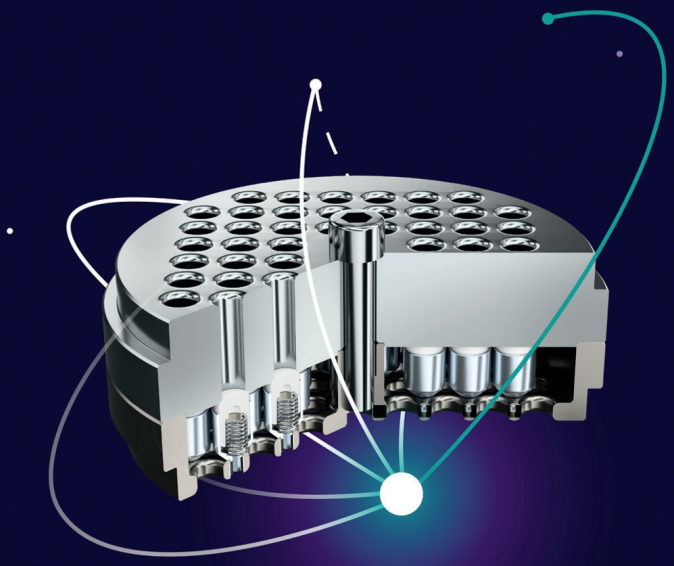
MAGNUM™ Plus Valve:

Setting a new standard in flow, efficiency, and serviceability

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Siemens Energy has leveraged its extensive engineering expertise to create a groundbreaking design that sets a new benchmark in effective flow area, serviceability, reliability, longevity, and efficiency—the MAGNUM™ Plus valve. This innovative valve is suitable for all molecular weight applications at both low and high compressor speeds and can be used with all brands of reciprocating compressors.

Unique advantages

The MAGNUM™ Plus valve optimizes compressor efficiency for a wide range of applications, including hydrogen, carbon dioxide, ethylene, propane, and natural gas. Unlike other poppet valves, it performs exceptionally well at high compressor speeds. Additionally, unlike plate and ring valves, the MAGNUM™ Plus valve uses a single element, well-known from our MAGNUM™ valve series for all valve sizes, simplifying inventory management.

Features and benefits

- Improves flow and reduces pressure drop backflow
- Increased compressor efficiency and reduced horsepower consumption
- High reliability
- Multi-poppet design is tolerant against over-lubrication, liquid carry over, and will continue to function with damaged elements eliminating unplanned shutdowns
- Easy to maintain and overhaul - common parts for every valve size, replaceable element cup design
- Simplifies the installation and service of compressors in remote locations and under difficult conditions
- Suitable for:
  - Lubed and non-lubed cylinder applications
  - Sour-gas applications
  - Compressors rotating speeds up to 1800 RPM
  - Differential pressure up to 3000 psi / 207 bar

Valve Elements and Springs

- Reliable, robust modified PEEK element
- Lower impact velocities and quiet operation
- Spring inserts prevent spring element and cup wear
- Low stress spring design

Valve Elements Cups

- Replaceable
- Corrosion resistant and high strength stainless steel
- High density element layout
- Profiled to optimize aerodynamic flow path



Seat

- Optimized flow pattern
- Ported holes for improved efficiency
- High density element layout
- Minimizes power consumption
- Proven materials (Nodular Iron, 17-4PH SS, SAE AISI 4140)

Stopplate

- Increase flow area
- "Open" design to reduce particle build up
- Proven materials (Nodular Iron, 17-4PH SS, SAE AISI 4140)

Raising the standard

Valve performance and reliability are crucial to compressor efficiency. The MAGNUM™ Plus valve's unique component design decouples the outlet flow area from the valve element functional area, increasing the effective flow area on the outlet side while simultaneously enhancing the effective flow area within the valve functional area. The use of threaded cups, which define the valve elements' movement direction through their unique shape, supports easy and straightforward service activities that can be performed by the customer's own resources. The valve element design minimizes tensile stresses, resulting in long life in demanding applications and easy serviceability.

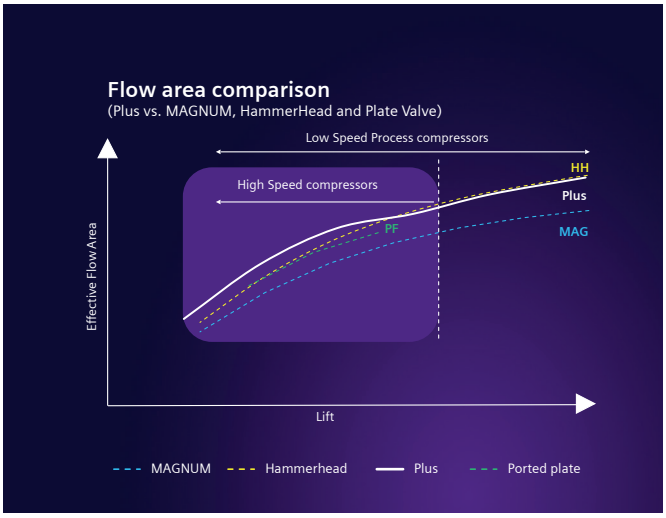
Innovative design for high efficiency and lower operational costs

Advanced computational fluid dynamics (CFD) and finite element analysis (FEA) were employed to develop the MAGNUM™ Plus valve's geometry, improving valve flow area by up to 30 percent compared to our renowned MAGNUM™ Hammerhead design. Increased flow area and reduced valve losses translate into enhanced efficiency and lower operational costs.

Performance testing

Flow testing has demonstrated that the MAGNUM™ Plus valve outperforms all other valve types tested, including MAGNUM legacy lines, poppet, plate, and ring-type valves (see graph of Flow Area vs. Lift).

Experience the future of compressor valve technology with the MAGNUM™ Plus valve—engineered for superior performance, efficiency, and ease of service.



Published by
Siemens Energy Global GmbH & Co. KG

Transformation of Industry
Siemenspromenade 9
91058 Erlangen
Germany

Published by
Siemens Energy, Inc.
4400 N Alafaya Trail
Orlando, FL 32826, USA

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