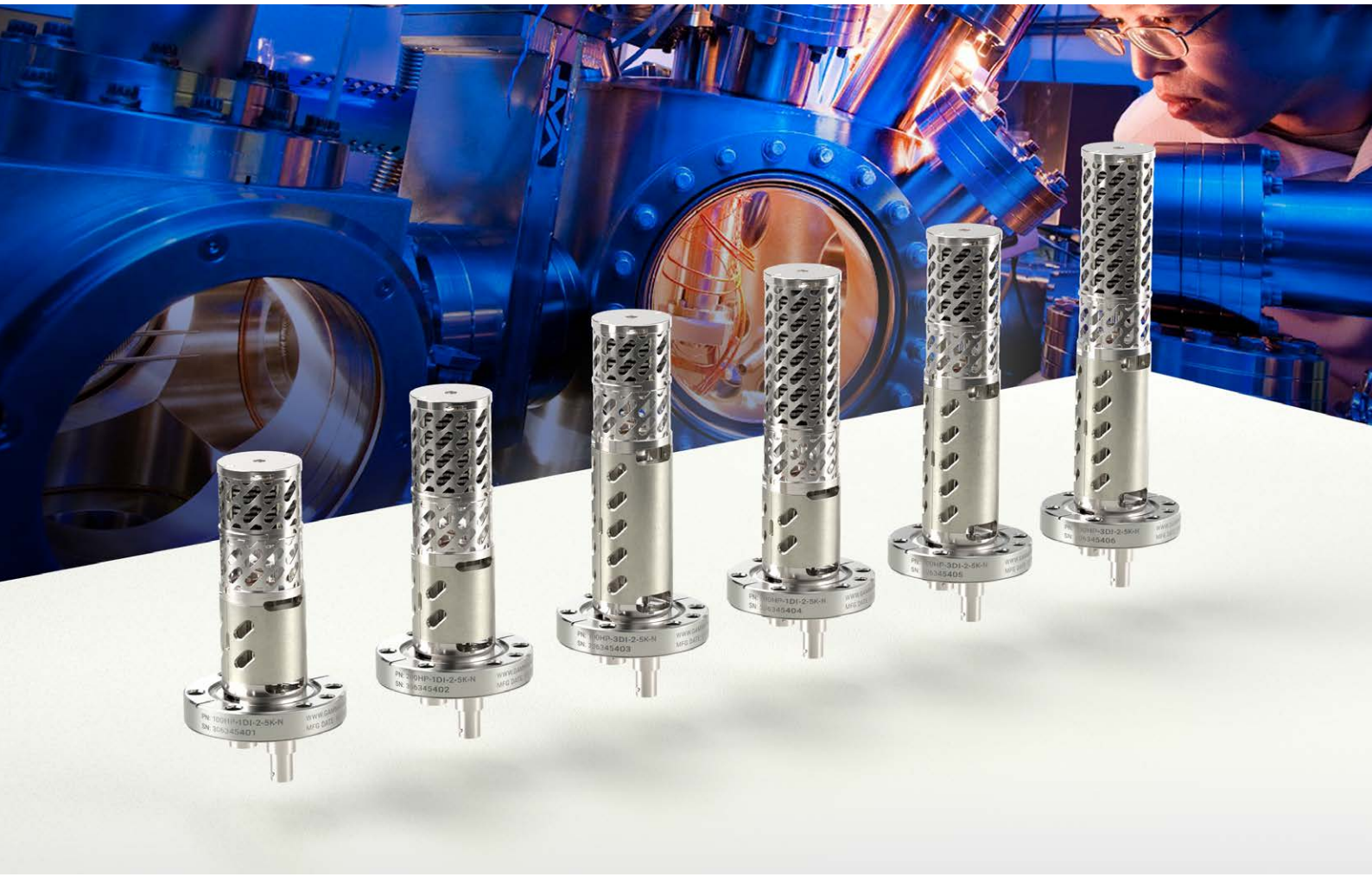
GAMMA VACUUM



HyTan NEG-Ion Pumps

Combined ultra high vacuum technology

The pump series that combines the power of NEG and ion pump technology

UHV pumps that are greater than the sum of their parts

HyTan NEG-Ion Pumps redefine UHV (ultra-high vacuum) pumping with a blend of NEG and ion pump proficiencies. NEG pumps offer high pumping speeds for H_2, but also chemically active gases like N_2, O_2, and CO, while ion pumps effectively handle all gas species, particularly noble gases and methane. By combining their strengths, HyTan NEG-Ion Pumps achieve unmatched gas removal efficiency across the UHV application spectrum.

Maximizing both performance and space, HyTan NEG-Ion Pumps employ an innovative approach by inserting all pump components into the user's vacuum chamber. This streamlined design reduces the pump's external footprint, making it the smart choice for systems with limited external space.

HyTan NEG-Ion Pumps also boast a modular construction. Easily swap modules to adjust pumping speeds and adapt to evolving system requirements.

48 different variants of this product series

Choose from a range of NEG modules, ion pump modules, and feedthrough options depending on your application.

HyTan NEG-Ion Pump benefits

Where vacuum is really needed: large ion pumps are typically assembled far from the vacuum chamber resulting in the loss of effective pumping speeds. The compact design of HyTan NEG-Ion Pumps allows for closer deployment, and full utilization of the pump's unique properties.

Self-sufficient and stable: with the ion pump effectively removing residual gases that the NEG cannot handle, auxiliary pumps used to achieve high vacuum can be isolated and turned off.

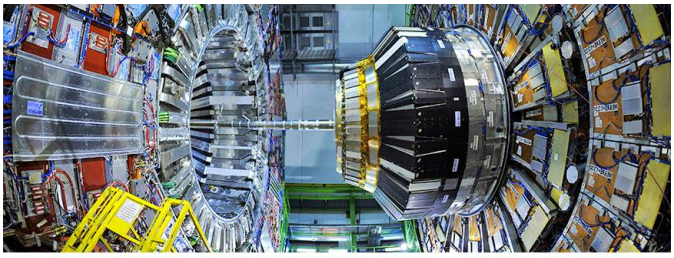
Optimal space utilization: by placing all pump components inside the vacuum chamber and positioning both feedthroughs on the base flange, the system's external footprint is significantly minimized.

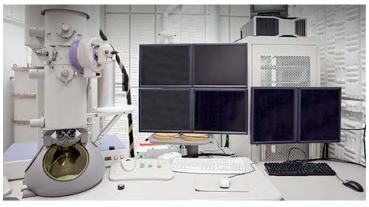
Clean, static, and quiet: both pump modules are oil-free and have no moving parts providing operation without contamination, vibration, and noise, vital for sensitive experiments and accurate measurements.

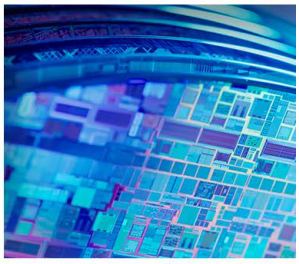
Enhanced base pressure: add a HyTan NEG-Ion Pump to your UHV system and realize low, stable base pressures, reducing the pump-down time of your vacuum system.

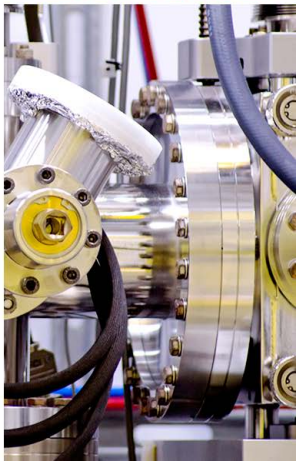
An end to the unecological and expensive break-replace cycle: the modular design allows for easy replacement of both the NEG and ion pump module, ensuring your vacuum system is both serviceable and future-proof.

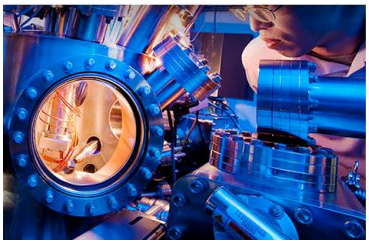
High reliability and stability: the NEG module does not require power for pumping operation and will continue to maintain UHV, even in the event of a power outage. The accumulation of gasses the NEG cannot pump will not affect its performance and can be removed by the ion pump module after power is restored.











HyTan NEG-Ion Pumps applications

Highly effective for environments requiring UHV pressures for long durations

Semiconductor manufacturing: already widely used in some seminconductor applications like mask writing with electron beams, NEG-Ion combination pumps efficiently evacuate process chambers ensuring a clean and contamination-free environment.

Research laboratories: HyTan NEG-Ion Pumps are well suited for research and scientific facilities. Ideal for use in material characterization, surface science and other scientific investigations where UHV, cleanliness, and vibration-free environments are critical.

Particle accelerators: NEG-ion combination pumps are employed to maintain the required vacuum levels in beamlines, storage rings, and experimental chambers. The UHV conditions created by HyTan NEG-Ion Pumps are crucial in preventing residual gas particle scattering and maintaining beam stability.

Nuclear research facilities: NEG-ion combination vacuum technology is used in research facilities involving particle physics, nuclear fusion, and plasma research. They contribute to maintaining UHV conditions in experimental chambers, accelerators, and fusion reactors, enabling precise control and measurements of plasma and particles.

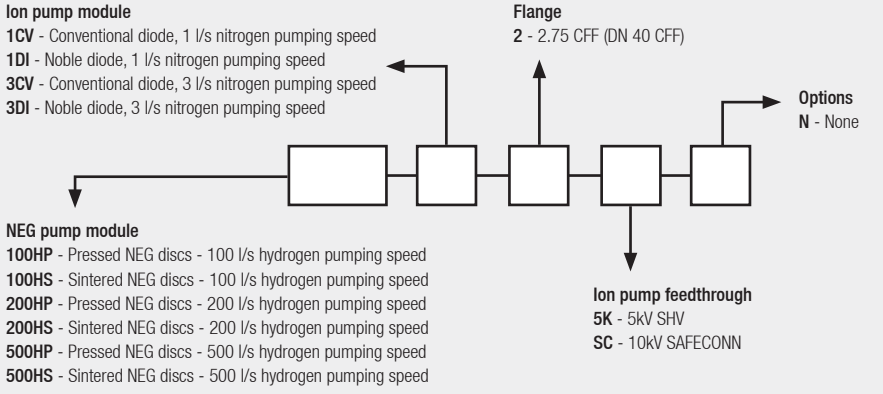
HyTan NEG-Ion Pumps specifications

		100HS				100HP				200HS				200HP				500HS				500HP			
		1CV	1DI	3CV	3DI	1CV	1DI	3CV	3DI	1CV	1DI	3CV	3DI	1CV	1DI	3CV	3DI	1CV	1DI	3CV	3DI	1CV	1DI	3CV	3DI
Pumping Speed[1] (l/s)	H_2	110				120				230				220				450				520			
	CO	45				40				100				100				200				210			
	N_2	20				15				50				55				100				100			
	Ar[2]	-	0.1	-	0,3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3
Sorption Capacity[3] (torr*l)	H_2	200				310				360				580				700				1100			
	CO	0.035				0.22				0.065				0.33				0.15				0.54			
	N_2	0.012				0.28				0.026				0.41				0.06				0.69			
Getter Mass (g)		20				31				36				58				70				112			
Total Mass (kg)		0.65		0.78		0.66		0.79		0.67		0.8		0.69		0.82		0.72		0.85		0.76		0.89	
Length (mm)		100		135		100		135		115		150		115		150		144		179		144		179	
Maximum baking temperature (°C)		300								300								300							
Flange		DN 40 CFF								DN 40 CFF								DN 40 CFF							
Conditioning power at 4A (W)[4]		12								16								22							
Activation power at 8A (W)[4]		70								100								150							

[1] Pumping speeds reference initial speed values at 25° C in exposed configuration
[2] CV elements have a very small pumping speed for noble gases like argon and can cope with small amounts. For larger argon amounts, we recommend using DI elements which are noble-gas stable. The given argon pumping speed only refers to a saturated ion pump module (equilibrium state) – the initial pumping speed will be larger.
[3] Capacities are reported for the NEG modules. Reported capacities are the quantity of gas pumped before the speed is reduced to 5% of its initial value. Combinations with Ion pump modules will increase functional capacity. This effect is shown by the sorption curves.
[4] Power values provided only refer to the NEG module without the cable. The additional power consumption due to the cable must be provided by the NEG power supply. NEG operation should be controlled by current. Activation currents provided achieve full activation in 1 hour for an installation with no shrouding, i.e., no parts close to the NEG module inside the vacuum chamber.

HyTan NEG-Ion Pumps ordering information

Structure for a HyTan NEG-Ion Pump part number is: NEG module - Ion pump module – Flange - Feedthrough - Options



For example:
100HP-1DI-2-SC-N is a HyTan pump consisting of a 100 l/s NEG pump module with pressed discs and a hydrogen pumping speed of 100 l/s, an ion pump module with a noble diode and a nitrogen pumping speed of 1 l/s. It uses the SAFECONN feedthrough.

Gamma Vacuum supplies everything you need for the operation of HyTan NEG-Ion Pumps from ion pump controllers, NEG controllers, all the necessary cabling, and technical support. Please check out our website for detailed information.

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