg 2

Deg 1 Positi  
0

Deg 2 Positi  
-2971000

Degrador 1 position  
**OUT**

Degrador 2 position  
**IN**

D1\_IN D1\_OUT  
**IN** **OUT**

D2\_IN D2\_OUT  
**IN** **OUT**

Reset 0 Position Deg1  
RESET zero  
position Degrador 1

Reset 0 Position Deg2  
RESET zero  
position Degrador 2

### FPD OPERATION

FPD lock  
**LOCKED**

FPD

FPD Positi  
0

FPD position  
**OUT**

FPD IN FPD OUT  
**IN** **OUT**

Reset 0 Position FPD  
RESET zero  
position FPD

**STOP PROGRAM**

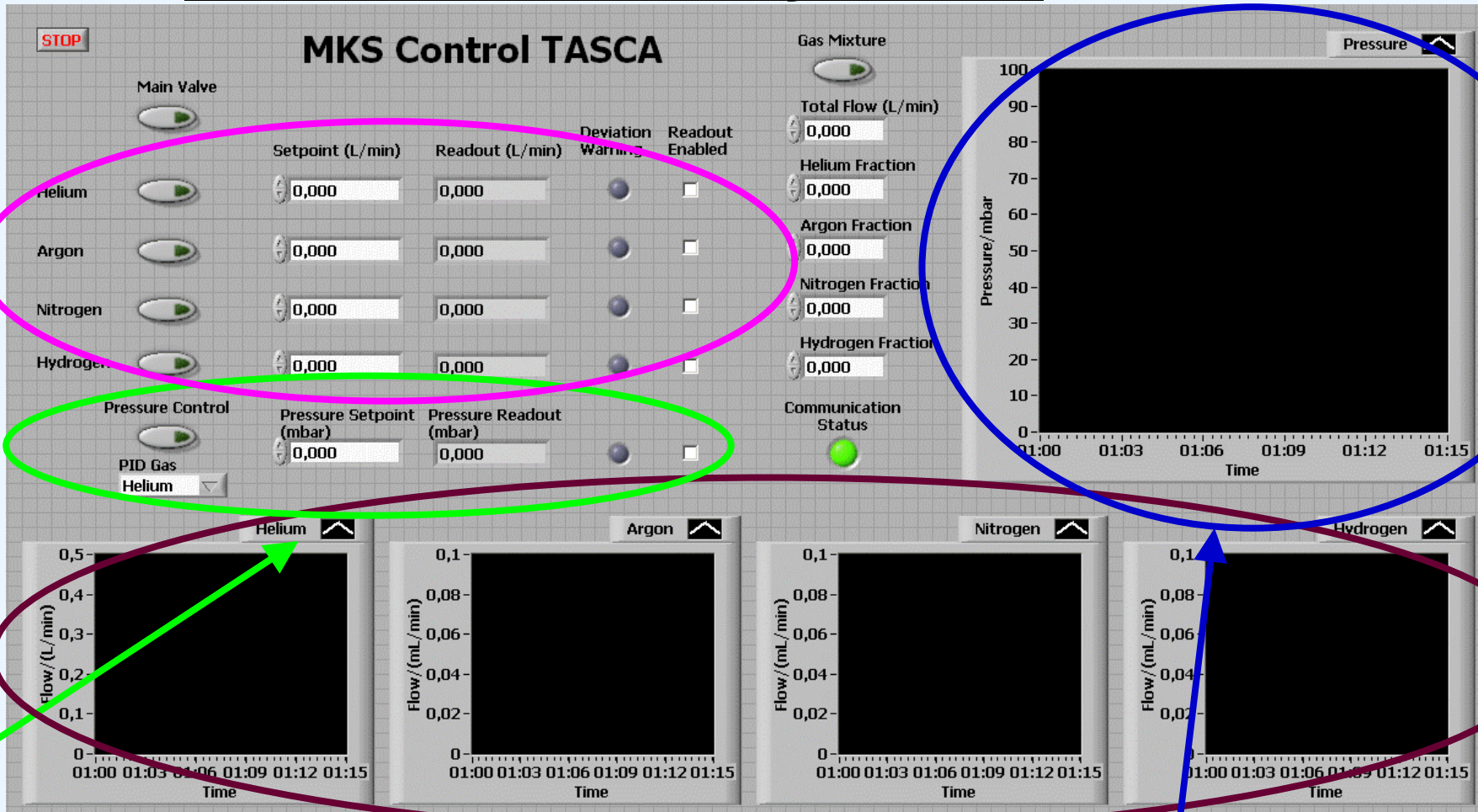
3 um and 1.4 um Degraders Control:

Focal Plane Detector Moving Control:

Left and Right Slits Control:



# Gas Control System



Pressure Set and Readout for up to 4 Gases

Pressure PID Control of the main Gas

Gas Flow History for up to 4 Gases

Pressure History for the main PID Gas



# CONCLUSIONS (existing systems):

<u>System:</u>	<u>Present time status:</u>	<u>Future developments:</u>
<u>1. Magnet Control</u>	<u>PC control &amp; MIL-bus card successfully tested and used</u>	<u>Using cFP micro-processor, for Magnetic field measurements</u>
<u>2. Beam Current Measurement</u>	<u>PC control preliminary tested and used connection with NODAL (acc) data base is working</u>	<u>PC part developing is in progress, input of new data from NODAL. cFP part - first design,</u>
<u>3. Motor – Drivers Control</u>	<u>PC control preliminary tested and used to control FPD degraders and slits placement</u>	<u>PC control, final design</u>
<u>4. TASCA Gas Control</u>	<u>PC &amp; MKS control tested and used to control Gas pressure of Helium and Hydrogen</u>	<u>PC &amp; MKS control, final design</u>
<u>5. RTC Gas Control</u>	<u>PC &amp; MKS control tested and used to control Gas pressure in both RTC chambers</u>	<u>PC &amp; MKS control, final design</u>

# CONCLUSIONS ( new systems ):

6. Beam line & TASCA  
Vacuum & Gas Control

PC & cFP control, first  
design

7. TASCA Safety Control

PC & cFP control, first  
design

8. TASCA Data base

PC first design



# TASCA Control System Cooperating Institutes

