Hose lines for cryopumps – cool connecting components

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The term "cryogenic pumps" is almost automatically associated with the Sefco AG name. Sefco AG, located in Bottmingen, Switzerland, is a leading manufacturer of these sophisticated machines. Attributes such as exceptional quality, reliability and functional safety of products and outstanding customer support are all part of Sefco AG's day-to-day corporate culture. No wonder, then, that the Angst+Pfister Group has been closely connected with Sefco as a supplier of components and services for almost 20 years. After all, strong partners like to work with strong partners.

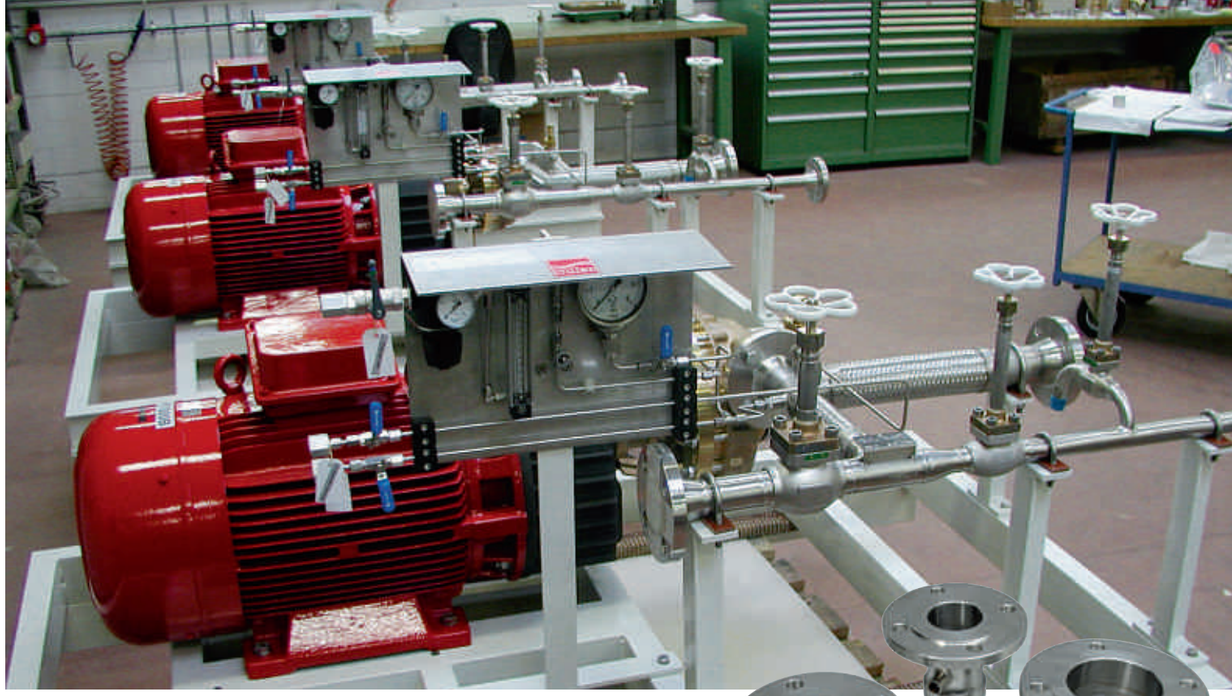
Cryogenic pumps are used in extremely low temperature ranges. They pump, for example, liquid gases such as liquid oxygen and nitrogen. Temperatures as low as –200°C are standard. Sefco AG cryopumps, whose area of application ranges from air separation equipment to gas liquefaction to petrochemistry, have to meet the highest quality standards. But even the most well-engineered pumps can only achieve full productive efficiency if all other components meet the same high standards. Hose lines and their connecting parts are a key element of the cryotechnical system. For many years now, Angst+Pfister has been supplying perfect components with its APSOfluid® ASSIWELL® metal hose lines.

Hose lines for extreme deployment conditions

What kind of performance do hose lines have to provide when they are part of a cryotechnical system? Naturally they should be able to withstand extremely low temperatures in the area of around –200°C. If the system is connected to rigid pipes, the connecting hose lines have to meet another requirement: they have to be highly flexible. Vibrations, which inevitably occur when using cryopumps, have to be compensated for in the same manner as for installation inaccuracies or the typical expansion- and contraction-related tensions that arise in connection with extreme temperatures or variations in temperature. If, for example, liquid nitrogen is conveyed at –196°C through the pipes, that subjects the connecting hose lines to a real breaking test: the rapid drop in temperature causes rigid pipes to shrink by around 2 to 2.5 millimeters per meter. Flexible hose lines have to counterbalance the resulting tension.

APSOfluid® ASSIWELL® metal hoses – the perfect complement

For years, Angst+Pfister has been successfully confronting these difficult operating conditions with its APSOfluid® ASSIWELL® metal hoses. The enormous spectrum of possible operating temperatures for APSOfluid® ASSIWELL® metal hoses alone is exceptional – it ranges from –272°C to +600°C. The typical temperatures that occur in the operation of cryogenic pumps are no obstacle for APSOfluid® ASSIWELL® metal hoses. Another element of their wide performance spectrum is that the metal hoses are suitable for pressure and high vacuum exposure due to their 100% vacuum resistance. The flexibility of APSOfluid® ASSIWELL® metal hoses also predestines them for use in cryotechnical systems. The corrugated stainless steel APSOfluid® ASSIWELL® 100 hose and its heavier APSOfluid® ASSIWELL® 133 "brother", which are preferentially deployed in Sefco AG's cryotechnical systems, both distinguish themselves through their utmost flexibility due to their design.



APSOfluid® ASSIWELL® metal hoses are attached axially to the cryopumps.

APSOfluid® ASSIWELL® metal hoses, partially equipped with added outlet nozzles

APSOfluid® ASSIWELL® hoses aren't all that's flexible

But APSOfluid® ASSIWELL® metal hoses aren't the only things that are highly flexible: a deciding factor for the longstanding partnering collaboration with Sefco AG is the high degree of flexibility that the Angst+Pfister Group demonstrates in fulfilling the specific requirements of its customers. Depending on the requirements, the nominal widths of the hoses vary from 20 mm to 300 mm. There are suitable APSOfluid® ASSIWELL® metal hoses available for all requisite pressure stages. And where connecting fittings are concerned, Angst+Pfister offers solutions for practically every situation. Highly skilled technicians weld the metal hose lines to the proper fittings in Angst+Pfister's own production center. Years of experience and vast technical expertise go into the welding process. The result is fissureless and burr-free welded pipework that is adapted precisely to the operating conditions. The ready-to-install hose lines fabricated by Angst+Pfister naturally comply with all requisite regulations such as the PED pressure equipment directive. Speedy delivery times and onsite consultation are other standard features of Angst+Pfister's range of services.

Angst+Pfister as a partner

Angst+Pfister Group's longstanding collaboration with Sefco AG is shaped by loyalty and a close, continuous interchange based on trust. Together the companies seek out and develop customized solutions. Both partners' enormous expertise flows into the manufacturing. Thanks to this longstanding partnership, the cryogenic systems offered are well-engineered, reliable and meet the highest quality standards.

The range of uses for APSOfluid® ASSIWELL® metal hoses extends far beyond the application described in this article. We would be happy to provide you with further information. Using our wealth of experience, our specialists' knowledge and our technical expertise, we develop optimum fluid handling technology solutions for you for a vast variety of applications.

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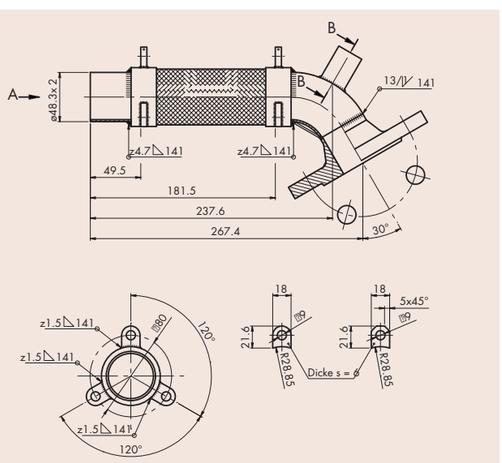
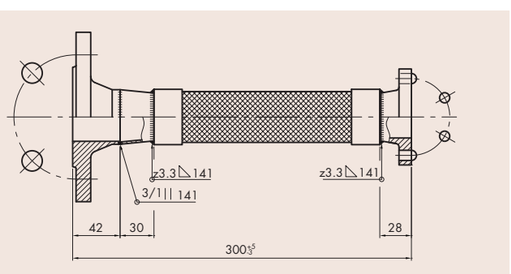


APSOfluid® ASSIWELL® metal hoses are custom-configured and custom-finished.



Flanged versions that comply with a variety of different standards.