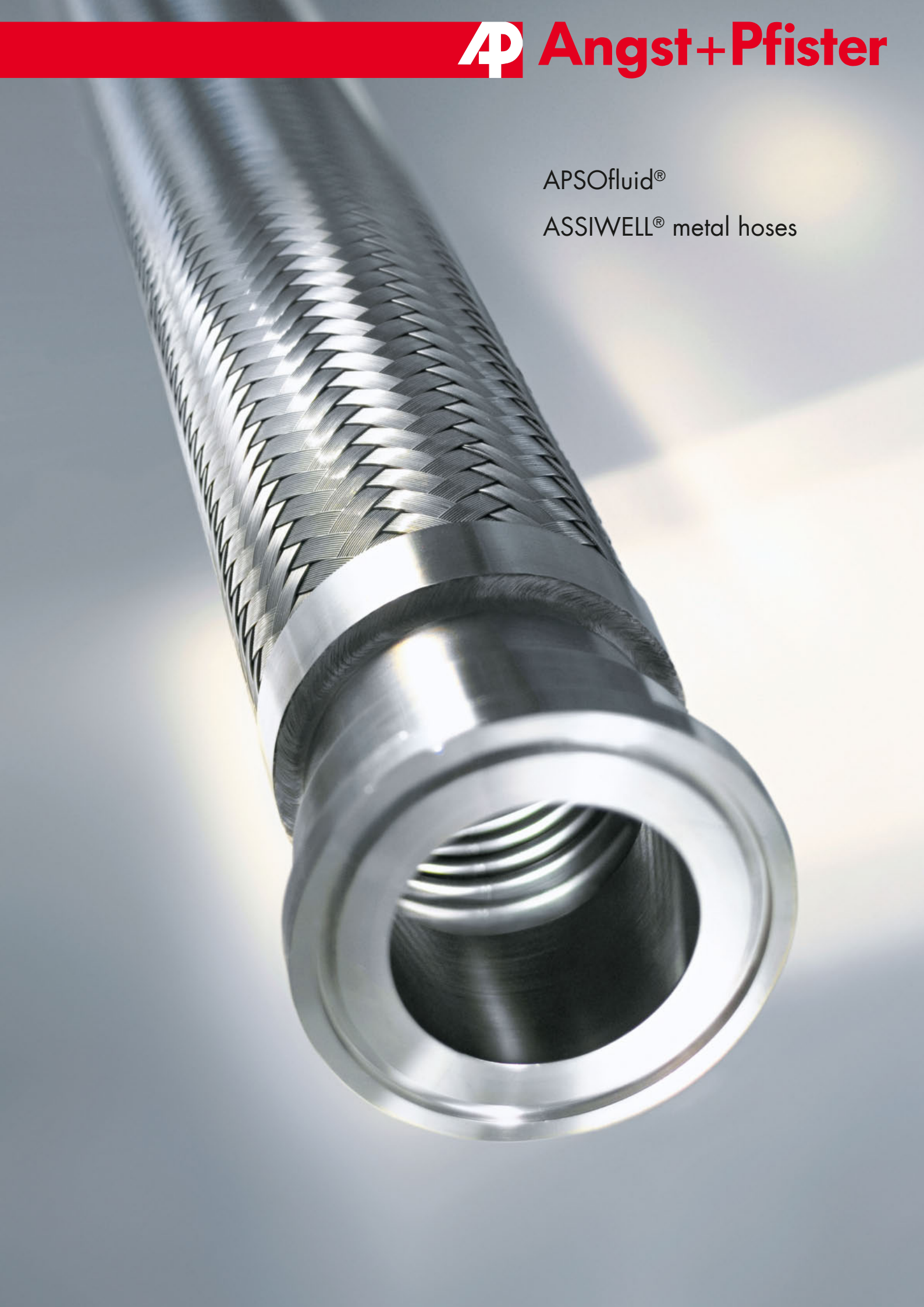


APSOfluid®

ASSIWELL® metal hoses



Tailor-made solutions for extensive range of application



ASSIWELL® hoses and fittings – the perfect connection

ASSIWELL® hose lines meet the strictest requirements and are individually dimensioned according to customer requests. Professional and secure welding of fittings and joints guarantees reliable connections.



Comprehensive engineering and professional service

It is a long way from the first idea to the final application. Angst + Pfister supports its customers in every step with professional expertise: from technical consulting until realization of the ready-to-use solutions.



Individual design for optimal ASSIWELL® hose lines

According to the application and the system parameters (medium, pressure, flow rate), a tailor-made solution is developed by the team of engineers at Angst + Pfister. By various validation processes it is ensured that all hose lines fully meet their application requirements.



Certifications and approvals

A wide range of ASSIWELL® hose lines is available for a variety of legal and technical guidelines and approvals.



ASSIWELL® hoses and fittings – the perfect connection



Comprehensive range of high quality ASSIWELL® standard hoses

Depending on the application/requirements, various series of ASSIWELL® standard hoses are available in different dimensions and with specific properties:

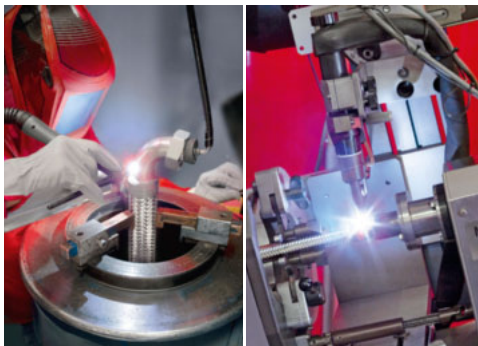
ASSIWELL®	Series	Material of bellow	DN	Application
066	Industrial series	1.4404	6–50	static, slightly dynamic
088	Preferred series	1.4541	8–200	slightly dynamic
100*	Performance series	1.4541 1.4404	6–300	dynamic
100W2*	High performance series	1.4404	16–100	highly dynamic, high pressure
133*	Heavy series	1.4571	12–300	dynamic, maximum pressure

* Complies with PED with safety factor four

High-quality standard fittings

The ASSIWELL® assortment offers high-quality fittings for all individual hose line solutions:

- Tube brackets for cutting ring assembly according to DIN EN ISO 8434-1
- Fittings with external thread according to DIN EN 10226
- Flat sealing screw connections with internal thread according to DIN EN 10226
- 24° screw connections with internal or external threads with weld end
- Loose plate flanges with pressed or weld on collar according to DIN EN 1092-1
- Further connections according to customer specifications



Pre-finished lines

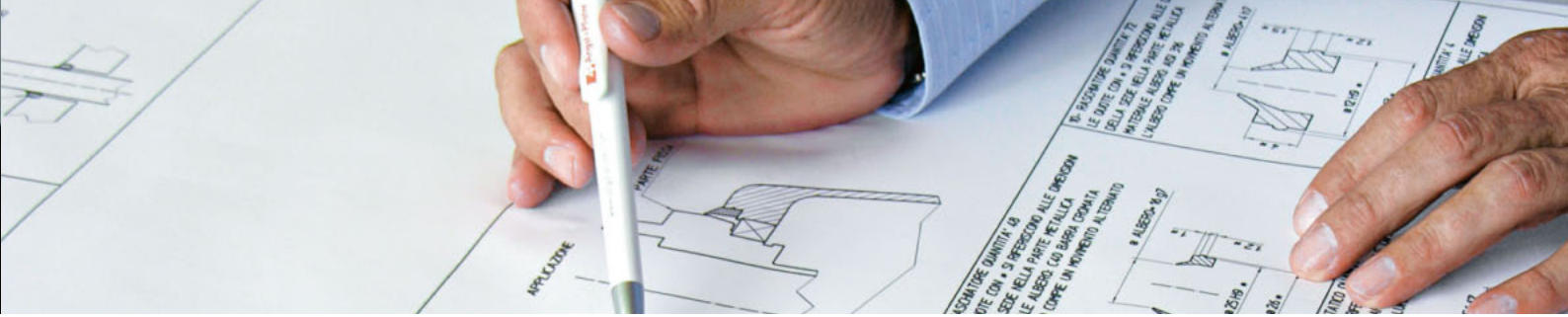
Optimized production and testing processes enable Angst+Pfister to supply pre-finished metal hose lines within short-term:

- Mechanised, semi-automatic TIG welding
- Manual TIG welding of nominal widths of 6 – 300 mm
- Mechanised TIG tube welding (orbital)
- Mechanised TIG welding of vacuum lines



Application example:

ASSIWELL® hose line connections to Unistat reaction tanks, thermally insulated for applications at temperatures between –100 °C and +400 °C, silicone oil as medium, pressure up to 5 bar, no freezing at sub-zero temperatures, ASSIWELL® vacuum lines DN 10 to DN 50 on stock.



Comprehensive engineering and professional service



Angst + Pfister is committed to the success of its customers. With its extensive offer and deep expertise, the specialist in fluid technology ensures that technical development goals are met.

Individual technical consulting

- Definition of tasks and feasibility analyses
- Precise determination of the requirements profile
- Compliance with relevant standards and safety guidelines

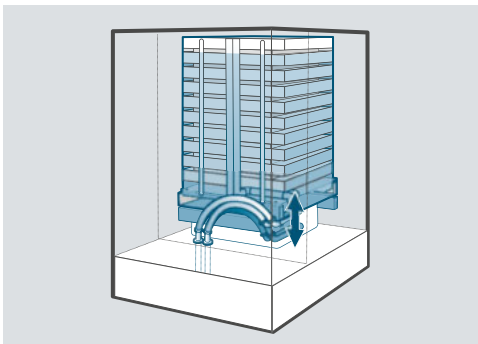
Customer-oriented design and project planning

- Dimensioning and optimization
- Adjustment to customer requirements
- Test running and setting-up

Comprehensive solutions thanks to interdisciplinary synergies

For integral system solutions, the ASSIWELL® product line also includes:

- Special fittings
- Compensators
- Tubes and joints



Example: Motion analysis

- Heating lines in a vacuum chamber
- Supply and return lines
- Suitable for vacuum
- Loaded with pressure and temperature
- Oscillating motions



Application example:

ASSIWELL® lines according to the Pressure Equipment Directive PED 97/23/EC used for gas turbines, lines for various media (gases, oils, fuels, coolants).



Individual design for optimal ASSIWELL® hose lines



The Angst+Pfister team of engineers responsible for APSOfuid® disposes of the know-how to design and develop specific hose lines for individual applications with high demands.

In order to offer the best possible product, every tiny detail has to be taken into account during design phase.

Custom-made for every field of application

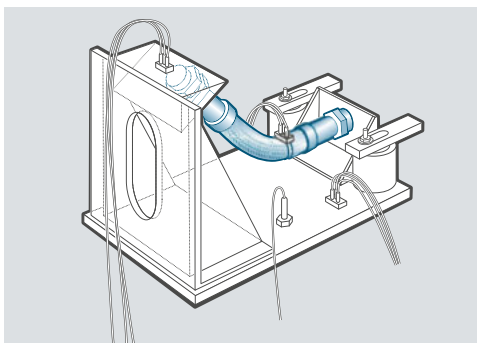
- Hose lines for cooling of transformers and converters in railway applications
- Hoses with integrated functionalities: Measurement connections, filling devices, sampling couplings
- All-metal hose lines for hydraulic applications

Required system parameters

- Used medium, pressure, flow capacity and temperature
- Specific situation of installation (static or dynamic)
- Production quantity: Production as single part, small or large series

Available validation processes

- Pressure loss calculation and test
- Motion analysis and vacuum leakage test
- Vibration and shock test



Example: Vibration and shock test

- Simulation of installation conditions
- Determination of the resonance range
- Executed in the phase of design validation
- High frequency vibration



Application example:

ASSIWELL® lines designed according to EN 15085, certification level CL1/CL2; lines for various media (transformer oil, water-glycol emulsion, air, exhaust gas).

ISO 9001

Certifications and approvals



Angst+Pfister uses a process-oriented management system according to ISO 9001:2000 that is also applied for the design of ASSIWELL® all-metal hose lines. All quality assurance tests, measurements and processes are documented and can be respectively traced.



Angst+Pfister supports you in the selection of components in consideration of your specific demands and requirements:

- Definition of tasks and feasibility analyses
- Definition of required level of complexity and precision
- Ensuring the compliance with relevant standards and safety guidelines



Design and project planning

ASSIWELL® hose lines can be produced according to the following certificates:

- Pressure Equipment Directive (PED) 97/23/EC, category I and II, module A1 Swiss TS
- DIN EN 15085-2 railway applications – welding of rail vehicles and vehicle components, certification level CL1 Swiss TS
- DIN 3384 stainless steel gas hose lines according to DVGW and SVGW
- TPW/W 119-1 design and testing of corrugated hose connections for water installations up to PN 10 and temperatures up to 95 °C according to SVGW
- TPW 119 design and testing of flexible connections for water installations according to SVGW



ASSIWELL® hose lines for gas supply to DIN 3384



ASSIWELL® welding of rail vehicles to DIN EN 15085-2 CL1



ASSIWELL® hose lines for pressure applications to directive 97/23/EG

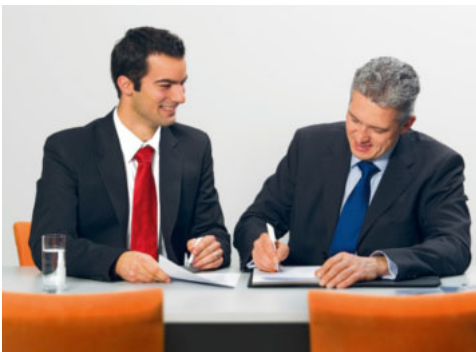


Application example:

ASSIWELL® lines as easy to install cooling lines in research laboratories, application with demineralized water, pressured up to 25 bar; helium leakage testing, leakage rate until 1×10^{-9} mbar l/s.

From standard products until customer-specific solutions

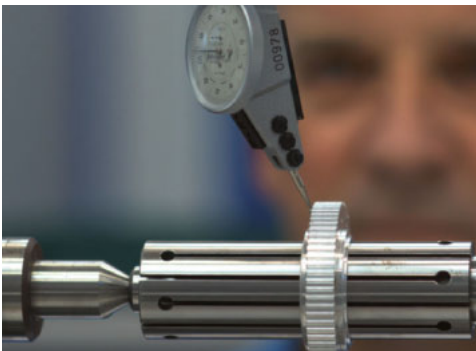
The assortment of ASSIWELL® metal hoses includes various corrugated hoses of different dimensions, types and materials for any possible application in fluid technology. Additionally, a wide range of pre-finished hose lines is available. The lines are characterized by an excellent resistance to high temperatures and chemicals attack, and keep their flexibility even with large diameters. The range of metal hoses is completed by various designs of stripwound hoses, with and without sealing. All types of ASSIWELL® metal hoses, which are based on completely different designs, perfectly complement each other depending on their individual application.



Engineering services: Expertise all along the line

The fluid technology specialists of Angst+Pfister offer long years of experience in the optimization of hose lines. We completely dedicate our expertise to our customers.

- Technical consulting for new and existing systems
- Composition of the perfect hose line
- Calculation and planning of line systems
- Cost effectiveness optimization
- Development of customer-specific solutions
- Application of standardized and newly developed components



The perfect network: High-quality components for the highest requirements

Angst+Pfister has production facilities in 15 countries worldwide. This global orientation provides our customers always with the most cost effective production environment – independently of the logistic requirements or the required product quality and quantity. Being a company that is certified according to ISO-9001:2000, we make every effort to completely meet the quality requirements of our customers.



Reliable logistics and customer focus worldwide

A comprehensive logistics infrastructure ensures that the right products are getting when and where they are required. Highly efficient processes supported by Electronic Order Processing system characterizes the Angst+Pfister Global Logistics Centre. Thanks to an extraordinary international network, all customers can be supplied "just in time", no matter at which location.

Services from Angst + Pfister Group

Angst + Pfister – Your supply and solutions partner

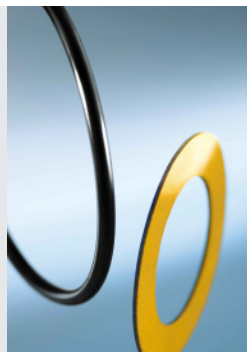
The Angst + Pfister Group is a leading international technical manufacturer and service provider for high-end industrial components. As a supply and solutions partner for engineering plastics, sealing, fluid handling, drive, and antivibration technology as well as

sensors, Angst + Pfister combines efficient logistics concept with comprehensive product application engineering services. Besides providing customer-specific parts, the Group offers a product range consisting of approximately 100,000 standard items.

Our core product divisions



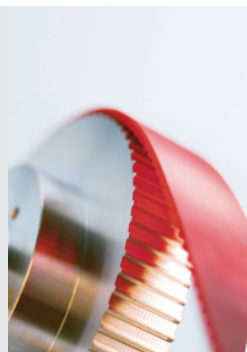
APSOplast®
Engineering Plastics
Technology



APSOseal®
Sealing
Technology



APSOfluid®
Fluid Handling
Technology



APSOdrive®
Drive
Technology



APSOvib®
Antivibration
Technology

Switzerland

Angst + Pfister AG
Thurgauerstrasse 66, Postfach, CH-8052 Zürich
Phone +41 (0)44 306 61 11
www.angst-pfister.com, ch@angst-pfister.com

Angst + Pfister SA

Chemin de la Papeterie 1, CH-1290 Versoix
Phone +41 (0)22 979 28 00
www.angst-pfister.com, ch@angst-pfister.com

Germany

Angst + Pfister GmbH
Siemensstraße 5, DE-70736 Fellbach
Phone +49 (0)711 48 999 2-0
www.angst-pfister.com, de@angst-pfister.com

France

Angst + Pfister SAS
Immeuble DELTAPARC
93, avenue des Nations, FR-93420 Villepinte
Phone +33 (0)1 48 63 20 80
Fax +33 (0)1 48 63 26 90
www.angst-pfister.com, fr@angst-pfister.com

Austria

Angst + Pfister Ges.m.b.H.
Floridsdorfer Hauptstrasse 1/E, AT-1210 Wien
Phone +43 (0)1 258 46 01-0
Fax +43 (0)1 258 46 01-98
www.angst-pfister.com, at@angst-pfister.com

Italy

Angst + Pfister S.p.A.
Via Montefeltro 4, IT-20156 Milano
Phone +39 02 300 87.1
www.angst-pfister.com, it@angst-pfister.com

Netherlands

Angst + Pfister B.V.
Afrikaweg 40, NL-2713 AW Zoetermeer
Phone +31 (0)79 320 3700
Fax +31 (0)79 320 3799
www.angst-pfister.com, nl@angst-pfister.com

Belgium

Angst + Pfister N.V. S.A.
Bedrijventrum Waasland Industriepark-West 75
BE-9100 Sint-Niklaas
Phone +32 (0)3 778 0128
Fax +32 (0)3 777 8398
www.angst-pfister.com, be@angst-pfister.com

China

Angst + Pfister Trade (Shanghai) Co. Ltd.
Rm 1803-1805, West Tower,
Zhong Rong Hengrui Building
No. 560 Zhangyang Road, CN-Shanghai 200122
Phone +86 21 5169 5005
Fax +86 21 5835 8618
www.angst-pfister.com, cn@angst-pfister.com

Turkey

Angst Pfister Advanced Technical Solutions A.Ş.
Akçalar Sanayi Bölgesi Kale Cd., No: 10,
TR-16225 Nilüfer/Bursa
Phone +90 224 280 69 00
Fax +90 224 484 25 96
www.angst-pfister.com/ats, ats@angst-pfister.com

Poland

Angst + Pfister Sp. z o.o.
ul. Komorowicka 260, PL-43-346 Bielsko-Biala
Phone +48 33 443 29 70
Fax +48 33 443 29 71
www.angst-pfister.com, pl@angst-pfister.com



APSOparts®

the Online Shop of Angst + Pfister
www.apsoparts.com