

### Technical description of the Subject of the Order

Detailed requirements for the components and parts for vacuum deposition line are given below. The requirements should be treated as minimum requirements. The contractor can offer components and parts with higher parameters.

	Name	Quality	Unit	Description
1	Roughing pump	6	pcs	<p>Peak pumping speed: 450 m<sup>3</sup>/h                      Ultimate preassure (without purge): 5x10<sup>-3</sup> mbar                      Full load power (@ ultimate preassure): 7.2 kW                      Full load power (@ peak pumping load): 17.3 kW                      Electrical supply options (high volt   low volt): 380-460 3Ø 50/60 Hz   200-230 V 3Ø 50/60 Hz                      Electrical connection (high volt   low volt): Harting Han K 4/4-F   Harting Han K 4/4-F                      Vacuum couplins (inlet   exhaust): ISO100   NW50                      Cooling water, supply preassure (max): 6.9 bar                      Cooling water, DP across pump (min): 1 bar                      Cooling water, flow @ min DP: 6 l/min                      Cooling water, temperature: 5-40 0C                      Cooling water, connection: Swagelok Ø 3/8" tube with olive                      Purge gas pressure: 2.5-6.9 bar                      Purge gas Light Duty: 12 sl/min                      Purge gas Medium Duty: 18-146 sl/min                      Purge gas connectio: Swagelok Ø 1/4" tube with olive                      High Flow Purge/ Solvent Flush, Supply pressure: 2.5-6.9 bar                      High Flow Purge/ Solvent Flush, Control valve connection: Swagelok Ø 3/8" tube with olive                      High Flow Purge/ Solvent Flush, Filter connection: 1/2" NPT Female                      High Flow Purge/ Solvent Flush, Solvent connection: 3/8" BSP Male (G 3/8")                      Noise (with suitable exhaust pipe): &lt; 64 dB(A)                      Operating Temperature: 5-40 0C                      Exhaust Back Pressure (MAX): 1400 mbar</p>
2	Cryo compressor	3	pcs	<p>Max load (@ warmest temperature): 3 600 W                      Pumping speed, in chamber:200 000 l/sec                      Ultimate operating pressure: 4x10<sup>-8</sup> mbar                      Max pump start pressure: 1 atm                      Time to defrost: 7.0 min                      Total cryocoil surface area: 2.0 m<sup>2</sup>                      Cooling water, flow rate (@ 13 0C): 13.6 l/min                      Cooling water, flow rate (@ 26 0C): 33.8 l/min                      Cooling water, flow rate (@ 29 0C): 54.1 l/min                      Power input, @ max load: 19.2 kW                      Max operating sound level: 73 dB(A)                      Min room volume: 27 m<sup>3</sup>                      Nominal power requirements: 200V 3-phase 50-60Hz   230V 3-phase 60Hz   380V 3-phase 50Hz   400V 3-phase 50Hz   460V 3-phase 60Hz   480V 3-phase 60Hz</p>
3	RGA spectrum gererator with micropole analyzer	3	pcs	<p>Maximum operating pressure: 0.9Pa                      Maximum output rising pressure: 0.5Pa                      Minimum detectable partial pressure: 5.0x10-6Pa (70eV)                      Resolution: 1.2±0.3AMU                      Clamp: ISO-KF16 (NW16) or CF34 (ICF34)</p>
4	Power controller 3-phase	20	pcs	<p>Voltage: 180-480 V AC 47-63 Hz                      Load current (max): 80 A                      Load: 3-phase                      Control signal: 0-10 V, 4-20 mA                      Control type: analog</p>
5	Power controller 1-phase	10	pcs	<p>Load voltage: AC 200-480 V                      Control voltage: AC 220 V                      Load current (nom): 30 A</p>

				Load: 1-phase
6	Servo drive	18	pcs	Type: electrical commutation motor Current: AC Nominal voltage: 220 V Speed: 2000 rpm Flange: 130 mm Power: 1.5 kW
7	Power supply for servo drive	18	pcs	Current: AC Nominal voltage: 220 V Phase: 1-phase Output current: 8.3 A Instant current (max): 24.9 A Power: 15 kW
8	PLC set	3	pcs	CPU Wago 750-8215 (or analog) – 2 pcs CPU Wago 750-8208 (or analog) – 1 pcs Module Wago 750-1405 (or analog) – 29 pcs Module Wago 750-1504 (or analog) – 26 pcs Module Wago 750-468 (or analog) – 9 pcs Module Wago 750-471 (or analog) – 18 pcs Module Wago 750-597 (or analog) – 2 pcs Module Wago 750-559 (or analog) – 8 pcs Module Wago 750-652 (or analog) – 13 pcs Module Wago 750-627 (or analog) – 3 pcs Module Wago 750-628 (or analog) – 21 pcs Module Wago 750-613 (or analog) – 6 pcs Module Wago 750-517 (or analog) – 9 pcs Module Wago 750-1607 (or analog) – 9 pcs Module Wago 750-415 (or analog) – 3 pcs Module Wago 750-600 (or analog) – 21 pcs Commutator 6 RJ45/2 multimodule optics FL SWITCH SFN 6GT/2TX – 1 pcs Wifi commutator FL WLAN 5110 – 1 pcs Power supply 60W, 24DVC Omron S8VK-C06024 (or analog) – 9 pcs Power supply 120W, 24DVC Omron S8VK-C12024 (or analog) – 11 pcs Power supply 240W, 24DVC Omron S8VK-C24024 (or analog) – 7 pcs UPS 650VA Eaton/Socomec 5P 650i (or analog) – 2 pcs UPS 850VA Eaton/Socomec 5P 850i (or analog) – 1 pcs UPS 1150VA Eaton/Socomec 5P 1150i (or analog) – 4 pcs UPS 1550VA Eaton/Socomec 5P 1550i (or analog) – 2 pcs
9	UPS	3	pcs	Type: uninterruptible power supply Output power: 2700 W / 3000 VA Output voltage (nom): 230 V Input voltage: 230 V Frequency (nom): 50/60 Hz Phase: 1-phase