

Service – Your One-Source Solution

Pfannenberg Global Services

Product Development

Maintenance

Commissioning

Product Validation

Spare Parts

Repair Service



Global Service - Your Local Advantage

Pfannenberg innovation has made it one of the largest globally operating manufacturers of thermal management and process cooling equipment today. Our wide product range stretches from individual warning and signalling components to complete system solutions for machine cooling and enclosure air conditioning.

We speak your language - In addition to manufacturing facilities located on three continents, Pfannenberg has developed a worldwide network of local subsidiaries and sales partners eager to meet your service needs.

We're there when you need us - Worldwide

Repair service

If your cooling system is down, you can expect immediate assistance from Pfannenberg. Our repair service affords you the fastest possible response – nationally or internationally. We ensure that your cooling system is returned to optimal condition – even if it's not a Pfannenberg product. Our on-site service gets you back on line faster, eliminating the transit time associated with factory repair programs.

We offer you the following services:

- **Fault diagnosis**
- **Repair costs estimates**
- **On-site repair**
- **Handling and disposal of returned goods**

Pfannenberg Service Centers

in Germany (headquarters), China, UK, Italy, Brazil and the USA

Service Support Centers

in France, Russia, Singapore and India

Service Agents

Serving 42 countries on 5 continents



Innovation with Worldwide Networking

A strong investment in research & development allows Pfannenberg to maintain its cutting edge industry position. We welcome every opportunity to provide innovative solutions for our customers' most demanding applications.

The fact that we are considered to be the inventor of the filterfan®, a product that is often copied but never equalled, is a testament to Pfannenberg's commitment to innovation and development.

The Pfannenberg Global Services Department offers comprehensive support to ensure that our high quality products continue to perform for many years to come.

Product Development



Maintenance Service



Responsibility for Resources and the Environment

Pfannenberg shares the worldwide concern for environmental protection and considers it our duty to share the responsibility for promoting the efficient convergence of man, machine and environment. This feeling shapes our emphasis on green production processes and resource utilization, as well as designing products with the highest energy efficiency and exemplary life cycle advantages. Pfannenberg's Global Services Program helps our customers to do their part by providing the materials and expertise needed to maintain equipment in efficient, like-new condition.



Customize Your Service Level

The Pfannenberg Service Levels: Level 1 Level 2 Level 3

Service is a high priority for Pfannenberg. Because each customer and application is unique, we have established three different levels of service flexibility to fit your needs. This customer-specific service program provides economy while, at the same time, ensuring quality. Not sure which option best fits your situation? Qualified Pfannenberg personnel are always available to help you choose.



Availability

In an emergency, speed is crucial. Your urgency is our priority from the very moment that you are connected with Pfannenberg Service. Depending on the selected service level, Pfannenberg Service is available...

24 hr Premium Hotline



- Level 1 ... during office hours,
- Level 2 ... also during the weekend, or
- Level 3 ... around the clock via the 24 Hour Premium Hotline.



Response time

Pfannenberg Service is at your disposal worldwide. The speed with which a service technician is on-site following the report of a fault is also defined by the service level...

On-Site Assistance

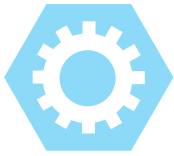


- Level 1 ... within 48 hrs (Mon-Fri) of the next business day
- Level 2 ... within 24 hrs (Mon-Fri) of the next business day
- Level 3 ... within 24 hrs (everyday) of the next day

Complete Flexibility: Choose a different level for each service component:

	Level 1	Level 2	Level 3
Availability Times during which a Pfannenberg service employee can receive your call, in order to initiate further measures.	Pfannenberg office hours (Mon to Fri, 7 am to 5 pm)	Pfannenberg office hours (Mon to Fri, 7 am to 5 pm) weekends (7 am to 5 pm)	24-hour hotline
Response time Maximum time from receiving your call until the Pfannenberg service employee is on-site.	48 hrs from the next business day (Mon to Fri)	24 hrs from the next business day (Mon to Fri)	24 hrs from the next day (everyday)
Spare parts See page 6 for more information.	Standard order	Stocked at Pfannenberg	Stocked at your premises
Maintenance See page 8 for more information.	annually	biannually	according to the service contract
Warranty extension Prerequisite for an extended warranty is the performance of maintenance at least once per year.	1 years	2 years	3 years

Spare and Consumable Parts



Spare Part Availability

No matter where you are located, your quick access to spare and wear parts is guaranteed by Pfannenberg's Global Parts Program.

Four different options are available to meet your needs:

Standard

Level 1

Standard spare parts are always in stock one of our service centers and ship within 24 hours of your order.

Manufactured spare parts may be in stock and may be built to order (shipment time up within 48 hours of your order).

Custom spare parts are only special ordered.

Parts Stocked at Pfannenberg

Level 2

On request, customer-specific spare parts can be stocked at Pfannenberg service centers. This makes particular sense in the case of non-standard spare parts. These parts are shipped within 24 hours of your order.

Parts Stocked at Your Facility

Level 3

The quickest access to parts is assured by stocking at your facility. This option is also available on request.

Online Spare Parts Shop

www.pfpartsusa.com

Order parts with the click of a mouse - directly from Pfannenberg - from anywhere in the world. Convenient, reliable and secure.

Simply click www.pfpartsusa.com and use the search function to locate the item you need.

The price and shipping costs are displayed immediately. This service is available 24 hours a day, 7 days a week.

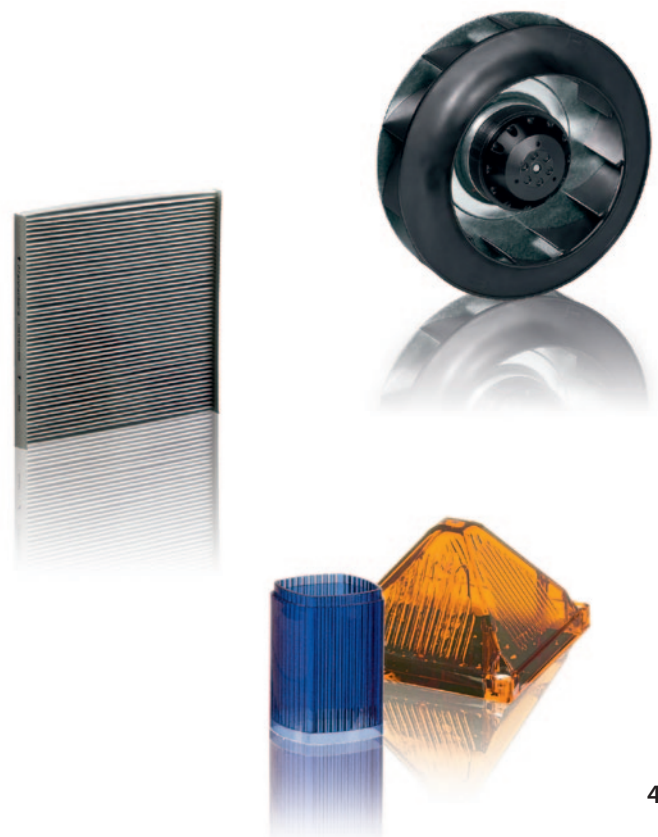
Wherever you are in the world, the Pfannenberg Online Spare Parts Shop is quick, comfortable and reliable.

Original Parts- ONLY from Pfannenberg

Original Pfannenberg parts, developed with each device, are a perfect fit every time. They automatically benefit from every factory product improvement and upgrade, as well as from over 50 years of thermal management experience. A long service life and a fair price make our original parts particularly economical.

Using original Pfannenberg parts is the only way to ensure...

- ... they are correct
- ... they fit properly
- ... they are available
- ... they can be delivered quickly
- ... you won't lose valuable time
- ... they function properly
- ... your warranty remains intact



Proper Servicing Promotes Reliability and Longevity

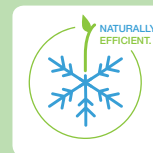
Maintenance

Pfannenbergs products are designed and manufactured to the highest quality standards - resulting in longer running times, even under extreme operating and environmental conditions. Service contracts are available to further ensure optimal performance of our products and to prevent expensive, unscheduled downtime. Regular maintenance, even once or twice per year, significantly reduces the probability of failure and increases machine reliability.

Our technicians have been trained on original products and know them thoroughly. They come to your factory with ready access to the latest measuring and control software. Our technician can also help you to optimize your factory and processes with equipment cleaning, inspection and other maintenance measures.

Maintenance includes:

- **checking the essential functions of the unit**
- **checking and exchanging consumable parts**
- **necessary cleaning**
- **readjustment of control and regulating modules**
- **proper tools and measuring instruments**
- **preparation of a maintenance report and a list of any parts needed for repairs**



Regular maintenance ensures high energy efficiency of Pfannenbergs products – lowering energy costs while benefiting our environment

Regular service



Maintenance frequency

Regular maintenance is necessary for even the most reliable machines. Depending upon operating conditions, a structured maintenance plan can significantly increase operational reliability and machine longevity.

A Pfannenbergs service contract, at the level selected to best fit your situation, will keep your machines consistently operating.

Warranty extension is your security

Depending the level you've chosen for your service contract, it's possible to extend the warranty on your Pfannenbergs product up to five years. The warranty period amounts to ...

Level 1 ... 1 years

Level 2 ... 2 years

Level 3 ... 3 years

Before Commissioning – Call Pfannenberg

Pfannenberg offers worldwide professional commissioning and start-up services to ensure that new systems get off to a good start and avoid improper installation and/or set-up issues that can cause machine failure or loss of production, especially for chilled water systems. We offer you the professional commissioning of your cooling systems anywhere in the world.

Our service technicians provide support for:

- **the conversion, expansion or relocation of your existing cooling solution**
- **technical support questions for your application**
- **commissioning of new devices in your manufacturing facilities**
- **organization and completion of commissioning**



Commissioning includes:

- verifying the design & installation of secondary coolant loop piping (in the case of water chillers)
- verifying electrical service and connection
- verifying proper installation and connection of the chiller to the piping system
- filling the secondary circuit with coolant (water, brine etc.) in the case of water chillers
- initial start-up of the system
- measurement and documentation of all technical data
- Acceptance and release to the user
- preparation of an acceptance protocol



Training courses

In order for your employees to develop a better understanding of air conditioning technology, we also offer training courses. This allows your employees to recognize problems faster and to make the correct decisions for the repair and resumption of production with greater reliability. The result is more economical and trouble-free operation of the systems. These training courses can be held at Pfannenberg, or at your location.



The standard contents of a training course:

- general information on refrigeration technology (circuit, components, functional sequences)
- the unit - relating to the customer's application
- commissioning of a refrigeration unit
- fault simulation, fault recognition
- remedial actions for faults during commissioning
- how to make contact in the event of a fault
- information about the work processes and the flow of documentation in the event of a fault

Research and Development

Product development

Pfannenberg's research & development facility offers the perfect venue for evaluating your products within the thermal management, air conditioning and/or signalling technologies realm. We can provide the resources needed to turn your basic product ideas into well-developed, revenue-generating products in less time, and for less cost, than you might expect. Lower your fixed costs by letting our professional team of experienced engineers handle your R&D so you can focus on the "big picture."

Some of the Engineering Services our R&D Department offers:

- conception
- development of specifications and test plans (design)
- design
- flow simulation (CFD)
- prototype construction
- prototype validation
- document management

Pfannenberg provides a wide range of product development services:

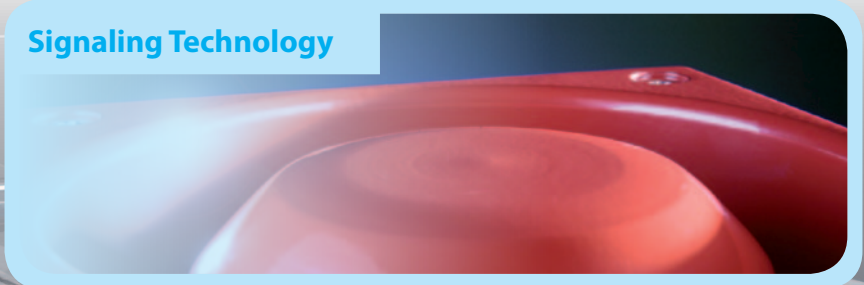
Machine and Process Cooling



Thermal Management



Signaling Technology



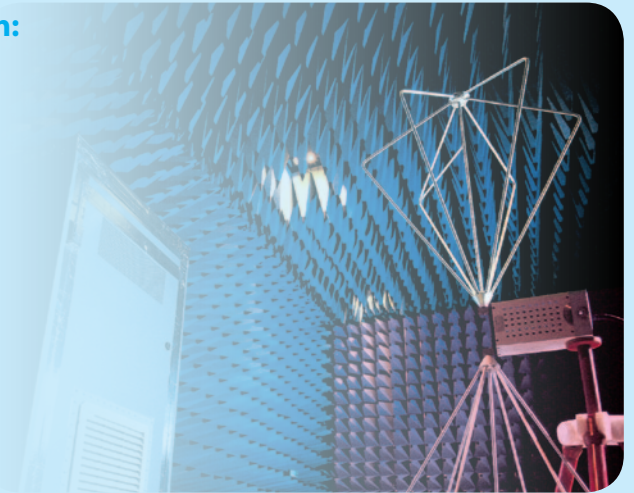
We Help Bring New Products to Market

The cost of maintaining a testing laboratory for product validation is prohibitive for many companies. Pfannenberg is pleased to offer our well-staffed, state-of-the-art testing facilities as an economical alternative to in-house validation. An extensive range of testing services is available to provide a detailed evaluation of your product.

Pfannenberg offers the following for product validation:

- environmental simulations in the climatic chamber
- infrared measurements
- protection class tests (IP protection)
- transport and vibration tests
- air quantity and light intensity measurements
- EMC tests / noise emission tests
- air flow simulation (CFD)

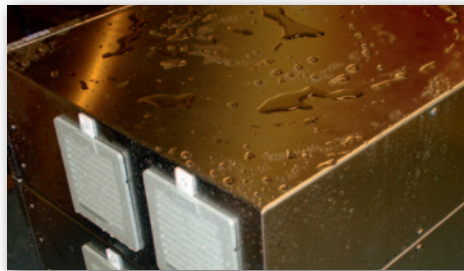
We work with you to develop a goal-specific testing plan; we organize and perform all necessary tests, and deliver a comprehensive report.



Air test facility



IP test equipment



Client product in Pfannenberg dust chamber



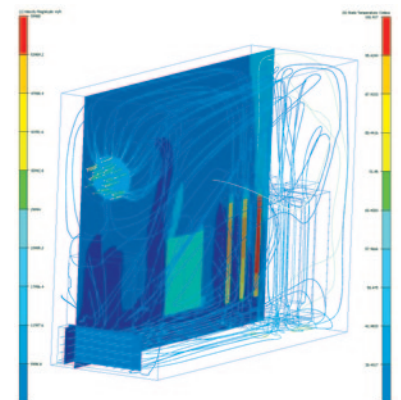
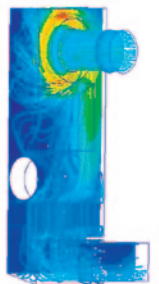
Computational Fluid Dynamics Analysis for Electronic Enclosure Solutions

By addressing complex flow and thermal challenges up front in the design process, a complete performance picture is captured - allowing our customers to get their products to market faster, deliver more innovative, efficient and profitable solutions, and reduce overhead and offering price as well as reduce warranty exposure. Fast, affordable, cost-effective project support for companies who have the need for CFD analysis, but not the budget.

Client: Manufacturer of large laser cutting machines

Problem: Client required an analysis of the thermal signature of their electrical cabinet and recommendation of correct thermal management products to handle the given heat load.

Solution: Pfannenberg provided a complete thermal and airpath CFD analysis using the manufacturer's specifications of the electrical enclosure, and heat load of internal electronics. Using this information, Pfannenberg was able to select and recommend the appropriate thermal management product, in this case, an air / water heat exchanger and chiller combination.



Examples (continued)

Case example: product development

Client: Manufacturer of multi-function housings for telecom.

Problem: A prototype of a cabinet with active roof ventilation must be presented to the (end) customer within four weeks.

Solution: The client turns to Pfannenberg, who develops an exact specification and testing plan together with the client. Pfannenberg designs prototypes on time, checks that they meet the relevant requirements and provides the client with the prototypes and test report.

Following successful acceptance by the (end) customer, the design and manufacturing documents are produced and handed over to the client.

Pfannenberg builds the first 100 devices; then releases production responsibility to the client.

Case example: product validation

Client: Technology leader in the field of laser marking systems.

Problem: The client has developed a new controller for its laser marking systems, but does not have the necessary resources to test the compliance of this new controller with the required design criteria. IP protection class (IP54) is of special importance here, so that the equipment does not fail the subsequent tests in the accredited (and expensive) test laboratory.

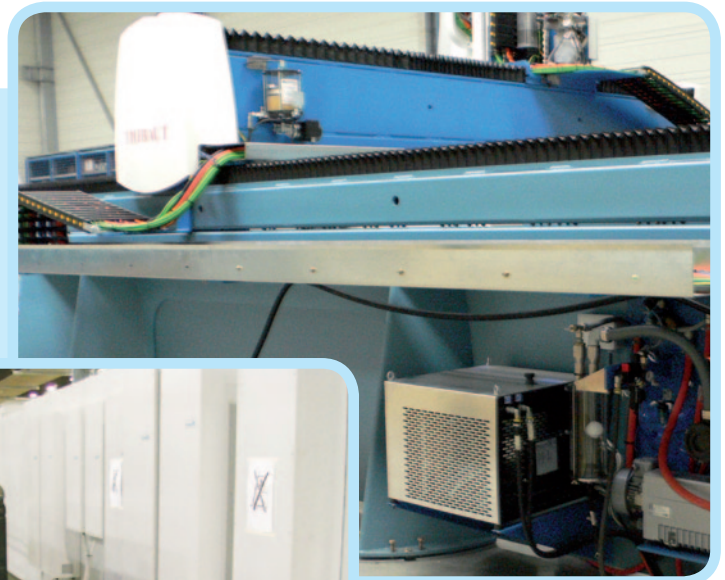
Solution: The client turns to Pfannenberg to develop an exact testing plan together with the client, based on relevant norms and standards. Tests are carried out in Pfannenberg's dust chamber (IP5x) as well as with a spraying arch (IPx4); weak points are analyzed and improved. The client subsequently has tests carried out in an accredited laboratory, which the equipment passes.

From the idea to the product...

No matter whether it is a question of cooling or larger projects, standard solutions or individual developments, your problems and activities will be in good hands with us. We can meet with you, face to face, on site. Using successful solutions, we will introduce our company as a solid, flexible and reliable partner.

Everything from a single source...

Within a prescribed period, innovative technology is developed and successfully implemented. For target markets, we not only carry out development together with our customers, but also provide consulting for installation and project management.



Become a Certified Pfannenberg Repair Organization (PRO)



Join the growing ranks of Pfannenberg's Professional Service Affiliates

With a network of over 1000 service professionals, Pfannenberg is always looking to grow our list of certified Pfannenberg Repair Organizations (PRO's). Whether servicing Custom Cooling Units for the Telecommunication Industry, or large Chiller units for the Machine Tool Industry, we are interested in working with the best technicians in our industry. We appreciate the local knowledge of our professionals and the global understanding of the support required for such key customers like Ford, Nokia and Schneider Electric.

Pfannenberg has trained professionals to teach and certify qualified refrigeration experts on our products using online resources or in-person training at our factory in Lancaster, New York. By qualifying with Pfannenberg, you can access many of the largest manufacturers in North America, while working with a private company who stresses loyalty with all our partners.



Pfannenberg Training Class



Pfannenberg Online Training

Other products and literature available from Pfannenberg...



Thermal Management Solutions



DTS Series Cooling Units



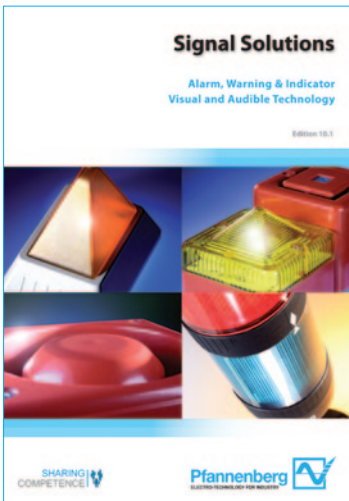
DTT Series Cooling Units



Wind Energy Solutions Guide



Food & Beverage Thermal Management Solutions



Signal Solutions Guide

A Bright Idea!
Building, Landmark & Art Illumination by Pfannenberg

Durable weather-resistant design and long service life make Pfannenberg lighting systems the optimal choice.

Call today for more information!

TV Tower & Trinity Bridge, St. Petersburg, Russia

Eiffel Tower, Paris, France

The advertisement features a glowing signal device in the top left corner. The background is a dark blue gradient. On the right side, there are two images: one of the TV Tower and Trinity Bridge in St. Petersburg, Russia, and another of the Eiffel Tower in Paris, France, both illuminated with lights.

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