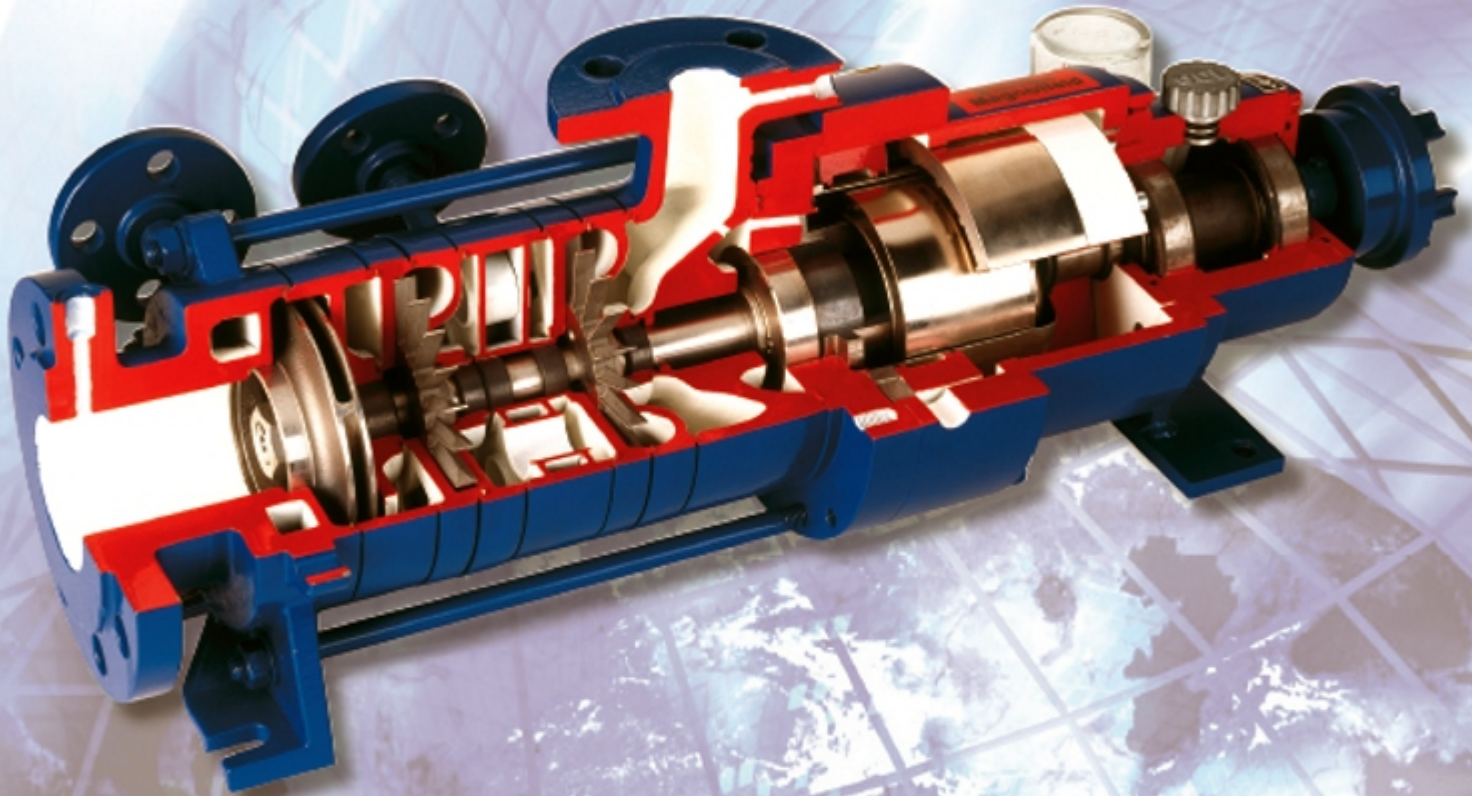


SERO™

PumpSystems



*Sealless Multi-Stage Pumps
Designed for Zero Emission Services*

SEMA™



SEMA™

(Magnetically Driven Side Channel Pump)

Engineered to meet demanding process conditions.

The SERO Advantage

Headquartered in Germany, SERO PumpSystems is the world's only exclusive manufacturer of side channel pumps. Since the issuance of their first side channel pump patent in 1929, SERO has continued to revolutionize the industrial pump industry. Specializing in individually configured pumping systems, SERO has consistently been on the leading edge of side channel pump design and technology.

Side Channel Pump Technology

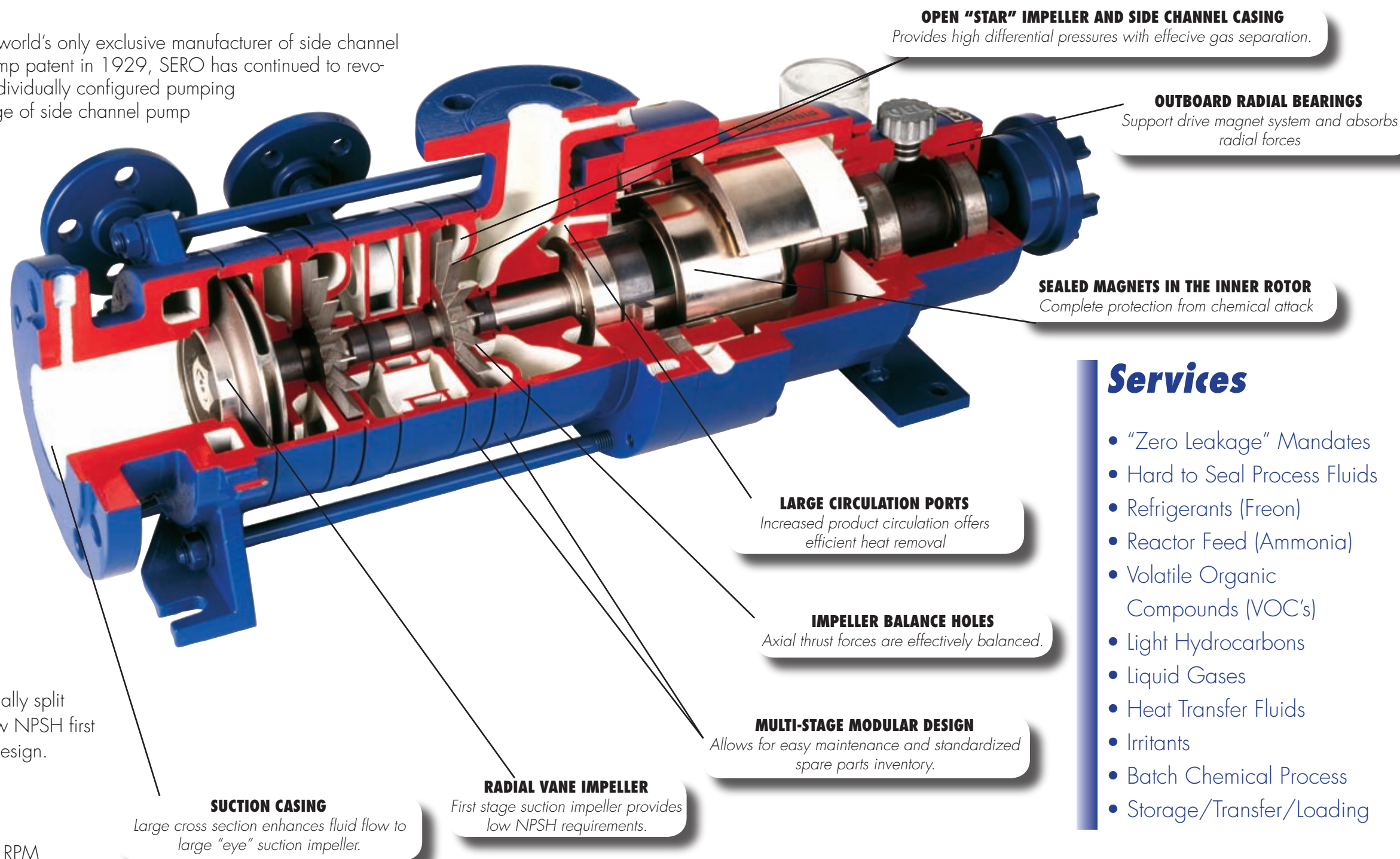
Side channel designs fill the hydraulic performance void between positive displacement pumps and centrifugal pumps. Fully open "star" impellers interact with the side channel casing creating an intense transfer of energy to the pumped liquid or liquid / gas mixture. The corresponding pressure increase (pump head) equals 5 to 10 times the amount generated by a similar size centrifugal pump at the same RPM. Additionally, the centrifugal effect of the impeller combined with the unique SERO internal flow patterns, allow our pumps to effectively handle fluids with gas entrainment of up to 50% and also be self-priming. All this in one compact package!

SERO Model SEMA

Sealless Pumps Engineered for a Wide Range of Industrial Services

Model SEMA is a proven state-of-the-art multi-stage, radially split segmented pump that combines the functionality of a low NPSH first stage impeller with the performance of a side channel design. The SEMA features include:

- Hydraulic Flexibility - Low Flows with High Head
- Exceptional Differential Pressures Developed at 1750 RPM
- Steep Performance Curves for Precise System Control
- Ability to Pump Process Fluids with Entrained Gas
- Low NPSH Requirements to Prevent Cavitation
- Self-priming
- Sealless, Zero Emission Mag Drive Design
- Modular Construction with Standardized Parts
- "Crafted In Germany" for Increased Reliability and Lowest Cost of Ownership



Services

- "Zero Leakage" Mandates
- Hard to Seal Process Fluids
- Refrigerants (Freon)
- Reactor Feed (Ammonia)
- Volatile Organic Compounds (VOC's)
- Light Hydrocarbons
- Liquid Gases
- Heat Transfer Fluids
- Irritants
- Batch Chemical Process
- Storage/Transfer/Loading

SERO™
PumpSystems

SERO Side Channel Pumps
Engineering Expertise - German Quality - Reliability
Designed for the Future



SEMA Engineering Details

SIZE	110	220	330	440	550
NUMBER OF STAGES	1 TO 8				
SUCTION FLANGE INCHES (MM)	1½ (40)	2½ (65)	2½ (65)	3 (80)	4 (100)
DISCHARGE FLANGE INCHES (MM)	¾ (20)	1¼ (32)	1¼ (32)	1½ (40)	2 (50)
RPM (60HZ)	1750				
MAXIMUM WORKING PRESSURE PSI (BAR)	580 (40)				
CAPACITY RANGE, GPM (m3/h)	6 - 12 (1.4-2.9)	13 - 24 (2.9-5.4)	26 - 40 (5.8-9)	47 - 64 (10.6-14.5)	76 - 106 (17.3-24.1)
HEAD RANGE @ MIN FLOW, FT (m)	100-740 (30-225)	140-1080 (40-330)	110-790 (35-240)	105-800 (32-250)	130-1000 (40-300)
TEMPERATURE RANGE °F (°C)	-40° - 392° (-40° - 200°)				
MAXIMUM VISCOSITY SSU (CST)	1050 (230)				
MAXIMUM ALLOWABLE ENTRAINED VAPOR	50%				

MATERIAL OPTIONS

Casings:

- Ductile Iron
- Stainless Steel

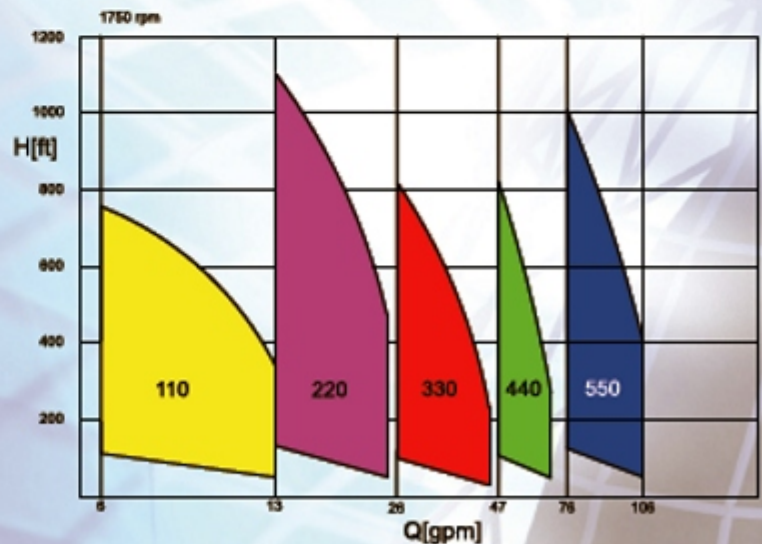
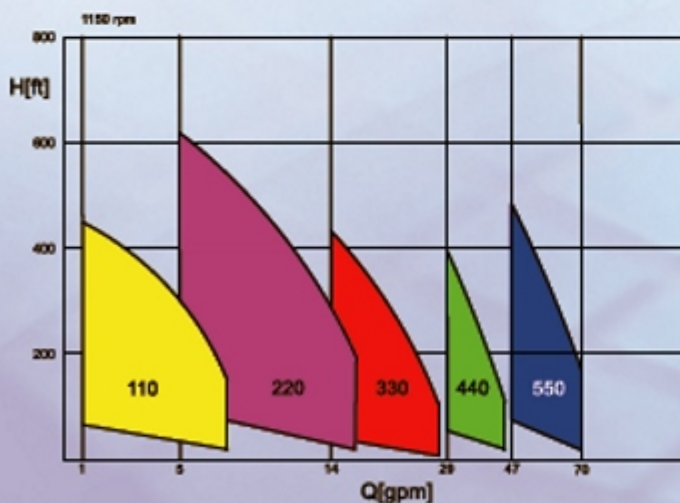
Impellers:

- HS Steel
- Stainless Steel
- Bronze

Mag Drive

Containment Shell:

- Stainless Steel
- Hastalloy



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