High-Vacuum Pumping Station

CAPABILITY SHEET · THE PIPE SETS THE SPEED · A TURBOMOLECULAR PUMP ON A BACKING PUMP, VALVES, GAUG

THE ONE IDEA

PRINCIPLE	The pipe sets the speed.
WHY IT MATTERS	The speed at the chamber is the speed of the pump in series with the conductance of the pipe to it, so it is always below both, and a short, wide, straight line is worth more than a bigger pump.

THE SYSTEM

PUMPS	A turbomolecular pump on a backing pump, dry or oil-sealed, with a roughing line, and a trap where oil is used.
VALVES AND LINE	A roughing valve, a foreline valve and a gate valve, on a short, wide, straight line with clamped or bolted flanges.
GAUGES AND VENT	A thermal gauge for the rough range, an ionisation or cold-cathode gauge for the high range, and a slow vent with dry gas.
FRAME AND BAKEOUT	A rigid frame or trolley that keeps the vibration of the pumps from the chamber, and bakeout heating where the vacuum needs it.
CONTROLS	A controller that starts the pumps in order, permits each step from the gauges, and closes the chamber off on a fault or a power loss.

THE METHOD

ORDER	Survey, size the line, choose the pumps, interlock, build and prove. The line and the proof are the two that a quick job skips.
LIMITS	Pressures, speeds, flows and sizes come from the customer's chamber and process, and are not printed here.

CONFIGURATIONS

TROLLEY-MOUNTED STATION	A turbomolecular pump and a backing pump on wheels, for one chamber or a few.
RACK-MOUNTED STATION	Built around a fixed chamber, with the pump close under it, a gate valve, gauges, a vent and the controller on one frame.
STATION FOR ULTRA-HIGH VACUUM	Metal-sealed flanges, bakeout, and an ion or cryogenic pump to hold the vacuum.

STANDARDS & SCOPE

STANDARDS	Public reference: ISO 3529-1 for the vocabulary of vacuum technology, ISO 2861 for clamped quick-release couplings.
SCOPE BOUNDARY	It is the high-vacuum pumping station: not a thermal vacuum chamber, not a helium leak detection system and not a hypobaric altitude chamber.
STATUS	Neometrix has quoted against successive high-vacuum pumping station requirements, and no delivered high-vacuum pumping station is claimed.

DEFENCE PROGRAMMES DESK

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