

Eol on Standard Vacuum Components for SIS100

Pumps: PSP 2.8.7.1.1 & 2.8.7.2.1

Valves: PSP 2.8.7.1.3 & 2.8.7.2.3

Gauges: PSP 2.8.7.1.5 & 2.8.7.2.5

Bake-out Control: PSP 2.8.7.1.4.2 & 2.8.7.1.4.3

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Standardisation



For standardization reasons, like number of spare parts, maintenance and operation, it's absolutely necessary that for all vacuum systems at the FAIR facility only one or two different manufacturers for each type of valve, gauges and pumps will be used.

Therefore we propose to deliver the standard components (valves, gauges, pumps, bake-out control) as a German in-kind contribution.

Description on EoI PSP 2.8.7.1.1 & 2.8.7.2.1



We will deliver:

- the pumps
- control units
- cables pumps - control unit

Pump type	Number	Comments	Costbook price:
Pumping station roughing	30	TMP&dry forepump&rough vacuum valve, gauge for roughing, sequential control	329k€
Sputter ion pumps (warm)	48	Pumps, controller, cables	261k€
Ti sublimation pumps (warm)	48	Pumps, controller, cables	175k€
Adsorption pump (cold)	56	pump	100k€
Pumping station roughing cryostat vacuum	40	TMP&dry forepump&rough vacuum valve, gauge for roughing, sequential control	438k€

Total price: 1303k€

Can TMPs be supplied by ICSI?

Description on EoI PSP 2.8.7.1.3 & 2.8.7.2.3



We will deliver:

- the valve
- local valve control and cables
- remote valve control

	Number	Type	Costbook Price
Gate valve	50	all-metal	579k€
Valve for roughing (cold)	56	all-metal	499k€
Valve for roughing (warm)	25	all-metal	290k€
Valve Control			89k€
Fast valve	6		171k€
Valve for roughing cryostat vacuum	60	Viton	214k€

Total price: 1842k€

Description on EoI PSP 2.8.7.1.5 & 2.8.7.2.5



We will deliver:

- gauges
- control units
- cables control unit – gauge

Not included:

- Bellow Cold Cathode Gauge (PSP 2.8.7.1.5.1.3)

Gauge Type	Number	Costbook Price
Hot Cathode Gauge	48	111k€
Cold Cathode Gauge	56	217k€
Residual Gas Analyzer	6	54k€
Wide Range Gauge Cryostat Vacuum	60	96k€

Total price: 381k€

We will deliver:

- bake-out control units
- cables

Not included:

- bake-out jackets

Total price: 134k€

Schedule for Standard Components



- 04/2009	Basic Layout Vacuum System
04/2009-04/2010	Detailed Design Vacuum System
04/2010-09/2010	Technical Specifications
09/2010-02/2011	Procurement
02/2011-04/2014	Delivery, Testing, Installation
04/2014	End of Installation

Remarks: All standard components are commercially available and can be bought out of stock. No prototyping or R&D necessary.

The procurement should be as late as possible.

The amount of money assigned as the german contribution for the UHV system of SIS100 (1780k€) is not enough to cover all standard components. Is a rearrangement of the money possible? Or which parts should be taken out of the EoI?

This discussion has to keep in mind that the standard components should be used FAIR wide and not only in SIS100!

Machine Overlapping Workpackages I



Pumps, PSP-Code 2.x.7.a.b.c

Subsystem/ Component	PSP Code	HEBT	SIS100	SIS300	CR	RESR	NESR	ER	SFRS	pbar	HESR	p-linac
Pumping Station roughing beam vacuum	.1.1.1	X	X	X	X	X	X	X	X	X	X	X
Sputter Ion Pump	.1.1.2	X	X	X	X	X	X	X	X	X	X	X
Titanium Sublimation Pump	.1.1.3		X	X	X	X	X			X		
NEG coating	.1.1.4		X	X		X	X					
Adsorption Pump	.1.1.5		X	X								
Pumping Station roughing cryostat vacuum	.2.1.1	X	X	X					X			

Pumping speed and connecting flange size may vary from machine to machine and also in the machine!

All pumps have to be delivered together with the required controller/power supply and all necessary cables. The controller/power supply of the pumps has to be controlled by the overall FAIR control system. The type of the interface to be used will be defined later in the detailed technical specifications.

Machine Overlapping Workpackages II



Gauges, PSP-Code 2.x.7.a.b.c

Subsystem/ Component	PSP Code	HEBT	SIS100	SIS300	CR	RESR	NESR	ER	SFRS	pbar	HESR	p-linac
Hot Cathode Gauge	.1.5.1.1	X	X	X		X	X	X	X	X		
Cold Cathode Gauge	.1.5.1.2	X	X	X								
Wide Range Ion Gauge	.1.5.1.1				X					X		X
Residual Gas Analyzer	.1.5.2		X	X	X	X	X				X	
Gauge Cryostat Vacuum	.2.5.1	X	X	X					X			

All vacuum diagnostics have to be delivered together with the required controller/power supply and all necessary cables. The controller/power supply of the ion gauges has to be controlled and monitored by the overall FAIR control system. The type of the interface to be used will be defined later in the detailed technical specifications.

Machine Overlapping Workpackages III



Valves, PSP-Code 2.x.7.a.b.c

Subsystem/ Component	PSP Code	HEBT	SIS100	SIS300	CR	RESR	NESR	ER	SFRS	pbar	HESR	p-linac
Gate Valve all-metal	.1.3.2.1	X	X	X		X	X	X	X	X		
Gate Valve Viton	.1.3.2.2	X			X							X
Angle Valve all-metal	.1.3.1.1	X	X	X		X	X	X	X	X		
Angle Valve Viton	.1.3.1.2	X			X							X
Fast valve	.1.3.3	X	X	X	X	X	X	X	X	X	X	X
Valve Cryostat Vacuum	.2.3	X	X	X					X			
Valve Control and Interlocks	.1.2.2.3	X	X	X	X	X	X	X	X	X	X	X

Flange size may vary from machine to machine and also in the machine!

All valves have to be controlled by the overall FAIR control system. The required hardware will be similar over the whole FAIR facility. The type of the interface used for the connection to the control system will be defined later in the detailed technical specifications.

The bundle of the gate and roughing valve consists of the valve, the valve control (hardware) and the required cables.

The bundle of the fast closing valves consists of fast closing valve, the high vacuum gauge (sensor), the control unit, the cable between fast closing valve and control unit and the cable between high vacuum pressure gauge and control unit.