MAXIMATOR®
maximum pressure

HULC

HULC - THE FIRST MODULAR HYDROGEN COMPRESSOR OF ITS KIND UP TO 1,050 BAR

The smart way of hydrogen compression

The Maximator HULC is a modular gas compressor that was specially developed for compressing hydrogen from low-pressure sources (e.g. from electrolysis) to up to 1,050 bar with a scalable volume flow.

High-pressure technology for hydrogen

The sustainable and secure supply of clean energy to our society is one of the greatest challenges of our time. Hydrogen combines energy security, climate neutrality and, as an energy carrier, has extraordinary potential to make a significant contribution to the energy transition.

If hydrogen is produced by electrolysis at low pressure (e.g. approx. 8 - 40 bar) it must be compressed to the highest possible pressure level for storage. For example, long-term storage tanks (home power solutions) are filled or forklift trucks, drones, pilot vehicles such as buses and cars are supplied with hydrogen. However, high-pressure hydrogen is also required for recovery applications, laboratory applications and other power-to-gas applications.

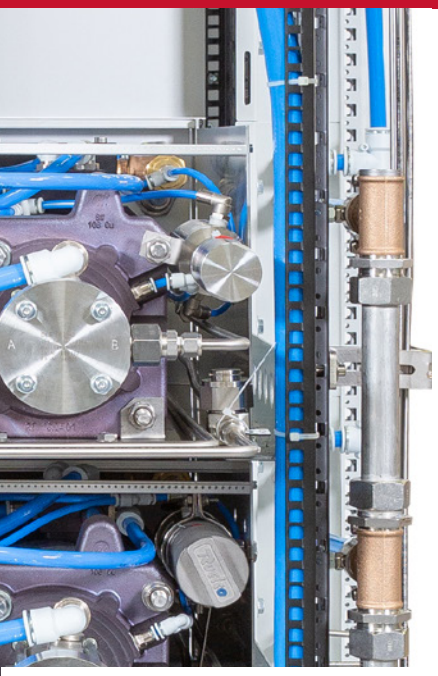
HULC - Hydrogen Unique Linear Compressor

At Maximator, we have been specialising in high-pressure technology for hydrogen applications for more than 20 years. As a manufacturer of valves, fittings and gas boosters, we know exactly how they seamlessly work together in an optimal system - trust our hydrogen high-pressure expertise.

The Maximator HULC series is a pneumatically operated, highly modular hydrogen compressor system. In addition to innovative technologies such as the new exchange concept, the Nitrogen Flow Purge process and our FlexDrive technology for efficiency-boosting, the Hulc series is particularly impressive due to its modularity. Depending on the application, the Hulc can be configured precisely to the respective requirements.

- **Maintenance friendly:**
  Innovative replacement concept guarantees maximum availability
- **Operation simplified - Plug & Boost:**
  Through our pneumatic switches, the system shuts off automatically when the preset pressure is reached
- **Certification included:**
  ATEX and CE ready

- at 35 bar gas inlet pressure up to 1 kg/h H2 mass flow at 1,050 bar (at 300 bar gas inlet pressure up to 2 kg/h possible)
- up to 1,050 bar pressure generation
- highest delivery availability



Areas of application for the HULC

- Filling long-term storage tanks (Home Power Solutions)
- Hydrogen compression for forklift trucks and pilot vehicles such as buses and cars
- Laboratory applications that require the highest pressures and cost-effective solutions
- Hydrogen supply for drones
- Various power-to-gas applications
- Hydrogen compression for the supply of project sites that are difficult to access / autonomous energy supply
- Pressurisation for tests with e.g. forming gas (95% nitrogen and 5% hydrogen)

Modularity

The HULC system is as flexible as you need it to be - with our 11 different modules, we ensure that we always provide the most effective solution for your individual application.

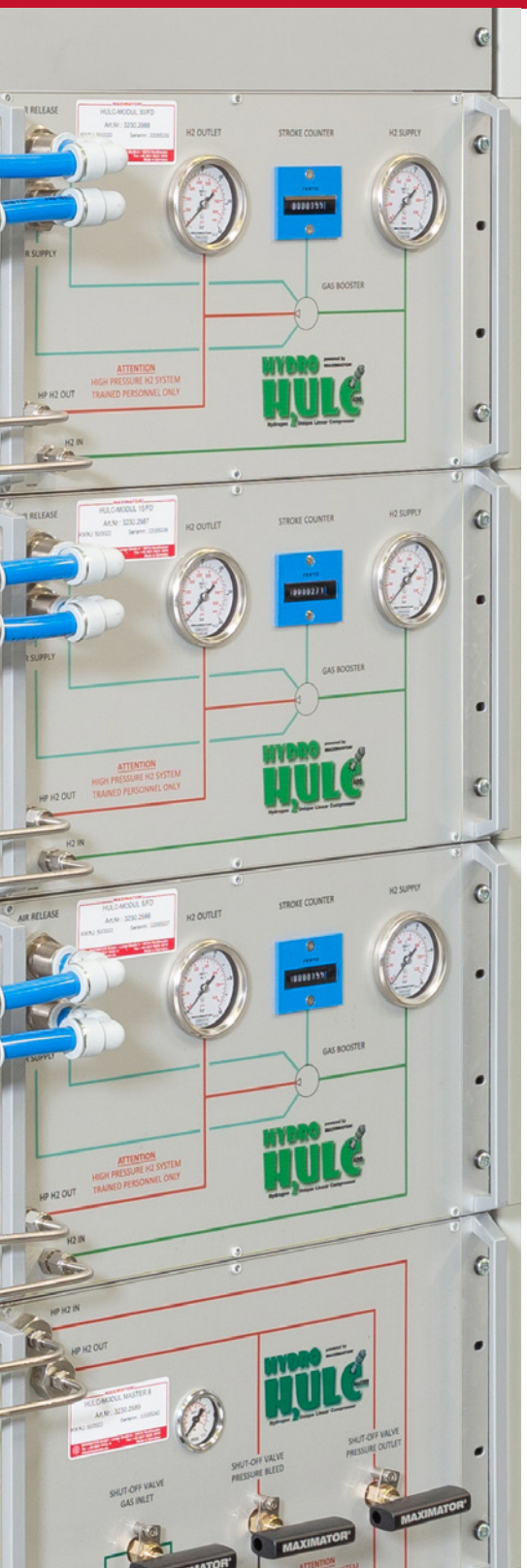
Gas inlet pressure in bar	Operating pressure in bar	Stages	Small cabinet			Large cabinet		
			Product key*	Order code		Product key*	Order code	
				Standard	Flex Drive		Standard	Flex Drive
10-90	35-90	1	HULC/S/H2/5/1	3230.0145	3230.0150	HULC/L/H2/5/1	3230.0156	3230.0163
	140-300	2	HULC/S/H2/5/S15/1	3230.0146	3230.0151	HULC/L/H2/5/S15/1	3230.0157	3230.0164
	250-600	3	-	-	-	HULC/L/H2/5/S15/S30/1	3230.3115	3230.3119
	600-1.050	4	-	-	-	HULC/L/H2/5/S15/S30/S75/1	3230.0159	3230.0165
35-300	140-300	1	HULC/S/H2/15/1	3230.3116	3230.0152	HULC/L/H2/15/1	3230.0160	3230.0166
	250-600	2	HULC/S/H2/15/S30/1	3230.0147	3230.0153	HULC/L/H2/15/S30/1	3230.3117	3230.0167
	600-1.050	3	-	-	-	HULC/L/H2/15/S30/S75/1	3230.3118	3230.3120
65-300	250-600	1	HULC/S/H2/30/1	3230.0148	3230.0154	HULC/L/H2/30/1	3230.0161	3230.0168
	600-1.050	2	HULC/S/H2/30/S75/1	3230.0149	3230.0155	HULC/L/H2/30/S75/1	3230.0162	3230.0169

* ... Please add „/FD“ as suffix for the Flex Drive Option

HULC X

High-pressure technology for hydrogen

- 1 master module can control up to 4 compressor modules
- Similar modules can be connected in series to achieve the highest pressures or in parallel to achieve the highest flow rates
- The complete solution is set up in 19“ racks in different heights (S and L)
- The maximum pressure level is 1,050 bar and up to a maximum of 2.5 kg of hydrogen per hour can be compressed (at 300 bar inlet pressure and 1,050 bar outlet pressure) as well as the parallel operation of two modules
- The minimum inlet pressure is 8 bar, the maximum inlet pressure is 300 bar (this means that the system can be used with almost any PEM/AEM electrolyser and also bundle accumulators up to 300 bar).
- All hydrogen-carrying high-pressure lines are equipped with our proven cone and thread fittings.
- High-pressure gas filter in each stage (7µm) for maximum purity
- Integrated cooling for maximum efficiency (no additional energy required)
- The system has no electrical connection (power supply), it is a purely mechanical system
- Each module is equipped with a stroke counter for easy lifetime monitoring
- Complete machine according to ATEX Zone 2 and Machinery Directive



HULC - hydrogen compression taken to the next level

- Poka Yoke design of the modules (confusion-free design)
- Nitrogen purge: NFP Nitrogen Flow Purge for maximum safety
- CE labelling according to ATEX (ATEX Zone 2 possible)
- CE according to Machinery Directive
- Fail safe (less manual intervention possible)
- Higher degree of automation
- Purge function on the high-pressure side: inertisation of the high-pressure sections with nitrogen
- Simplified maintenance processes thanks to user-friendly design
- Pneumatically operated emergency stop

Emergency stop device

The emergency stop device offers maximum safety - built in. In the event of an emergency, the emergency stop device allows the system to be stopped immediately. So you are always on the safe side.

The system is automatically moved to a safe state via the integrated pneumatic shut-off valves. This immediately shuts off the drive air to the gas boosters, bringing them to a standstill.

Restart protection is also integrated, which must first be activated manually so that the system can start up again. Your advantage: incorrect use is ruled out.

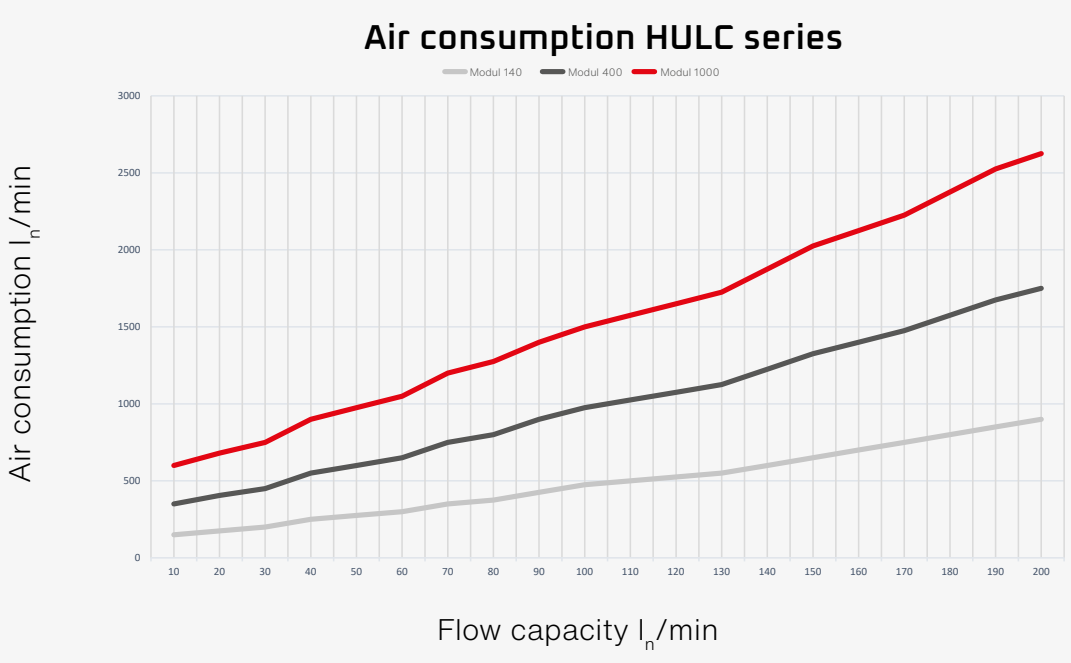
Flex Drive
Market-driven innovation

An important contribution to the sustainability of technical solutions is the implementation of energy-efficient measures. With this in mind and supported by market feedback and customer surveys, we have developed various product-related optimizations. The unique and patented Flex Drive technology for our pneumatically operated gas compressors with two air drive sections is one of these optimizations to achieve ecologically efficiency-enhancing goals.

With Flex Drive technology, we offer our customers a unique opportunity to get the most out of their high-pressure technology in terms of efficiency. The technology allows the two air drive parts to be pressurized independently of each other and therefore only one of the two compressed air drives to be used when the power requirement is low (principle of the area ratio drive section vs. high-pressure section).

This is particularly advantageous when filling large storage tanks over long periods of time or in the process of initially low-pressure relevant volume flows. When a certain pressure level (Flex pressure) is reached and one air drive section is no longer sufficient to supply a constant volume flow or pressure, the second air drive automatically switches on.

- Patented Flex Drive technology: Save up to 40% compressed air (BAFA eligible)
- Optionally available for all Hulc modules
- Time savings of up to 20% can be achieved in applications for filling storage tanks



Maintenance concept

The maintenance concept of the HULC system impresses with its user-friendliness and minimal downtimes. Thanks to the modular concept of the respective compressor slide-in modules, all that is required is to disconnect the supply connections. The module to be serviced can then be pulled out of the drawer and a new module inserted. After connecting the supply lines and a leakage test, your system is ready for operation again - all within approx. 30 minutes.

Simply send the module to be serviced to us. Your module will be professionally dismantled, checked and repaired. You can obtain replacement modules from our stock.

The modules can be replaced by our service experts or your own trained specialist personnel. Training and practical instruction is provided by our TÜV-certified trainers at our Maximator Academy - please contact us for more information.

Maintenance is recommended after approx. one million cycles or one year of operation (corresponds to an average of 1.2 tons of compressed hydrogen).

HULC X

Configure now

ePortal

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