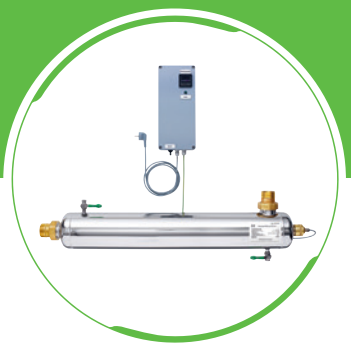

# Provide your cooling water with brand-new qualities

Highly efficient Grünbeck technology for cooling water treatment

grünbeck


1 Fine filter
2 Euro system separator
3 Water softener Delta-p® „I“
4 Brine tank
5 Activated carbon filter to reduce chlorine
6 Residual hardness monitoring
7 Reverse osmosis system GENO®-OSMO-X
8 Pure water tank RT-X
9 Pressure booster system FU-X

*System configuration for optimum, low-salt make-up water*

# It is about water purity and about the future

*Clean water protects health and property. This also includes systems in industry, trade and building services engineering. We from Grünbeck believe that the operating reliability and long service life of your investment is just as import as its flawless and efficient operation. To have our technology at your side means you can rely on optimum performance at all times. With Grünbeck's solutions for water treatment, you will achieve three goals at once: You protect your technical appliances, ensure economic operation and preserve the environment.*

**Cooling water treatment of the next generation.**
The cooling water treatment provided by Grünbeck perfectly meets your requirements. Because, as a supplier of complete solutions, we know the specifics of your evaporative cooling systems. And your expectations regarding the cooling water. For the selection of the treatment process for the make-up and circulation water of cooling systems, the water composition as well as the type and set-up of the cooling system are essential. In order to maintain their technical functionality as well as to protect the environment, guidelines for the proper operation of the cooling system, such as VDI 3803 and VDI 2047-2, are crucial.

**Cooling water treatment, an important factor of success.**
Innovative Grünbeck technologies perfectly adapt the treatment of the make-up water to your cooling system. Losses due to salt reduction decrease. The use of dosing agents is reduced. Thus, you do not only protect the environment but also save operating costs. Undesirable scale and salt deposits are prevented. Thanks to Grünbeck's future-oriented water treatment, the cost effectiveness of your system not only is maintained but even increased.

## The Grünbeck concept for optimum cooling water treatment

- **Harmonisation of the make-up and circulation water treatment of evaporative cooling systems**
- **Observance of the limit values as per VDI 3803 and the specifications of the manufacturer**
- **Hygienic operation of evaporative cooling systems according to VDI 2047-2**
- **Increase of the cost effectiveness of the entire cooling system**

# High-quality salt reduction control: the life insurance for your system

*Automatic salt reduction system GENO®-KWA*

A reliable, automatic salt reduction system ensures the long service life of your system. The progressive Grünbeck technology combines a multitude of functions and connection options.

A conductive or inductive sensor controls the conductivity measurement. In case of a power failure, the salt reduction valve closes automatically. Thanks to the optional weatherproof cabinet with heating module, it is possible to install the system outdoors.

With intelligent technology, you establish optimum conditions for the stable operation of your system and the long-term preservation of its value.

**Progressive technology ensures your success.**

In order for the cooling water to protect all system components efficiently, Grünbeck offers innovative water softeners and reverse osmosis systems as well as technologies such as the conductivity-controlled, automatic salt reduction system GENO®-KWA. A system, which takes care of the measuring and control functions recommended by VDI guideline 2047-2, such as:

- Continuous conductivity measurement
- Exact monitoring of the pH value
- Preliminary salt reduction and stop of salt reduction in case of biocide dosing
- Activation of the cooling water circulation pump

This makes control and regulating tasks much easier and ensures the reliable protection of the system as well as cooling water that complies with the rules.



# Pure cooling water for hygiene and safety

*Filter system GENO-mat® F*

*UV disinfection system GENO®-UV KWA*

Pure water is your best cooling water. Free from scale, minerals, dirt and micro-organisms. Grünbeck's highly efficient filter systems and UV disinfection prevent deposits as well as the formation of biofilms. Your system remains free from pathogens such as legionella.

In partial flow operation, Grünbeck filter systems such as the GENO-mat® F series reliably filter dirt particles and released deposits from the circulation water of evaporative cooling systems.

Systems for the disinfection of the water, such as the GENO®-UV KWA, irradiate the water with UV light and thus reduce the growth of micro-organisms. The need for biocides decreases.

## Filtration and UV desinfection

- **Continuous partial flow filtration of the circulation water**
- **Backwash either manual, timer-controlled or differential pressure-controlled**
- **Physical disinfection**
- **Reduction of the biocide demand**
- **Monitoring of UV irradiation according to VDI 2047-2**

# Optimised water quality thanks to proper dosing


*Dosing system GENODOS® DM*

Filtration and disinfection are the first steps to ensure cooling water of the highest quality. The exact dosing of agents is the consistent continuation. Thus, you will achieve optimum results even in challenging environments. It reduces the risk of corrosion and deposits and limits the microbiological load in the water.

To this effect, Grünbeck's product range features the well-proven GENODOS®-dosing systems, which automatically dose the conditioning agents into the cooling water in exactly the right amount. This guarantees the best cooling water possible while using resources economically.

## Valuable advantages of Grünbeck's cooling water treatment

- **Prevention of corrosion and deposits**
- **Limitation of the microbiological load**
- **Securing the hygienic and trouble-free operation of evaporative cooling systems**



# Your cooling water, perfectly protected from corrosion and bacteria

| Cooling water products → | KW 1510 | KW 1600 | KW1620 | KW 1830 | KW 4000 | KW 4500 | KW 4130 |
|---|---|---|---|---|---|---|---|
| | Corrosion protection, hardness stabilisation, dispersion | | | | Biocide | | |
| Chemical resistance group of GP pump | standard | standard | standard | standard | 4G | 4G | 4G |
| Corrosion protection for steel | ⊕⊕ | ⊕⊕ | ⊕⊕ | ⊕⊕ | ⊖ | ⊖ | ⊖ |
| Corrosion protection for copper/non-ferrous metals | ⊖ | ⊕⊕ | ⊕⊕ | ⊕ | ⊖ | ⊖ | ⊖ |
| Corrosion protection for aluminium | ⊖ | ⊖ | ⊕⊕ | ⊖ | ⊖ | ⊖ | ⊖ |
| Hardness stabiliser | ⊕⊕⊕ | ⊕ | ⊕ | ⊕⊕⊕ | ⊖ | ⊖ | ⊖ |
| Dispersion | ⊕⊕⊕ | ⊕ | ⊕⊕ | ⊕⊕⊕ | ⊖ | ⊖ | ⊖ |
| Biocide | ⊖ | ⊖ | ⊖ | ⊖ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕ |
| pH application range | 7 - 10 | 7.5 - 9 | 6.5 - 8.5 | 7 - 10 | 6 - 10 | 6 - 10 | 6 - 10 |
| Circulation concentration [g/m³] | 5 - 30 | 80 - 120 | 30 - 50 | 30 - 50 | 100 - 300 | 50 - 100 | 200 - 300 |
| Analytical proof via molybdenum concentration | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ |
| Analytical proof via peroxide test | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | ⊕ |
| Analytical proof via org. $PO_4$ | ⊕ | ⊕ | ⊕ | ⊕ | ⊖ | ⊖ | ⊖ |
| Content of canister [kg] | 20 | 20 | 20 | 20 | 20 | 20 | 30 |

⊕⊕⊕ *very well suited* ⊕⊕ *well suited* ⊕ *suited* ⊖ *unsuitable*

*Cooling water dosing agents*

Keeping up the quality of your cooling water is easy. Because Grünbeck has the perfect solutions. For instance, perfectly harmonised additives. Exactly dosed, they contribute to the continued trouble-free operation and prevent deposits and corrosion in cooling water systems.

Furthermore, Grünbeck offers specialised products for the disinfection of the cooling water by means of biocides, which ensure a microbiologically sound and safe operation of evaporative cooling systems. Take advantage of these technologies.

Enjoy the security of expert analysis and consultation. Grünbeck's specialists thus establish the basis for your economic and responsible use of resources. Progressive technology and the expertise of how to apply it as efficiently as possible: from Grünbeck you can expect both.

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Certified by TÜV SÜD according to DIN EN ISO 9001, DIN EN ISO 14001 and SCC$^{P}$