technotrans

power to transform

Energy-saving cooling plants

Cooling technology made in Germany

Your powerful partner in thermal management

More than 50 years partner of the industry

Expertise, not only in the plastics and metal industry

Solutions for an efficient future

Indispensable for CO_2-neutral production

Extensive performance range from cold to hot

Units, plants and systems from - 80 °C up to + 400 °C

The rebranding of gwk to technotrans solutions GmbH, which was completed as part of the group strategy „Future Ready 2025," and the integration of Reisner Cooling Solutions, which was implemented at the beginning of 2022, represent 100 years of joint experience in thermal management and provides a unique center of competence for highly efficient cooling and temperature control systems in the temperature range from -80 to +400 ° Celsius on the world market.

Under the slogan „power to transform", our company, which is geared towards further growth, is availaable to its customers with even more power as a reliable partner for innovative cooling and temperature control solutions in the key markets of plastics, metal and rubber.

The basic requirements are the same across all industries:

Reliable, precise and energy-efficient technology. Furthermore, technotrans creates concrete added value - namely by means of application-specific innovations.

If there is a thermal management challenge,
we design and build a better solution.

technotrans Vision

Globally active - internationally positioned

Present in all major markets worldwide

Flexibility through multiple locations

Powerful organizational units

24/7 Customer Service

Worldwide technical support. Around the clock.

Cost minimization through energy reports

Without exception, all industrial manufacturing processes involve the in- and output of energy, which has to be supplied or taken away in the form of heat. The heat energy to be released is given off into the environment in the form of heat by the use of cooling plants. Heat recovery systems allow the heat to be converted into heat energy. Optimised combined systems minimise the energy consumption of the cooling plants and utilise energy by means of heat recovery at the same time.

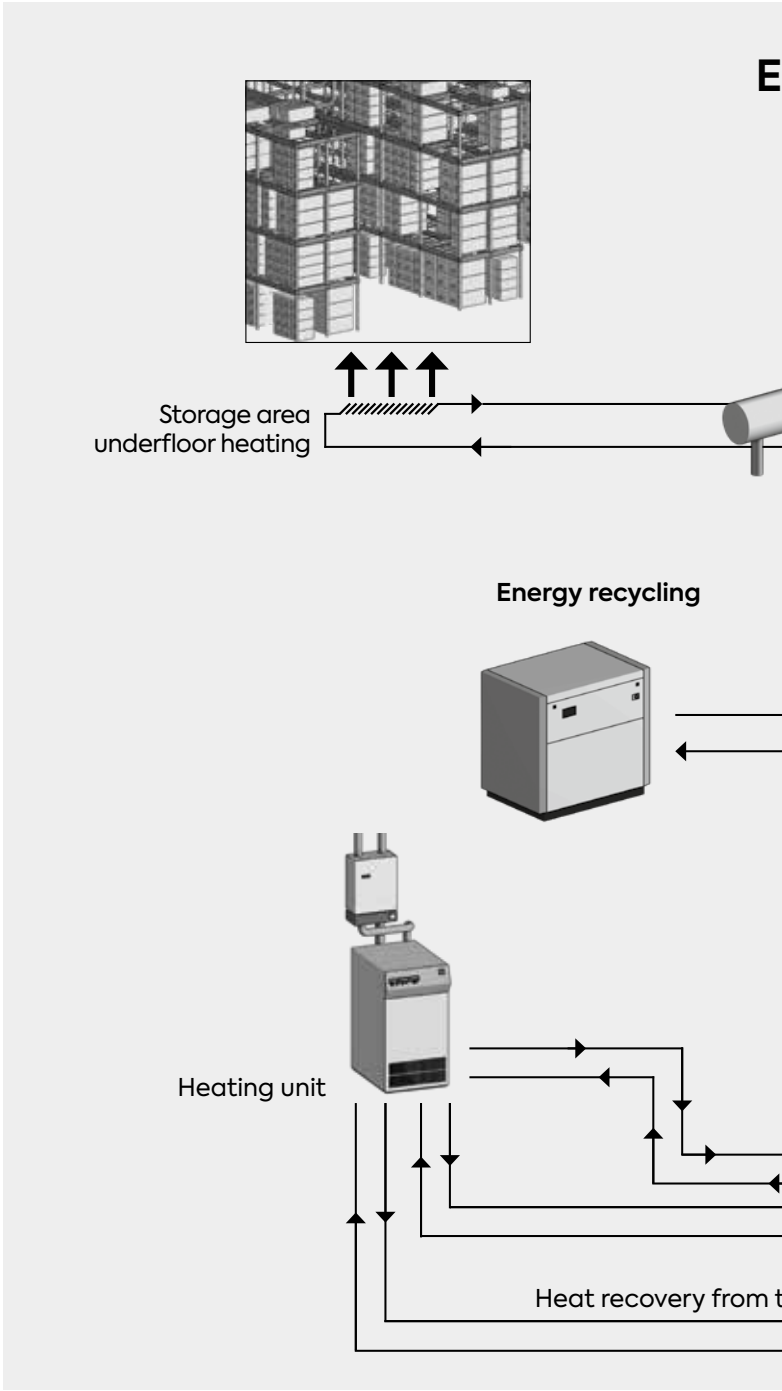
The adjacent schematic diagram shows that cold water can be produced by several cooling systems, that clearly differ with view to investigation and operation costs. Depending on the application the most suitable cooling system can be chosen. Primarily the expected operating costs have to be taken into consideration.

Energy reports for the optimum cooling plant

technotrans solutions follows the principle that the optimum cooling plant for the specific application can only be found by analysis. This analysis is included in our expertise in energy efficiency and is used as a primary factor for a decision on the investment.

In most cases only a combined system can offer the best solution, i.e. a centrally controlled combination of different cooling units in connection with heat recovery, capacity control of chillers and relief of the primary heating.

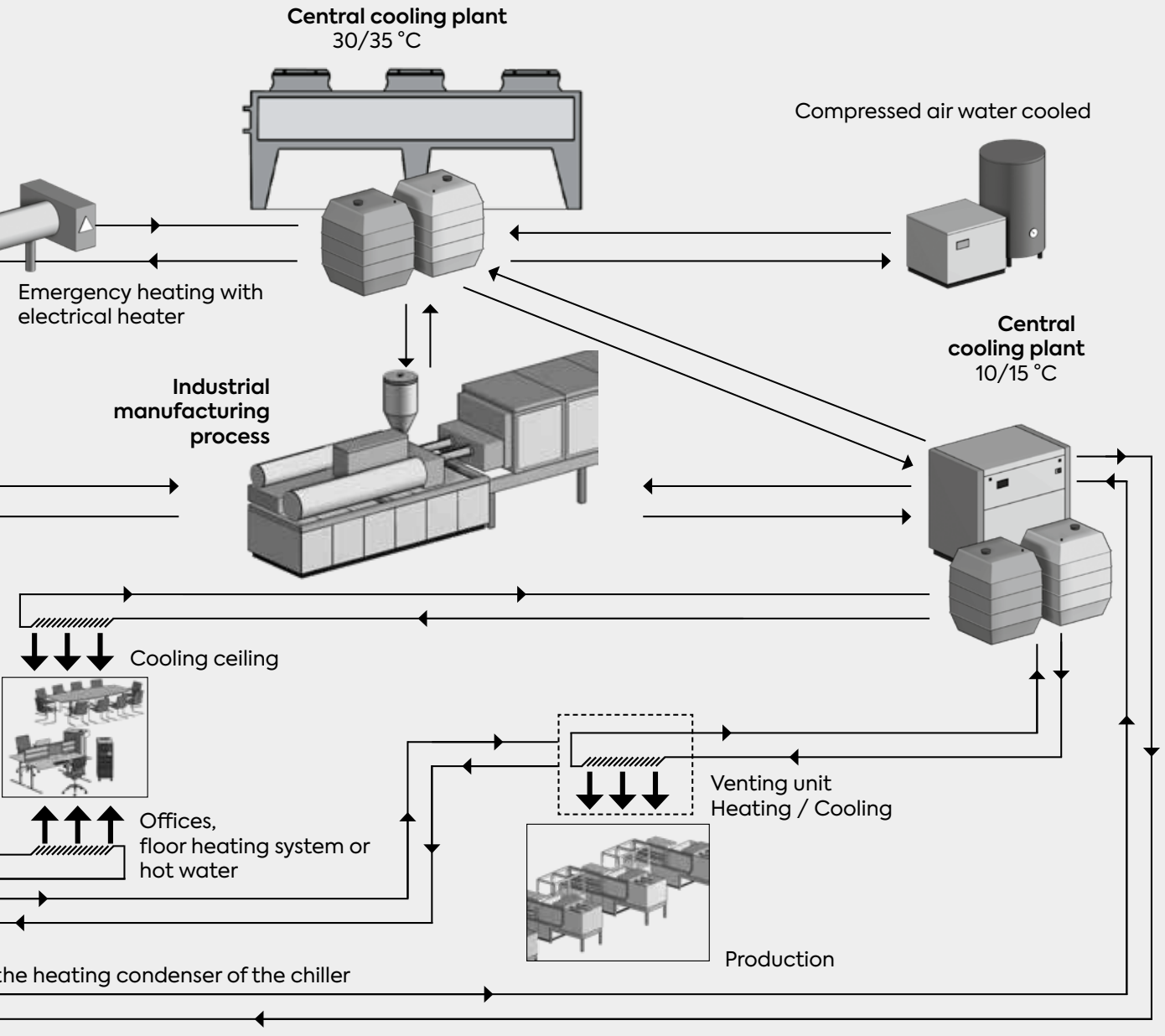
With its unique product range, technotans solutions plans combined systems with lowest operating costs for production. That means to you,that gwk provides the complete guarantee for correct calculation and planning and installs its systems on a turnkey basis.



technotrans solutions produces combined systems and heat recovery sytems for many years now. The systems installed to date not only save several hundred million kilowatts of heating energy annually, they also save a similar quantity of electrical energy – hereby the amount saved is even larger due to the reduced operating costs.

Apart from the advantage for the operator, technotrans solutions also renders an extraordinary contribution to protect the environment.

nergy flow diagram – optimised cooling of a production process



technotrans solutions – cooling plants for free

This is an unconditional promise. A technotrans solutions cooling plant can be acquired at no cost. The reason is that the investment costs for a new plant are amortised by the saved operating costs.

Capital-free plant leasing makes plant contracting with liquid funds possible. (This offer is valid for Germany and the countries of the European Union).

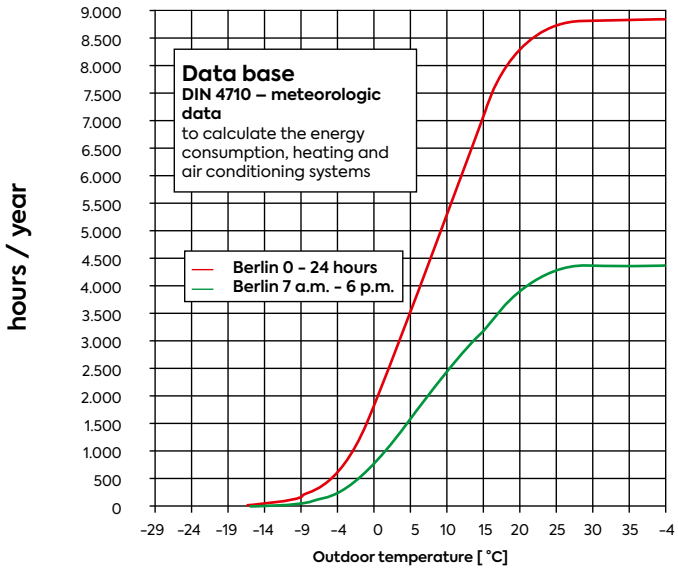
Objective of energy optimization through the technotrans solutions project study

- Calculation of the optimised combined systems (cooling and heating systems) for injection moulding factories
- Exceeding the heat from the production machines under consideration of

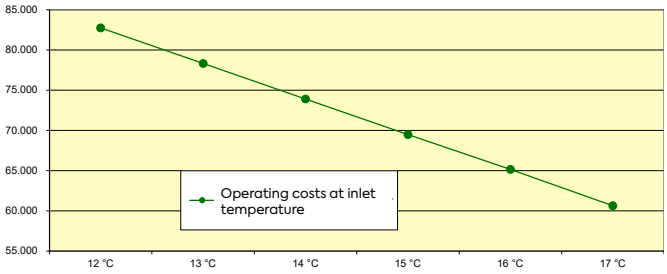
– the best process reliability
– high product quality
– shortest cycle time

Selection criteria:

- Production plant and products
  = cooling power requirement
  = lowest necessary water temperature
- Economic efficiency of the cooling plant
  = operating costs
- Energy management of the total production
  = potential of heat recovery



technotrans uses outdoor temperature to reduce the operating costs



Influence of the cold water temperature
Exapmple at a cooling capacity of 500 KW
approx. 4.500 EUR per 1 K temperature increase

Project study example 1:

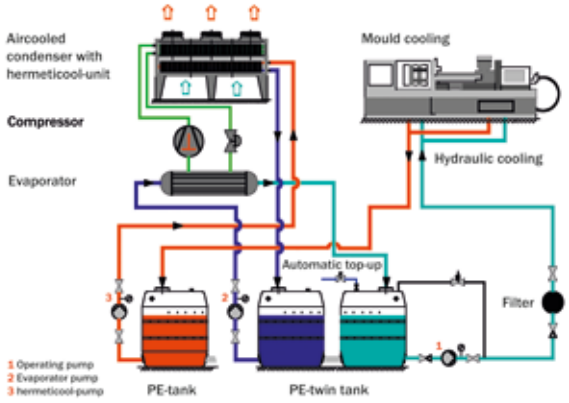
Single circuit cooling plant with an process temperature about 15 °C for the mould cooling and hydraulic cooling at 235 kW cooling capacity.

Before optimization:
Single-circuit cooling plant with conventional chiller

After optimization:
Energy optimised single-circuit cooling plant with hermeticool

– Freecooling up to approx. 5,200 h/a
– Energy savings up to 240,628 kWh/a = 48 %
– Energy cost savings up to 20,167 €
– CO_2-savings up to 168,440 kg

Industrial compact cooling plant with hermeticool



Project study example 2:

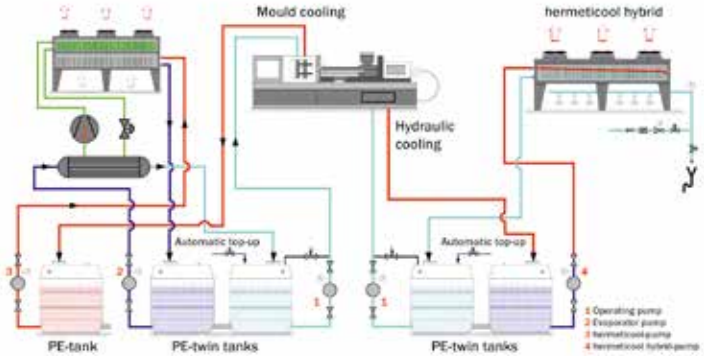
Double circuit cooling plant in split design: Mould circuit 15 °C with 87 kW cooling capacity and hydraulic circuit 30 °C with 148 kW cooling capacity

Before optimization:
Conventional design: mould circuit with chiller/ Hydraulic circuit with cooling tower

After optimization:
Innovative design: mould circuit with chiller and hermeticool / hydraulic circuit with hermeticool hybrid

– Energy savings up to 237,608 kWh/a = 46 %
– Energy cost savings up to 18,510 €
– CO_2-savings up to 166,115 kg
– Savings of 1,800 m³ water per year

Mould circuit: air-cooled chiller with hermeticool
Hydraulic circuit: hermeticool hybrid



The centralised cooling plant

The **technotrans** project team consists of cooling and control specialists as well as engineers in process technology who have many years of experience at production level. This experience leads to the high technical standard in centralised **technotrans** cooling plants and combined systems.

The water chiller is the most important module in a centralised cooling plant. But only the optimal dimensioning of all components leads to a perfect function. There are many options in the choice of the system.

technotrans solutions prefers a closed circuit, with tanks made of stainless steel or plastic, with manifolds made from stainless steel and with factory piping made of PVC or PE. In order to reduce costs, we recommend a combination of several cooling systems to be controlled by a central computer and the **technotrans solutions Software Central Energy Management System**.

Quality is our strongest argument

As a rule, a central cooling plant is responsible for the overall production operation. Our technotrans solutions engineers therefore emphasize on correct dimensioning when designing a cooling plant for a production. This, in combination with the use of high-quality, longlife and maintenance-friendly components will achieve the highest possible reliability of the plant. A combined system exactly tailored to a specific operation will achieve the required reduction of operating costs by means of the lowest possible energy consumption.

Electrical cabinet

technotrans solutions engineers plan and design complete control boards under consideration of specific requirements and site standards. These systems are built by our qualified personnel and afterwards installed on site.
The product range covers small operator panels, simple control cabinets up to large control systems.

Process visualisation

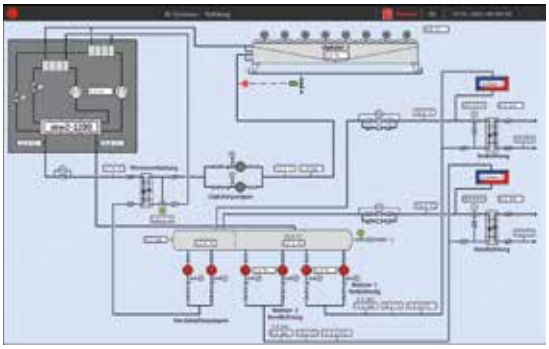
During industrial processes a number of individual parameters have to be measured and calculated. They include physical parameters such as temperature, pressure, flow rate and power consumption. The following data is visualised by the technotrans solutions control system:

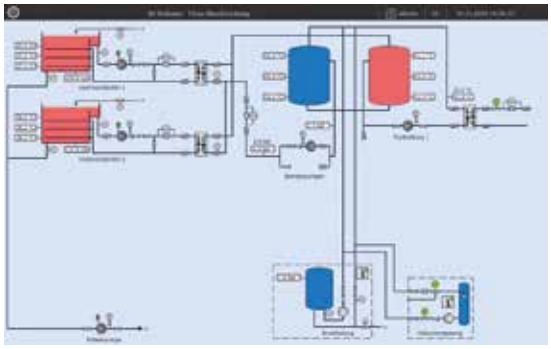
– Operation parameters such as temperature, flow rate and pressure, power supplied to the production, operation hours of components and power consumption. The recording and processing of these data allows a centralised energy management.

– Storage of measuring data

– Indication of stored data by characteristics or tables

As a matter of fact communication with a superior network is also possible. The technotrans solutions process visualisation is based on the WinCC software system by Siemens, adjusted to the technotrans solutions unit systems which thereby allow an individual screen design.





kws l, kws w and kws c energy-saving modules

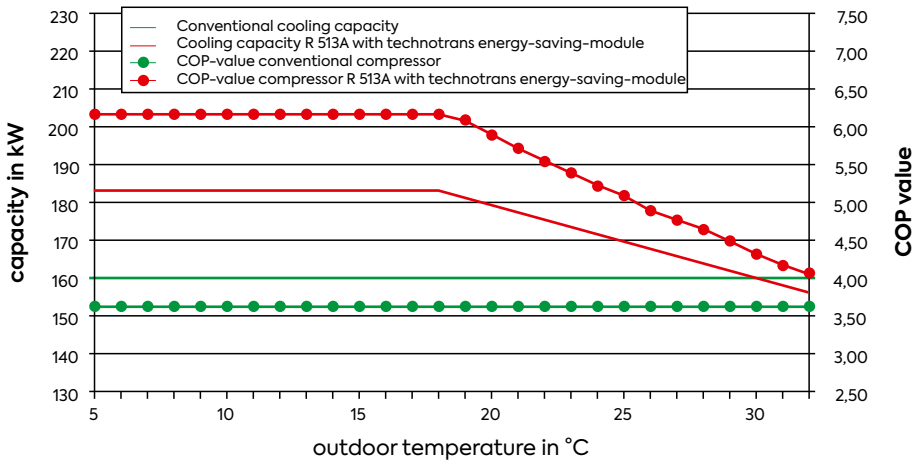
Water cooled chillers for industrial use

Energy-saving industrial water chillers have the task of drawing off heat from a process. This is done by targeted cooling with cold water at suitable points so as to simultaneously increase production and improve quality.

Except for the low-temperature range, technotrans solutions chillers are operated with R 513A, a chlorine-free refrigerant. By choosing this refrigerant, the pressure conditions in the cooling circuit are clearly lower than in systems that use other products.

As a result, the installed components are exposed to less stress, clearly less wear and the COP value is higher. Higher COP values mean lower operating costs.

technotrans solutions energy saving module



Energy consumption at a production period of 7,200 h/a:

Conventional solution:	317,355 kWh
technotrans-Energy-saving-module:	216,865 kWh
Energy-saving potential:	31.7 %
Averaged COP-value with energy saving module	5.15

With hermeticool-function (combined unit)

Conventional solution:	86,374 kWh
technotrans-energy-saving-module:	60,177 kWh

technotrans solutions chillers of the kws 1 series are cold water aggregates with externally set-up condensers. These chillers are equipped with screw condensers; the power regulation of the capacity to be dissipated is continuous. Since shell and tube evaporators manufactured by technotrans solutions are used, these machines are especially suitable for industrial cooling processes. The technotrans solutions energy-saving module, in combination with an electronic expansion valve allows realization of a continuous condenser regulation. With this type of operation, the ongoing operating costs are reduced by approx. 25 % compared to common cooling units.

Water-cooled cooling units by technotrans solutions are preferably used when cooling water at a higher temperature level is inexpensively available. With correct dimensioning of exchanger surfaces on evaporators and condensers, the output figures of the machines are further optimised.

technotrans energy saving module

Use of electronic expansion valves reduces operating costs.

Advantages:

– Fast reaction time

– Even overheating regulation

– Variable implementation

Energy-saving water recooling system with infinitely variable fan control

EC fans are used wherever economical energy use is required. The air volume requirement is optimally adapted to the actual load to be discharged, the weather conditions and the operating requirements with the integrated electronics. This significantly minimises energy consumption and maximises the service life of the system.

The advantages at a glance:

- Significant energy savings and reduction of operating costs
- Adaptation to the actual load to be discharged
- Cleaning function of the heat exchanger block by changing the direction of rotation
- Night limitation to minimise noise emission

EC fans are used in the following technotrans products:

– Air-cooled chillers
– Water and glycol recooling systems
– hermeticool
– Evaporative cooling towers
– Air-cooled condenser s

In use around the world technotrans soltutions cooling towers

technotrans soltutions cooling towers are used to carry off heat from production plants with higher temperature levels and work acc. to the principle of evaporation. Cooling towers are a part of a central cooling plant supplied on a turnkey basis which can be controlled by a fully programmable microprocessor.

To prevent pollution of the consumer by contaminated water from the cooling tower circuit, the cooling circuits of consumers and cooling tower are separated by an installed plate heat exchanger. As a rule, water treatment and water purification are part of our supply and service program.

The technotrans solutions stainless steel cooling tower of the ghkv series

The cooling tower pack is made from a plastic honeycomb structure with a high heat exchange capacity and high mechanical loading capacity. The housing is constructed from stainless steel, forming a completely installed unit together with the water basin.

Low pressure high capacity fans with a high level of efficiency and a low noise level force the cooling air through the fill-pack. Water return from the process is distributed equally by polypropylene hollow cone spray nozzles.

Clean process water with ku-plants by technotrans solutions

Water is an excellent cooling medium. ku plants from technotrans solutions utilise the cooling energy provided by water to carry away heat from production machines in the most trouble-free and cost-effective way possible.

Fresh water from a well, from rivers and from other surface reservoirs is always saturated with oxygen and includes a large number of minerals and suspended particles which can block up the cooling channels in production units through corrosion or by producing deposits.

kU plants from technotrans soltutions do not allow such problems to arise. A plate-type heat exchanger made of stainless steel separates the clean closed circuit that is used to cool the production from the natural fresh water circuit that is contaminated with all kinds of impurities. Cooling tower water loaded with concentrated solids and particles should not be passed through the cooling channels of production machines. Here too, ku plants provide clean working.

A microprocessor controller working in combination with a continuously operating motorised valve provides precise temperature management regardless of the temperature of the fresh water available. Consumption of fresh water is minimised and expensive water treatment is not required.

The operating pump works continuously at the same pressure and thus ensures consistent flow conditions. Automatic water feeding prevents the water level dropping too low. Providing a standby pump that is switched in automatically and also emergency cooling via the fresh water feed increases safety in operation.

ku plants are an ideal tool to reduce maintenance costs, since all the production machines remain clean and ready for operation.


technotrans

Tailor-made compact chillers for special production processes

Chillers need to be adapted to the specific requirements of the application to ensure an exact temperature regulation and a reliable operation.

Explosion-proof compact chillers

In many processes simple cooling with industrial water is not adequate. Individual process-controlled temperature management requires the use of chillers directly in the production plant, especially if materials that are a fire hazard are being produced or processed.

Explosion proofed chillers are offered as standard by technotrans solutions and can be equipped with a wide variety of options.

› Low temperature chiller
with a temperature range of > 50 °C

Low temperature chillers

Explosion-proof chillers for the Ex-zones 1 and 2 are part of the technic standard range.

In chemical processes reactions are initiated and monitored according to temperature and pressure. Using a wide variety of machine components, chillers can be produced in modular form with one or more temperature circuits over a total temperature range from -60 °C up to +220 °C.

Machines of this type basically have microprocessor controllers which regulate the timing sequence and the temperature of the process. We recommend discussions with our process engineers to ensure correct sizing.

› Low temperature chiller with integrated heating circuit

Energy recycling and heat recovery

technotrans solutions energy recycling

Every industrial production requires energy in order to make products. Often, electrical or primary energy is induced as heat, used for operation and must then be dissipated, converted or destroyed.

Our technotrans process engineers analyse and calculate production processes and the overall thermal periphery with the objective of lowering the necessary energy by means of energy recycling, of reducing the energy requirement at the individual stations, of converting energy or using it several times and dissipating it sensibly.

The result is considerable energy saving, which results in cost-cutting and contributes to preserving the environment.

technotrans solutions heat pumps

Heat pumps are cooling machines which are primarily regulated by the cold water temperature and are mainly used to draw off heat from production units. In winter this heat is pumped to a higher temperature through the compressor and made usable for heating purposes. In the summer the heat is drawn off into the outside air by means of externally located condensers. The heat pumps are filled with R 134a refrigerant and can produce hot water of temperatures of up to 60 °C.

In order to heat service water all year round, a desuperheater is placed before the heating condenser to heat the service water up to a maximum of 70 °C. Desuperheaters are an extremely useful option for each water chiller. Heat pumps in combination with air extraction and ventilation units can be used in summer to provide cooling by extracting the heat from large rooms and halls to provide cold air at specific points to cool production equipment such as blown film units, and to support the hall heating in winter by passing hot air directly from the heating condenser into the air ducts.

technotrans solutions air heaters

technotrans solutions air heaters consist of copper tubes with metal fins which give off the heat from production machines into the circulated ambient air. These aggregates convert heat energy without utilizing additional primary energy.

In a direct circuit the heat produced in the process is pumped directly to the air heater, for example the heat given off by a hydraulic circuit.

By comparison, in an indirect circuit the heat is given off first by a heat exchanger into the heat transfer medium in the heat exchanger circuit. This is in principle much the same as in a central heating system .

Air heaters are of two types: of open construction with an axial fan for the heating of large rooms and halls, and a more presentable form with a nice housing and a radial fan for use in office or apartment.

Centralised cooling plants in containers save space and money

A complete centralised cooling plant, including the required peripherals, can be set up in the absolute shortest possible time at the subsequent place of installation and is immediately ready for use by means of prefabrication and installation in a container. This way, the otherwise high investments for an operating building, the costs for installation and start-up of the plant are reduced.

Container cooling plants almost have no limitations in terms of their capacity and variety of possible combinations. They are supplemented by peripheral systems such as water treatment and water preparation systems or compressed air compressors. If the production operations are re-located, then the container can be moved as well without any difficulty.

Generally it is not necessary to obtain a special construction permit.

The decisive factor for the selection of a container cooling system is of course the future operating costs. A series of different cooling systems and the combined systems composed of these units are primarily available:

- **Water chillers in combinations with hermeticool units**
- **Heat pump systems for heat recovery**
- **Cooling tower combined with a ku system as a closed, clean cooling circuit**
- **Air heaters for direct recovery of heat**

› Containerised cooling plants are designed acc. to the individual demands

All containers for installation of the cooling plants are tailor made, tuned to specific needs and requirements. The walls are insulated in terms of sound and heat; openings for pipe connections and electrical supply are provided.

The roof of the container is prepared to receive exterior aggregates. Since container cooling systems are set up outside, they do not cause building costs or result in losing valuable production space.

Clean water is also part of it

Due to its good heat transfer properties and high specific heat, water is extremely suitable as a heat transfer medium. On the other hand, a large number of substances is dissolved in water and this can cause unwanted side-effects in a cooling system, such as deposits. Water can take up and release oxygen and thereby cause corrosion. We want you to use only water that will cause you no problems. Our laboratory will prepare an analysis based on a sample of water. The water analysis is the basis of a recommendation for the water preparation required and to determine how the water should be treated.

Water preparation means in every case the production of treated water which is suitable for use in cooling units. In this connection water softening units of different sizes are applied.

For the maintenance of the water, we recommend our customer service and our extensive product portfolio for the treatment and conditioning of the cooling water.

For your own maintenance staff, we supply test equipment, cleaning equipment and the necessary test kits to verify the product content of the chemicals in the cooling water.

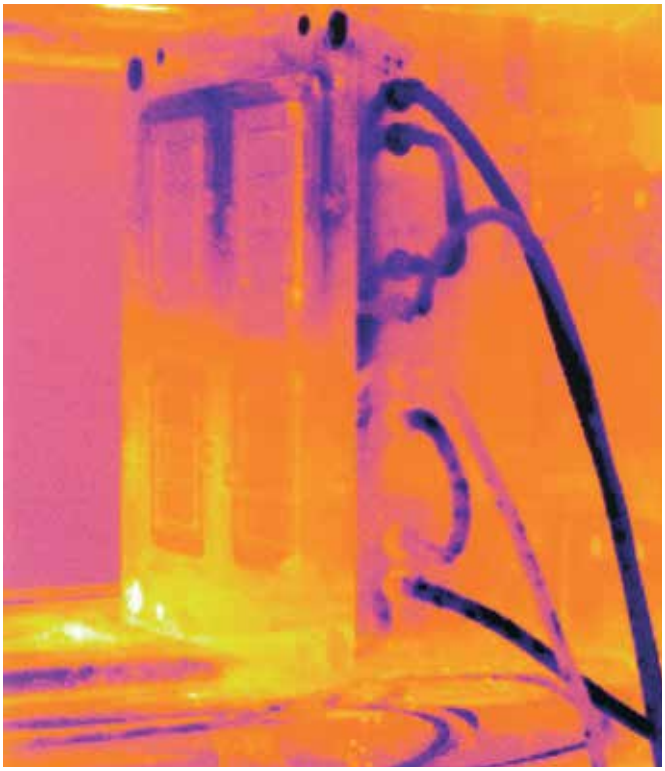
› Double water softening unit to remove the minerals that form lime scale and dosing station for inhibitors to prevent corrosion, integrated into a container unit

Advantages at a glance:
Tank system

– Individual in-house production, flexible in shape and size
– Permanent water level monitoring via built-in pressure sensors
– Automatic water refill
– Automatic dosing of biocide and corrosion protection (optional)

Advantages at a glance:
Full-flow return filter

– Backwater-proof construction
– Cleaning without cleaning possible without interrupting operation
– No additional pressure losses to the the consumers
– 100 percent return filtration
– Filter inserts with different machining widths



› **Thermography of an injection mould**
Inhomogeneous increase of temperature due to the use of contaminated heating/cooling channels

› Homogeneous temperature distribution after flushing the mould and conditioning the water

One-stop turnkey plants

Our tasks include the complete planning of a cooling plant including all the peripheral equipment and instruments. Above all, the planning of the entire piping system for a specific and consistent supply of all consumers rounds off our package of services.

On request we can produce for you complete layouts for cooling water, material supply, power supply and compressed air lines. Our installation teams are experienced in the laying of piping systems made of steel, copper, stainless steel, PVC, polyethylene and polypropylene. On the basis of our detailed plans you can also have the work carried out by installation companies which you prefer.

The connection between the cooling plant, heat recovery system and the existing heating unit is made through hydraulic switching systems. technotrans solutions makes use of all current serial and analogue interfaces for data transfer between the production machines and the cooling system or the cooling system and the heating unit or to communicate with a process controller.

Our worldwide service network: In person on site or virtually

As a globally active partner, we speak your language – in every respect. We think deeply into your requirements. And find a convincing solution for practically every task.

Our complete service gives you more freedom and security: We are your high-performance partner in the planning and implementation of your projects – right up to turnkey installation.

And we remain reliably at your side. With our expertise in the maintenance and repair of your equipment, machines and system solutions. With expertise and recommendations for retrofitting or upgrading existing equipment.

Our customer service is there for you 24/7. So you can be sure to get the support you need from us at any time. Quickly and competently.

You want to increase productivity, optimise processes and reduce costs? technotrans plans and supports your individual projects worldwide on site – right up to commissioning. With customised service modules, we increase machine availability and operational reliability in your production.

And our innovative technologies help you to optimise energy efficiency in your operations.

technotrans

technotrans solutions GmbH
Scherl 10 · D-58540 Meinerzhagen
Tel. +49 2354 7060-0 · Fax +49 2354 7060-150
info-solutions@technotrans.de · **www.technotrans.de**

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