SmartFlow

Intelligent Seal Water Control System

SmartFlow Control System optimizes seal water consumption and generates dramatic water savings

Purpose of seal water

Seal water is used for cooling a mechanical seal and lubricating seal faces. Each seal type has specific flow requirements for seal water. Exceeding the flow requirements does not bring any benefits but it generates extra costs due to increased water consumption. Water needs to be filtered before it is used as well as treated after usage. Industry is using various methods to control the flow starting with simple components such as control valves to more sophisticated flowmeters such as Safematic's Safeunit™.

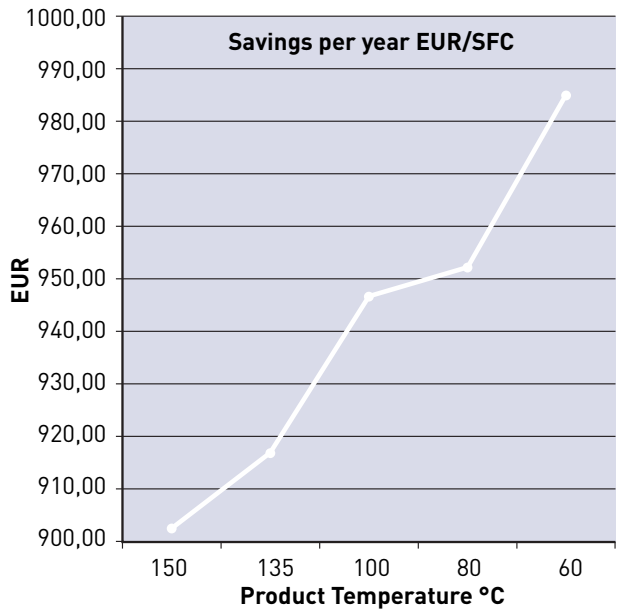
Water savings

There is a growing demand for reducing seal water usage and seal-related costs. Environmental issues and standards should also be brought to consideration. John Crane Safematic has the right solution for reducing seal water consumption: the SmartFlow control system. This intelligent system uses seal water only when the mechanical seal truly requires cooling. Based on field tests and laboratory experiments this system saves up to 97% of seal water compared to flow meter regulated control systems.

SmartFlow Control water consumption and savings with 4 l/min flow:

Product	Water Consumption	Savings
150°C	0,420 l/min	89.5%
135°C	0,364 l/min	90.9%
100°C	0,245 l/min	93.9%
80°C	0,223 l/min	94.4%
60°C	0,093 l/min	97.7%

Seal: Safematic SE2-P1-40-QRMQ
Rotation speed: 3000 1/min
Seal water price: 0,50 C/m3



Principle of operation

System operation is based on a heat-activated shape memory alloy spring that functions mechanically opening and closing the flow channel. The system accommodates automatically to new operating conditions, i.e alternating pressure and temperature.

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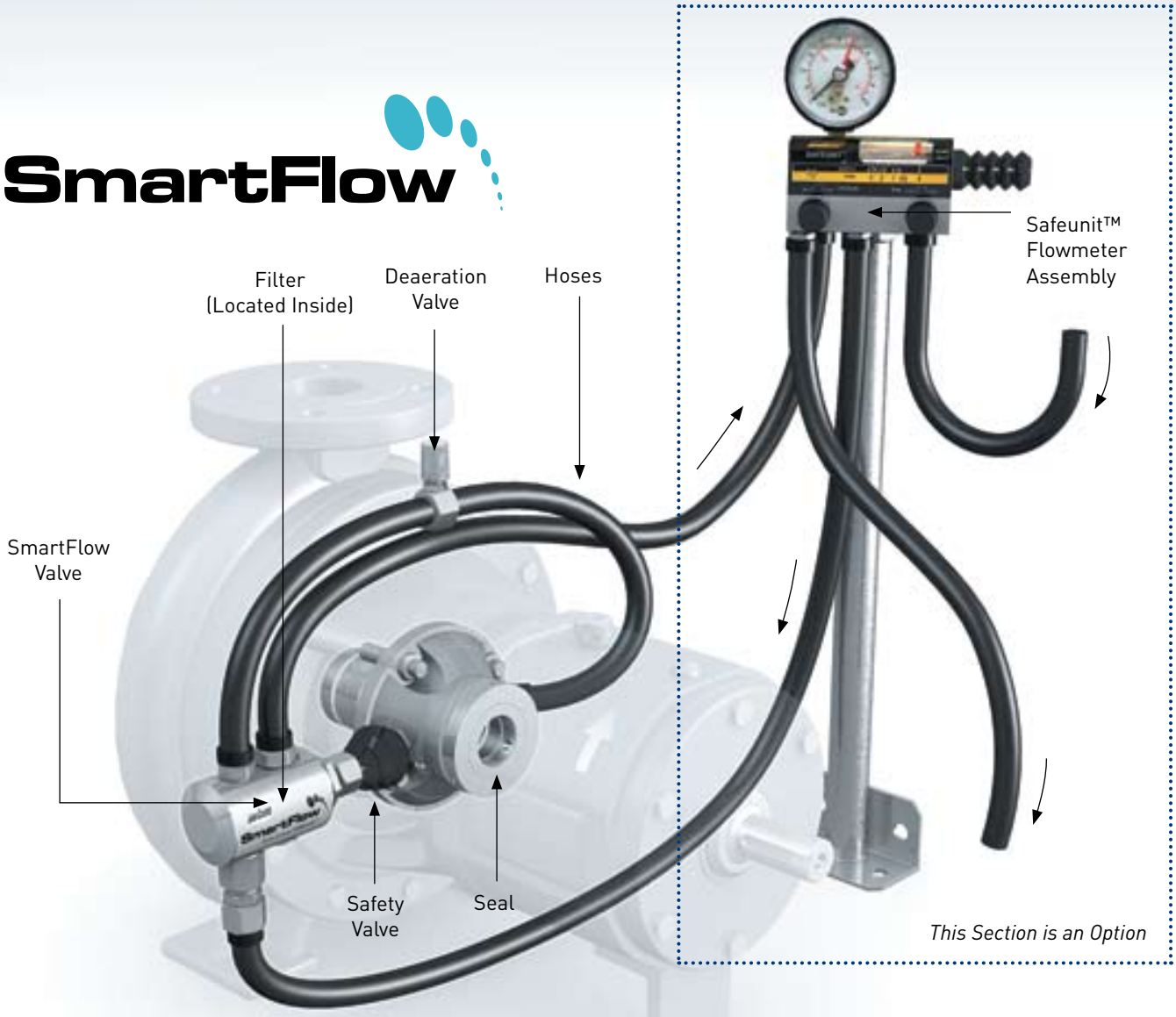

Product features and benefits

- saves water
- a compact unit
- reliable operation based on proven technology
- simple installation
- integrated filter to prevent clogging of the system
- no need for electricity, no wiring needed
- automatic operation is fast and accurate
- no adjustments needed
- maintenance-free operation, periodic check of filter is adequate
- fail-safe construction prevents seal failures in case of fault situations
- manufactured of recyclable materials

Calculate your savings

- Typically a double-acting mechanical seal uses 4-6 l of seal water/min when operated without control device.
- By using the Safematic Safeunit™ seal water control system water consumption can be reduced by 2-3 l/min.
- SmartFlow Control System reduces water consumption an additional 0,5-1,5 l/min depending on used application.
- If the water price is 0,50 EUR/m3, the annual savings per pump is approximately 1200 EUR and the water usage reduction being 4,5 l/min.

Operation Circumstances

Temperatures

Product temperature max. 150 ºC (300 °F)
Seal water outlet temperature max. 35 ºC (100 °F)

Pressure

Seal water pressure 3-16 bar (44-230 Psi), must be at least 2 bar (28 Psi) higher than product pressure.
Product pressure max. 14 bar (200 Psi)

General requirements for seal water quality

Solid particles max. 10 mg/l may not include clay or alike small abrasives
Particle size max. 50 µm
Silicate content max. 10 mg/l
Permanganate number max. 30 mg/l
Amount of iron max. 1 mg/l
Total hardness max. 10°dH

Other

Outlet hose ought to be lead to a pressureless environment, otherwise seal water pressure must be at least 3 bar above discharge pressure.

Coding system

Code	Type	Applications	
22160018	SFC-R1/8	for seals having water connections size	R 1/8"
22160014	SFC-R1/4	for seals having water connections size	R 1/4"
22160038	SFC-R3/8	for seals having water connections size	R 3/8"
22160012	SFC-R1/2	for seals having water connections size	R 1/2"
22170018	SFC-NPT1/8	for seals having water connections size	1/8" NPT
22170014	SFC-NPT1/4	for seals having water connections size	1/4" NPT
22170038	SFC-NPT3/8	for seals having water connections size	3/8" NPT
22170012	SFC-NPT1/2	for seals having water connections size	1/2" NPT

For your nearest John Crane facility, please contact one of the locations below.

John Crane Safematic Oy
Muurame, Finland
Tel: +358-10-8525-611
Fax: +358-10-8525-600

Europe
Slough, UK
Tel: +44-1753-224000
Fax: +44-1753-224224

North America
Morton Grove
Tel: +1-847-967-2400
Fax: +1-847-967-3915

Latin America
São Paulo, Brazil
Tel: +55-11-3371-2500
Fax: +55-11-3371-2599

Middle East & Africa`
Dubai, United Arab Emirates
Tel: +971-481-27800
Fax: +971-488-62830

Asia Pacific
Singapore
Tel: +65-6512-5200
Fax: +65-6512-5233

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