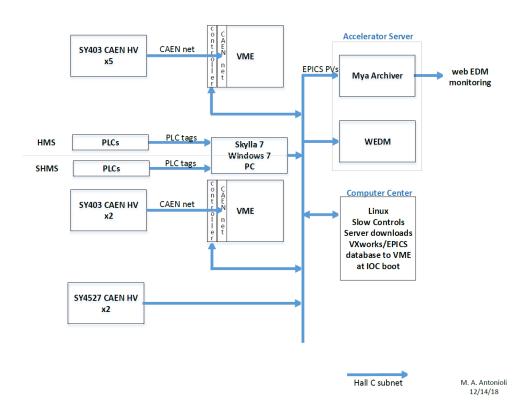
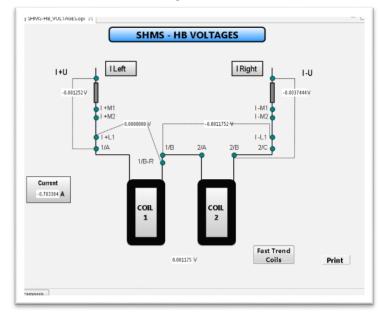
Hall C EPICS Slow Controls Report (12/06/2018 – 12/12/2018)

• Mapping of current PLC-to-EPICS system created.

Current System PLC to EPICS



- SHMS HB Voltage Taps OPI screen completed using EPICS-CSS Studio.
 - * New screen is based on PLC HMI Voltages screen, shows similar appearance and structure for the interface.
 - **★** OPI screen runs in real-time mode using PVs from accelerator host.

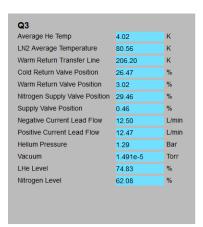


SHMS HB Voltages screen developed in EPICS-CS-Studio

- Spreadsheet generated with all SHMS PVs available on the PLC.
 - ★ These PVs are not available in the accelerator Host (129.57.255.12)
 - ★ Spreadsheet shows: PLC tag name, data type, scope, tag address, proposed PV name for EPICS, and description for each PVs.
- EPICS-IOC test server developed.
 - **★** PLC tag created on DSG PLC controller.
 - **★** Tag read by EPICS server running on dsg-linux2 PC (129.57.195.32).
- Python program created to convert CSS .opi files to EDM .edl files (opi2edl).
- Opi2edl program tested by converting SHMS HB Helium Temperatures CSS screen.
 - **★** Screen deployed to WEDM.
- Python program developed to convert CSV list of PVs to EDM screen (csv2edl).
- Hall C Cryogenics, HMS Cryo, and SHMS Cryo screens created using csv2edl program and deployed to WEDM.

HMS Cryoge	nics	
4K Return Transfer Line	5.25	K
4K Supply Transfer Line	5.14	K
Nitrogen Supply Transfer Line	166.50	K
Particle Transport Vacuum	3.728e-5	Torr
Dipole		
Average He Temp	4.70	K
LN2 Average Temperature	78.36	K
Return Transfer Line	4.53	K
Supply Transfer Line	0.00	K
Cold Return Valve Position	64.85	%
Warm Return Valve Position	-0.89	%
Nitrogen Supply Valve Position	10.11	%
Supply Valve Position	27.04	%
Left Current Lead Flow	4002.80	L/hour
Right Current Lead Flow	4101.04	L/hour
Helium Pressure	1348.11	mBar
Vacuum	1.133e-6	Torr
LHe Level	69.68	%
Nitrogen Level	60.06	%

Q1		
Average He Temp	4.34	K
LN2 Average Temperature	79.65	K
Warm Return Transfer Line	199.10	K
Cold Return Valve Position	25.52	%
Warm Return Valve Position	0.55	%
Nitrogen Supply Valve Position	65.03	%
Supply Valve Position	21.88	%
Negative Current Lead Flow	14.76	L/min
Positive Current Lead Flow	14.76	L/min
Helium Pressure	1.30	Bar
Vacuum	8.096e-6	Torr
LHe Level	64.06	%
Nitrogen Level	65.47	%
Q2		
Average He Temp	4.13	K
LN2 Average Temperature	80.35	K
Warm Return Transfer Line	216.10	K
Cold Return Valve Position	29.29	%
Warm Return Valve Position	0.03	%
Nitrogen Supply Valve Position	26.13	%
Supply Valve Position	22.77	%
Negative Current Lead Flow	13.98	L/min
Positive Current Lead Flow	13.99	L/min
Helium Pressure	1.30	Bar
Vacuum	1.594e-5	Torr
LHe Level	60.03	%
Nitrogen Level	66.60	%



Screenshot showing of HMS Cryo WEDM screen created using csv2edl program. Screen lists all PVs provided for HMS Dipole, Q1, Q2, and Q3.

	SHMS Cryog	enics	
ı	J J. J.	,	
ı	Helium Return Transfer Line	5.22	K
ı	Helium Supply Transfer Line	6.10	K
ı	LN2 Supply Temp	90.21	K
ı	Particle Transport Vacuum	8.992e-8	Torr
ı	Transfer Line Vacuum	8.096e-7	Torr
ı			
ı	Dipole		
ı	Average He Temp	4.63	K
ı	LN2 Average Temperature	77.12	K
ı	Warm He Return Temp	172.11	K
ı	Cold Return Valve Position	95.53	%
ı	Warm Return Valve Position	0.52	%
ı	Nitrogen Supply Valve Position	24.32	%
ı	Supply Valve Position	18.25	%
ı	Left Current Lead Flow	65.42	L/min
ı	Right Current Lead Flow	65.40	L/min
ı	Helium Pressure	1.44	Atm
J	Vacuum	5.163e-8	Torr
1	LHe Level	61.91	%
ı	Nitrogen Level	50.58	%

НВ		
Average He Temp	4.64	K
Warm He Return Temp	207.74	K
Cold Return Valve Position	98.38	%
Warm Return Valve Position	0.99	%
Supply Valve Position	29.41	%
Left Current Lead Flow	65.81	L/min
Right Current Lead Flow	67.10	L/min
Helium Pressure	1.36	Atm
Vacuum	1.615e-7	Torr
LHe Level	60.20	%
Average He Temp	4.61	K
LN2 Average Temperature	78.94	K
Warm He Return Temp	170.66	K
Cold Return Valve Position	98.47	%
Warm Return Valve Position	1.56	%
Nitrogen Supply Valve Position	37.62	%
Supply Valve Position	17.98	%
Left Current Lead Flow	67.24	L/min
Right Current Lead Flow	67.65	L/min
Helium Pressure	1.36	Atm
Helium Pressure Vacuum	1.36 8.123e-4	Atm Torr

Average He Temp	4.60	K
LN2 Average Temperature	81.62	K
Warm He Return Temp	191.61	K
Cold Return Valve Position	96.10	%
Warm Return Valve Position	-0.33	%
Nitrogen Supply Valve Position	2.75	%
Supply Valve Position	19.51	%
Left Current Lead Flow	66.54	L/min
Right Current Lead Flow	66.63	L/min
Helium Pressure	1.42	Atm
Vacuum	1.190e-7	Torr
LHe Level	59.93	%
Nitrogen Level	58.90	%
Average He Temp	4.61	K
LN2 Average Temperature	80.37	K
Warm He Return Temp	205.35	K
Cold Return Valve Position	98.15	%
Warm Return Valve Position	0.56	%
Nitrogen Supply Valve Position	36.55	%
ratiogen oupply valve i osition	-4.64	%
,		L/min
Supply Valve Position	62.15	Dillill
Supply Valve Position Left Current Lead Flow	62.15 63.06	L/min
Supply Valve Position Left Current Lead Flow Right Current Lead Flow		
Supply Valve Position Left Current Lead Flow Right Current Lead Flow Helium Pressure	63.06	L/min
Supply Valve Position Left Current Lead Flow Right Current Lead Flow Helium Pressure Vacuum LHe Level	63.06 1.43	L/min

Screenshot showing of SHMS Cryo WEDM screen created using csv2edl program. Screen lists all PVs provided for HMS Dipole, HB, Q1, Q2, and Q3.

Cryogenics Overview		
4K Supply valve		%
4K Return valve	106.20	%
4K Flow limit	27.00	g/s
Hall C 4K Supply Flow	19.59	g/s
Hall A 4K Supply Flow	20.83	g/s
Hall B 4K Supply Flow	6.96	g/s
4K Supply Pressure ESR	3.34	Torr
Hall C 4K Supply Pressure	2.77	Torr
Hall C 4K Return Pressure	1.18	Torr
Hall C Quench Line Pressure	1.37	Torr
Hall C Quench Line Pressure	1.12	Torr
Quench line flow	8.69	g/s
Lead line flow	0.82	g/s
Lead line pressure	1.11	Torr
Hall C LN2 Flow	5.22	g/s
Hall C LN2 Supply pressure	4.87	g/s

Screenshot showing of SHMS Cryo WEDM screen created using csv2edl program. Screen lists all PVs provided for HMS Dipole, HB, Q1, Q2, and Q3.

- HTML menu created for cryogenic WEDM screens for use during development.
- DSG group log-in set up on Hall C Linux server for EDM screen development.