

# EoI on Standard Vacuum Components for SFRS

Pumps: PSP 2.4.7.3.1-3 & 2.4.7.7.1

Valves: PSP 2.4.7.3.4 & 2.4.7.7.3

Gauges: PSP 2.4.7.5 & 2.4.7.7.5

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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.

We will deliver:

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

Pump type	Number	Comments	Costbook price:
TMP	22	TMP&dry forepump&rough vacuum valve, gauge for roughing, sequential control	216k€
Roughing Pumps	22		104k€
Sputter ion pumps	48	Pumps, controller, cables	139k€
Pumping station roughing cryostat vacuum	60	TMP&dry forepump&rough vacuum valve, gauge for roughing, sequential control	658k€

Total price: 1117k€

We will deliver:

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

	<b>Number</b>	<b>Costbook Price</b>
UHV valve	15	201k€
Valve for roughing cryostat vacuum	69	246k€

**Total price: 447k€**

We will deliver:

- gauges
- control units
- cables control unit – gauge

Gauge Type	Number	Costbook Price
Vacuum Gauge (Vacuum infrastructure)	25	107k€
Wide Range Gauge Cryostat Vacuum	69	111k€

Total price: 208k€

- 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
02/2011-09/2013	Delivery, Testing, Installation
09/2013	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 SFRS (1062k€) is not enough to cover all standard components (1782k€). 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 SFRS!

# 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.

## 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.