

Energy-saving Components and Systems for Heat Distribution



Integrated optimisation of
energy concepts for heat
distribution



Baelz steam technology
– always a sensible
investment in industry
and public facilities

Heat distribution with steam

There is potential for saving energy wherever steam is used. The Baelz-thermodynamic® process prevents energy wastage through two effects resulting from condensate-based control: There is no need for condensate drains, as the condensate undergoes major cooling – in applications, this is typically during the distribution of district-heating steam from heating and hot water systems. In addition, steam also plays a significant role within **internal plant networks** in industry.

Our **steam transfer stations** can be used as space-saving Luxese Instant Heat® system solutions for steam networks. These are compact and diverse, fully heat insulated and completely mounted on a bracket ready for connection. Likewise, steam heat transfer stations are also often customised to meet individual requirements and installed on site.

At Baelz everything is from a single source: Advice, design and implementation with our own proven components in accordance with industrial standards, and always in line with customer requirements. The internationally unique **modular heat exchanger Modulo** baelz 147 and the Steam Terminal® baelz 145 offer flexibility in design combined with tremendous system availability.

An example showing how effective Baelz technology is: **Currently, more than 4000 steam heat transfer stations** in the district-heat network of Paris supply a wide variety of buildings with heat – from humble apartment blocks through to a government ministry – and have been doing so since the 1970s! In Germany too, numerous cities such as Dortmund, Frankfurt and Munich have steam district-heating networks in which Baelz stations help to save energy.



Steam system Paris, Clinique Trousseau



Steam transfer station Palais Bourbon, Paris

In industry, heat is frequently generated locally and distributed correspondingly. In the case of steam with very high boiler pressures in the plant networks, the controllable steam jet pump with cooling water injection, the so-called **steam desuperheater or saturated steam generator**, can reduce the pressure and inject treated water directly into the superheated steam. The required steam state can be set and maintained precisely.

Steam district-heating networks, and also internal networks, usually convey plant or „black“ steam. However, if companies require higher-quality pure steam, **pure steam generators** from Baelz can generate operationally reliable pure steam from this using full automation technology. Appropriately treated feed water is supplied to the pure steam generator, where it is heated until pure steam is available for further use with the desired pressure and corresponding degree of purity.

In Germany, numerous energy-saving steam systems from Baelz have been operating reliably for years – and always with energy saving – not only in various public utilities or at Deutsche Bahn, but also in the local steam heat networks of diverse companies such as Henkel, BASF, Bayer, Roche, Nestlé or Boehringer Ingelheim.

The Alsace company Leroux & Lotz has opted for conversion to Baelz steam heat transfer stations. Here, wood chips are burned in conjunction with the use of baelz 105 heat transfer stations, these yielding a total output of 2 MW.

The Palais Bourbon, seat of the French parliament, is connected to the district-heating network and has been supplied with heat via Baelz transfer stations since 1999. Standing shell-and-tube heat exchangers with up to 195 pipes and an output of 1150 kW are in use there. 4 bar absolute is present at the primary end. The system has operated without fault since 1999. In 2012, the Baelz-electrodyn® control system baelz 6200 was retrofitted and two years later a further spiral tube heat exchanger, baelz 106, was installed.

This intelligent installation enables an energy-saving heat transfer. Systems similar to that in the parliament building can be found in numerous other famous buildings in Paris, for instance in the Panthéon, the Institut Curie, Louvre, Centre Georges Pompidou, Les Invalides, as well as in all prominent hospitals in the city.



Steam transfer compact station, Steam Terminal®

Hot water applications

Heat distribution with hot water

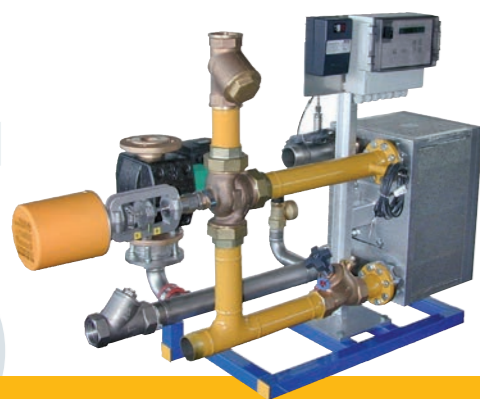
Heat is often distributed with hot water to the consumers via district heating. In the long term, the **development of district-heating** pipes is a very good investment in environmentally-friendly heat supply systems. No fossil energy sources are burnt locally, as this occurs centrally instead with higher efficiency and optimum flue gas cleaning.

Baelz provides the right energy-efficient technology for district and local heating. Distributing hot water using **Baelz-hydrodynamic®** jet pump technology entails major advantages here in regard to energy and material saving or **material conservation**, as well as for **simplifying the hydraulics** of heating systems. It also results in a significantly lower return temperature than with conventional technology, which helps to boost efficiency in district heating networks in particular.

Thanks to jet pump technology, **electricity is saved**, as there is largely no longer a need for electric pumps. While the latter have to return water into the flow in conventional plants – the flow energy having been dissipated in control valves or differential pressure regulators – **controlled Baelz jet pumps** enable the flow energy in district-heating and hot water to be retained at all times.



District heat transfer station in the flow system



Water heating Moduline in the flow system

Corresponding heat transfer stations are available for heating and hot water systems, including complete system solutions with an integrated jet pump. Among these solutions are the heat transfer station for hot water with 180°C Hot Water Terminal® and the unique home station Hydropilot® with integrated network-enabled controller Pilot® baelz 6164.

Drinking water heating according to the flow principle with compact stations Moduline and integrated controlled jet pump can be used for approx. 40 to 1500 KW. Hot water tanks are replaced by a system of heating drinking water in line with requirements. This saves space and also helps reduce potential Legionella growth in stagnant water.

Proven and energy-saving – controlled jet pumps Jetomat® Baelz-hydrodynamic® with Baelz-electrodyn® control system and Pilot® controllers

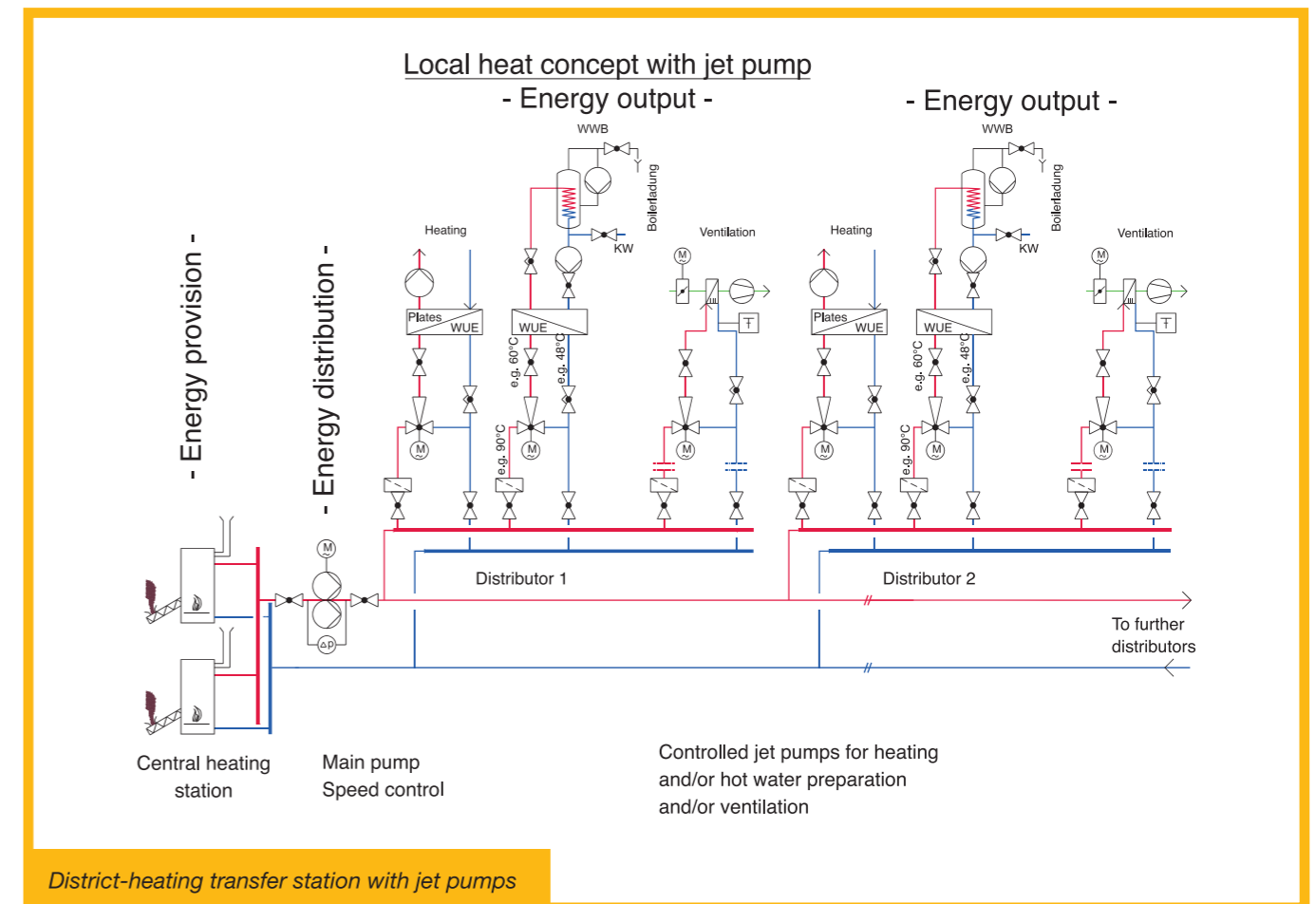
1. Heat and cold distribution in major plants using the Clinic in Mainkofen as an example

When renovating the Clinic in Mainkofen, modern control and jet pump technology improved the economic efficiency of heating, air-conditioning and ventilation systems via heat distribution using water. This is because it leads to a faster **amortisation of the investment costs** and a more long-term **reduction in energy and maintenance costs**.

The jet pump technology uses the differential pressure generated by the main pump for the entire energy distribution system to all consumer circuits, and does away with the need

for further circulating pumps. There is no longer any need whatsoever for fittings that were used previously, such as control valves, non-return valves and differential pressure regulators. Switch cabinets are more compact and the hydraulics have a clearer layout. Depending on the number of control circuits, this results in enormous savings potential.

Durability and low maintenance of jet pumps ensures reliable availability of the system. Remote maintenance via the internet offers both convenience and security.



District-heating transfer station with jet pumps

2. Transfer stations for Stuttgart Airport

Energy-efficient district heating is supplied to Stuttgart Airport via a local hot water network. The heating station has a total heat output of 16 MW.

The construction of this heat generation and distribution including conversion of the consumers in the numerous airport buildings was realised successively within 18 months during airport operation.

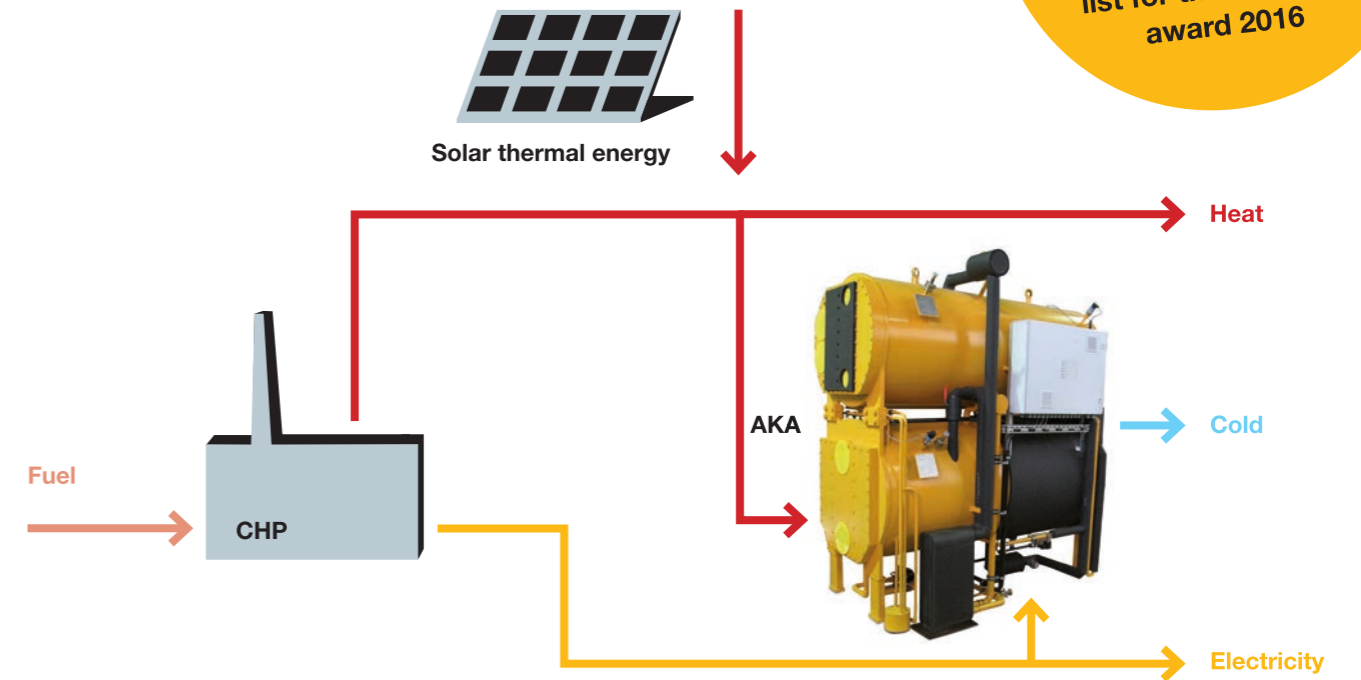
There was no need to interrupt operations either in the terminals or in the many other buildings. 35 heat transfer compact stations **Moduline baelz 143** with outputs from 200 to 1200 kW now supply all the airport buildings with heat. The **patented combination of controlled jet pump and plate heat exchanger** protects the heat transfer medium against calcification while ensuring low return temperatures at the same time.



One of the heat transfer stations with plate heat exchanger and jet pump

Combined heat, cooling and power

Cooling with heat generation – innovative, energy-saving Baelz absorption chillers via Baelz-absorpdynamic® – method included in the winners list for the Industrial award 2016



Schematic representation of a trigeneration plant

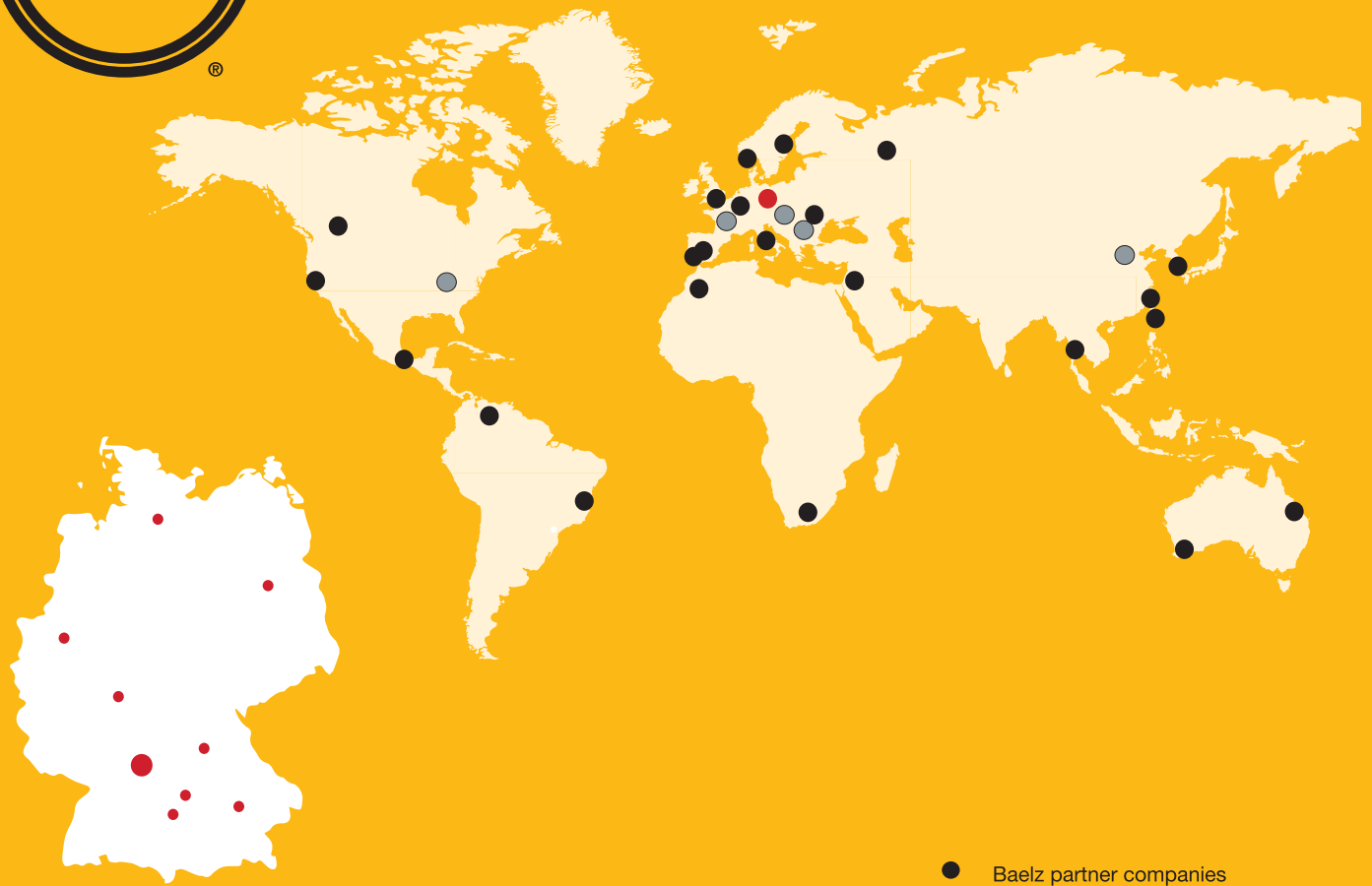
The increasing need for energy-efficient refrigeration supply to major consumers such as office buildings, public buildings, hospitals and shopping centres represents a high innovation potential for refrigeration technology. In practice, **combined heat, cooling and power (trigeneration)** has proven its effectiveness. The heat that is always accumulating during electricity generation in a CHP (combined heat and power plant) can be used to cost-effectively power a refrigerating unit in the summer season. District-heating networks as well as gas turbines, combined heat and power plants or solar thermal energy can be utilised as a heat source.

Advantages of this technology: Apart from the huge electricity savings in comparison to compression refrigerating machines, this form of refrigeration increases the capacity utilisation of cogeneration or combined heat and power plants (CHP) in times of weak heat demand, thereby reducing their operating costs.

Under the name „Bee“ and „Bumblebee“ and following the Baelz-absorpdynamic® method, Baelz refrigerating machines are available on the market with refrigeration capacities of 50 kW and 160 kW. A „hornet“ with 500 kW is planned.

In conjunction with a CHP, a refrigeration system for product cooling was realised at Bänninger in Reiskirchen. Here a „bumblebee“ ensures that the products are cooled during the production of plastic tubes. The constantly high COP of 0.8 allows an increase in cooling efficiency to be achieved, while boosting the efficiency of the CHP.

Further systems can, for example, be found in the Kassel and Karlsruhe municipal works and the Hanover Congress Centre. In Jordan too, Baelz refrigerating machines are in service. There, **solar thermal energy** is used to provide efficient cooling for schools and for a conference centre.



● Baelz partner companies

● Baelz near to you

● Baelz subsidiaries

Deutschland

W. Baelz & Sohn
GmbH & Co.
Headquarters in Heilbronn

Berlin, Hamburg, Essen,
Siegen, Frankfurt,
Nuremberg, Aalen, Ulm,
Munich

USA

Baelz North America
Atlanta, GA

Austria

Bälz GmbH
Vienna

France

Baelz Automatic SARL
Paris

China

Baelz Heat Automation Equipments
Beijing

Baelz helps save energy in the following sectors:



Chemicals



Automotive



Textiles



Heat distribution



Pharmaceuticals



Aviation



Timber



Power stations



Paper



Tyres



Buildings



**Food
Beverages**