GOODWAY BENELUX

Innovative cleaning and maintenance equipment

MARITIME AND OFFSHORE | POWER GENERATION | PETROCHEMISTRY | PHARMACY
FOOD AND BEVERAGE | PACKAGING | PULP AND PAPER | FACILITY MAINTENANCE

Supplier of cleaning and maintenance equipment for:

Water-cooled chillers


Plate heat exchangers


Surface condensers


Tube heat exchangers


(Firetube) boilers


Air-cooled chillers

goodwaybenelux.com

WELCOME TO

GOODWAY BENELUX

Goodway Benelux is a supplier of innovative cleaning and maintenance equipment. We have been a trusted and authorized Goodway® distributor for over 30 years, and are active within the European industry.

Goodway® maintenance equipment and solutions are primarily used for cleaning of commercial- and industrial heat- and cooling systems, such as heat exchangers, chillers, condensers, and boilers. Goodway® products are designed to be easy-to-use, affordable, and highly effective in removing all kinds of deposits from the above mentioned applications.

Goodway Benelux serves and has customers in various industries, such as:

- (Nuclear) power plants
- District heating- and cooling plants
- Petrochemical plants
- Food production- and processing plants
- Pulp and paper mills
- Pharmaceutical- and packaging facilities
- The entire maritime- and offshore industry

Commercial- and industrial heating- and cooling systems can be found virtually anywhere on the world. With the right cleaning and maintenance procedures and equipment, it is possible to maintain high efficiency levels, prevent unplanned downtime, increase equipment lifetime, and reduce energy- and running costs.

Goodway Benelux is located in Werkendam, The Netherlands. Here we have our warehouse with inventory of the different productlines, as well as our office with specialized sales representatives and project engineers. Due to this central location, we're able to supply our products to most countries within the EU-region, with short lead times.

Are you interested to learn more about our company and maintenance equipment? Our sales- and project engineers are looking forward to getting in contact and exchange information.

Goodway Benelux is located in The Netherlands

EXCELLENT SUPPORT

From pre-sales questions to technical support regarding our products, our team is here to help. Goodway Benelux also provides on-site support, training and demonstrations.

HIGH QUALITY EQUIPMENT

Goodway Benelux offers some of the most innovative maintenance equipment in the market. All with the focus on reliability, safety and effectivity. Also these products are ready to go, meaning they are equiped with the right couplings for the EU-industries (plug and play). This equipment will take your maintenance activities to the next level!

EXPERT CUSTOMER SERVICE

Providing customer solutions to unique problems and cultivating meaningful interactions with customers is important to us. Our dedicated sales representatives and project engineers are here to help answer questions at any stage of the process.

FAST SHIPPING

You need the right products to get the job done, the faster, the better. We work hard to get our products to you quickly, so you can get to work.

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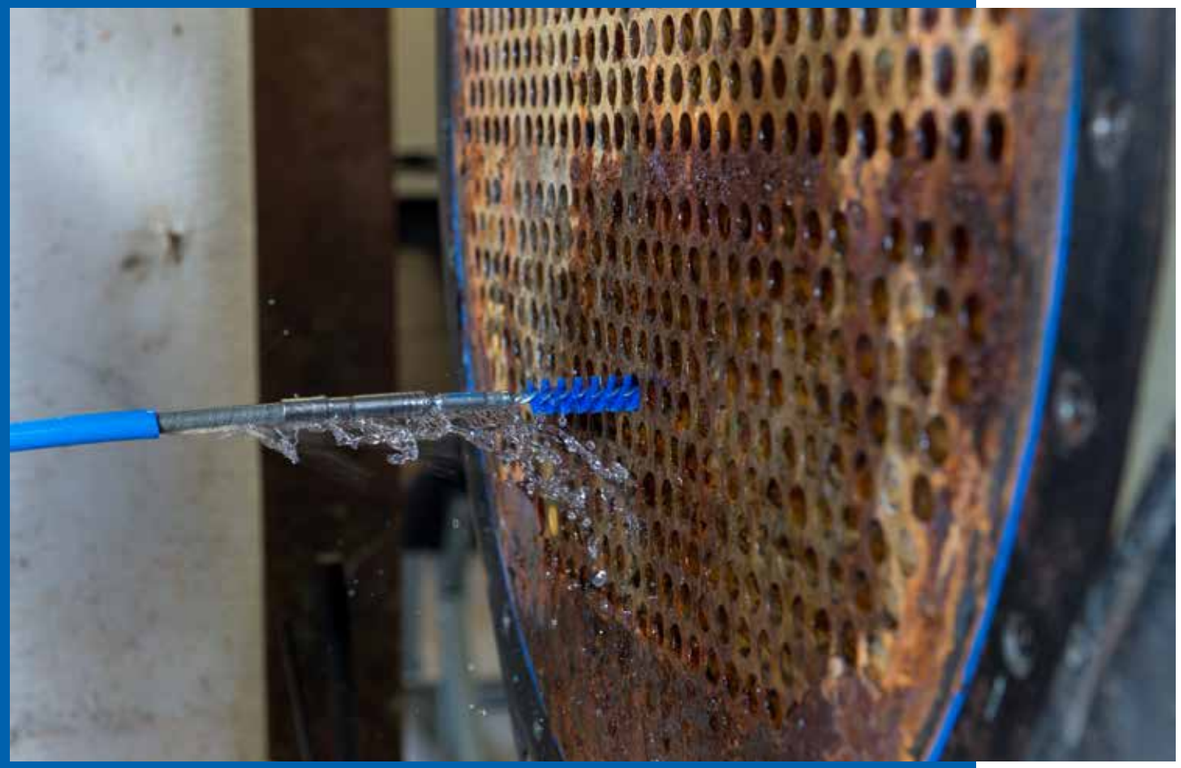
TABLE OF CONTENTS

GOODWAY BENELUX PORTFOLIO



1 ROTARY TUBE CLEANING

Tube cleaning with rotating brushes is one of the most effective methods for cleaning shell & tube heat exchangers. By this we mean cleaning the inside of the tubes by means of a rotating brush method. The concept is simple; a tube cleaning system powers a flexible shaft, which then rotates a brush. Due to the rotating action of the brush, there is continuous friction on the tube wall, which will cause the fouling to quickly come off. The integrated low-pressure water flush rinses the loosened deposits out of the tubes. The water also acts as coolant for the internal shaft core and brush strands.

Rotary tube cleaning is used for:

- Chillers and condensers
- Shell and tube heat exchangers
- Falling film evaporators
- Air fin coolers

Do you want to learn more about rotary tube cleaning?

Check out this short 2-minute video which was made at a large research center during a chiller tube cleaning job. →

More about rotary tube cleaning

Tube heat exchangers are found in many different places, such as various types of manufacturing plants and maritime vessels. Fouled tubes have a detrimental effect on the heat transfer and thus the efficiency of the entire heat exchanger system. It is therefore important to have a preventive cleaning and maintenance program in place. Goodway® rotary tube cleaners are designed for easy and effective tube cleaning by service technicians and engineers.

Applications

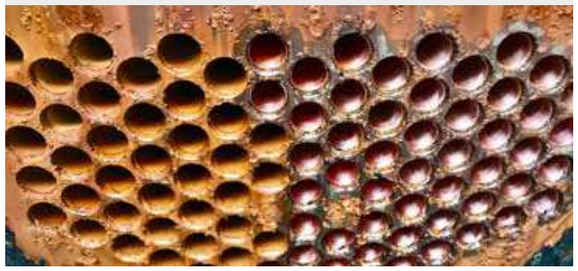
Goodway® rotary tube cleaning machines are used to clean straight heat exchanger tubes, either with smooth or grooved tubes. Depending on the type of application and fouling, different machines, spare parts, and accessories are recommended, to perform the cleaning succesfully.

- Water-cooled chillers
- Shell and tube heat exchangers
- Condensers
- Absorption chillers
- Falling film evaporators
- Industrial heat pumps

Fouling

The mechanical tube cleaning technology with rotating brushes is perfectly suited and often used to remove the following types of deposits:

- Biofouling (slime, film)
- Thin layer of scaling
- Mud, sand, silt
- Algae, shells, barnacles



Advantages

- √ **Rotating brushes do not damage the tube material**, even with copper/nickel and titanium alloys. Furthermore, it's safe to use for operators, since it's a low-pressure cleaning technique.
- √ **Easy-to-use equipment**. Service technicians and maintenance engineers can easily use the equipment, with minimal training. Goodway Benelux can offer remote or onsite support, if necessary.
- √ **Optimal results can be achieved** when a heat exchanger is cleaned on a regular basis. It will allow the system to run at near peak efficiency and have less technical errors due to fouling.
- √ **Cost-efficient cleaning technology.** Tube cleaning with rotating brushes is very cost-efficient, compared to other cleaning techniques (such as high-pressure cleaning).

PRODUCT

RAM-PRO

The Goodway® RAM-PRO tube cleaning system is a lightweight device, developed to clean the tubes of heat exchangers easily and effectively. The RAM-PRO is regularly used for tube cleaning of water-cooled chillers and condensers. It is very compact in size, and therefore frequently supplied to maritime vessels, where space is limited. HVACR service companies also like the RAM-PRO, due to its specifications and compactness.

Features RAM-PRO

The RAM-PRO system has been developed to clean heat exchanger tubes as effectively and efficiently as possible. The system is equipped with various useful features, such as:

- Compact and lightweight (15,8 KG) - easy to carry around and transport, considerably lighter than other tube cleaners. Ideal for compact workspaces.
- Sturdy roll cage - protects equipment on job sites and during transport.
- Fitted as standard with a (patented) quick coupling manifold. This allows the operator to connect the flexible shaft to the tube cleaning system within seconds.
- Designed for rugged environments - motor assembly is connected with vibration isolators to help tolerate bumps and jolts.
- Flexible shafts and brushes can rotate in either direction thanks to the bi-directional footswitch.

Specifications RAM-PRO

- Motor power: 0,5 HP
- The 230V model works at both 50 and 60 Hz
- Speed: 862,5 revolutions/minute (fixed)
- Direction of rotation: bi-directional
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Dimensions: 51 x 23 x 41 centimeters (L x W x H)
- Weight: 15,8 KG (35 lbs)

★★★★★

"For the tube cleaning of sea water condensers on board of our vessels we are using several RAM-PRO and RAM-4 systems. The tube cleaners do the job seamlessly in combination with the rotating brushes."

***Parlevliet & Van der Plas** – The Netherlands*

Learn more about the RAM-PRO on our website. →

PRODUCT

RAM-4

The Goodway® RAM-4 tube cleaning system has been developed to clean the tubes of heat exchangers easily and effectively. Although the RAM-4 and RAM-PRO have similar specifications, the RAM-4 is seen as a more versatile tube cleaning system. It is supplied for both commercial- and industrial applications, like water-cooled chillers and condensers, as well as industrial tube heat exchangers.

Features RAM-4

The RAM-4 system has been developed to clean heat exchanger tubes as effectively and efficiently as possible. The system is equipped with various useful features, such as:

- Equipped with a mobile dolly with 2 large wheels, making it easy and quick to transport on-site.
- Simple in use, fixed speed settings so that little training is required to use this device.
- Pricewise one of the best devices for tube cleaning jobs, such as cleaning (smaller) water-cooled chillers.
- Fitted as standard with a (patented) quick coupling manifold. This allows the operator to connect the flexible shaft to the tube cleaning system within seconds.
- Flexible shafts and brushes can rotate in either direction thanks to the bi-directional footswitch.

Specifications RAM-4

- Motor power: 0,5 HP
- The 230V model is available in 50 Hz or 60 Hz
- Speed: 862,5 revolutions/minute (fixed)
- Direction of rotation: bi-directional
- Easy to transport, due to the mobile dolly and wheels
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Dimensions: 43 x 51 x 94 centimeters (L x W x H)
- Weight: 22,0 KG (49 lbs)

★★★★★

"We have already used the RAM-4 tube cleaning device several times on all 16 generator- and lubrication oil coolers. The most important thing is that the tubes are really clean and the effort (time, labor etc.) is less. The brushes have a long lifetime, we hardly see any wear on them. We decided to proactively replace them after every cooler tube cleaning. The operators who clean the coolers are very satisfied."

***Beznau Nuclear Power Plant (Axpo)** – Switzerland*

Learn more about the RAM-4 on our website. →

PRODUCT

RAM-PRO-XL

The Goodway® RAM-PRO-XL tube cleaning system is an upgrade on the RAM-PRO and RAM-4 tube cleaners, developed to clean the tubes of water-cooled chillers and tube heat exchangers quickly and effectively.

The RAM-PRO-XL has a variable speed between 0-900 revolutions/minute; in other words, the speed of the brush can be precisely adjusted by the operator. In addition, the RAM-PRO-XL is known for its patented tube-guard technology; special tablets are mixed with the flushing water, which offers an extra cleaning effect, and protects the cleaned tubes against corrosion and oxidation.

Features RAM-PRO-XL

The RAM-PRO-XL system has been developed to clean heat exchanger tubes as effectively and efficiently as possible. The system is equipped with various useful features, such as:

- Variable speed between 0-900 revolutions/minute.
- Integrated tube-guard technology removes bacteria, obliterates dirt buildup, and protects tubes from corrosion and oxidation.
- Sturdy roll cage - protects equipment on job sites and during transport.
- Fitted as standard with a (patented) quick coupling manifold. This allows the operator to connect the flexible shaft to the tube cleaning system within seconds.
- Flexible shafts and brushes can rotate in either direction thanks to the bi-directional foot switch.

Specifications RAM-PRO-XL

- Motor power: 0,5 HP
- The 230V model works at both 50 and 60 Hz
- Tube-guard technology for extra cleaning effect and protection against corrosion and oxidation
- Speed: 0-900 revolutions/minute (adjustable)
- Direction of rotation: bi-directional
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Dimensions: 66 x 23 x 51 centimeters (L x W x H)
- Weight: 25 KG (55 lbs)

★★★★★

"We use the RAM-PRO-XL device with accessories for the general tube cleaning of our smaller shell & tube heat exchangers. The high-speed rotation of the brush together with the low-pressure water flush ensures a safe and effective cleaning for our operators and the equipment itself."

VATTENFALL

***Vattenfall** – Sweden*

Learn more about the RAM-PRO-XL on our website. →

PRODUCT

RAM-5

The Goodway® RAM-5 tube cleaning system is a unique machine. The difference with the other tube cleaning systems is that the RAM-5 uses a special "speed-feed" technology. In short, this means that the flexible shaft and cleaning brushes are fed through the tubes semiautomatically, without manual feeding of the shaft. When large amounts of tubes from chillers, condensers, and other tube heat exchangers need to be cleaned in a short timeframe, the RAM-5 is the best fit.

Features RAM-5

The RAM-5 system is an advanced tube cleaner with a semiautomatic push/pull functionality, which allows to clean tubes faster than other rotary tube cleaners.

- Much less effort and labor is required from the operator while using the RAM-5, due to the speed-feed technology. With other tube cleaning systems, the flexible shaft and cleaning brush must be manually fed through the tubes.
- The movement speed of the brush inside the tubes remains constant due to the speed-feed technology, which should have a positive effect on the cleaning results.
- The RAM-5 system has a setting to adjust the brush rotation speed between 0 and 862,5 revolutions/minute. This offers an extra cleaning effect, especially for enhanced tubes.
- The RAM-5 system has a setting to adjust the feeding speed of the flexible shaft. At the highest setting, the flexible shaft will automatically be fed through the tubes at 0,9 meters/second.

Specifications RAM-5

- Motor power: 1 HP
- The 230V model is available in 50 Hz or 60 Hz
- Maximum shaft feed rate 0,9 meters/second
- Speed: 0-862,50 revolutions/minute (adjustable)
- Direction of rotation: bi-directional
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Dimensions: 43 x 51 x 94 centimeters (L x W x H)
- Weight: 34 KG (75 lbs)

★★★★★

"We have purchased a RAM-5 tube cleaning system to clean the tubes of various (large) heat exchangers on-site. The device is very easy to assemble and use. We had a very good cleaning of our equipment."

ENGIE

***Tihange Nuclear Power Plant (ENGIE)** – Belgium*

Learn more about the RAM-5 on our website. →

Industrial tube cleaning

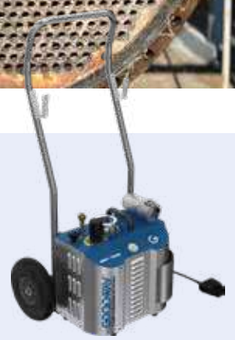
Shell and tube heat exchangers can be found in many different industrial processes and plants. These heat exchangers require periodic cleaning and maintenance of the tubes in order to maintain optimal efficiency and lifetime. In some cases, a high-pressure cleaning is performed to remove the deposits inside the tubes. However, it is also possible to use a low-pressure method which can be safer, more cost-effective, and faster. Goodway® tube cleaners are effective against soft, medium, and hard deposits.

RAM-4X

- Electrically powered (1 HP)
- 1725 RPM fixed speed
- With dolly for easy transport

AWT-100

- Air powered (1 HP)
- 500-3000 RPM adjustable speed
- Compact design



AWT-100X

- Air powered (4 HP)
- 500-3000 RPM adjustable speed
- With dolly for easy transport

Applications

- Shell and tube heat exchangers
- Exhaust- and firetube boilers
- Extraction/vacuum piping
- Falling film evaporators
- Reformer tubes (catalyst)

Fouling

Rotating brushes and cleaning tools are effective against deposits that are often found in heat exchangers, such as:

- Silt, mud, algae, shells, and barnacles
- Dust, soot, and product residues
- Rust and light scaling

IRIS / EC heat exchanger testing

In some cases customers use Goodway® tube cleaners to perform a second cleaning of the tubes, after they have initially cleaned it with high-pressure cleaning equipment. By having a brush mechanically remove the last remaining layer of fouling within the heat exchanger tubes, the cleanliness level can be increased even further. This is especially interesting when the tubes have to be inspected afterwards through IRIS or EC testing.

Advantages

Within the (heavy) industry it is not always necessary to choose traditional techniques, like high-pressure cleaning. Sometimes, the deposits are rather soft, which makes a high-pressure cleaning "overkill". In this case, clients could switch to our rotary tube cleaning technology.

- Rotary tube cleaning is a low-pressure technique for cleaning. Water is used to flush out loosened deposits at low-pressure, thus being much safer for the operator and the system itself compared to techniques like high-pressure cleaning. It's also possible to clean heat exchanger tubes without water, depending on the tube inner diameter.
- Goodway® tube cleaning equipment is cost-efficient. It's a one-time investment with recurring need for shafts and brushes. Allowing you to clean many heat exchangers.
- Due to little water being used during cleaning, the total wastewater production is a fraction of traditional techniques, such as high-pressure cleaning.

PRODUCT

RAM-4X

The Goodway® RAM-4X tube cleaning system has been developed for the cleaning of heat exchangers- and boiler tubes, with medium to hard deposits. The RAM-4X is equipped with a powerful electric motor (1 HP), with a rotation speed that is twice as high as the standard tube cleaning systems, such as the RAM-4. This makes it possible to remove harder deposits from heat exchangers, condensers, and other applications. The RAM-4X is a versatile system that can be used for tube cleaning with or without water, therefore it's also frequently used for boiler systems and piping. Learn more in chapter 4 and 5, pages 38-47.

Features RAM-4X

The RAM-4X is a powerful device developed to clean heat exchanger tubes and piping. The system can be used with or without water and has useful features, such as:

- Equipped with a mobile dolly with 2 large wheels, making it easy and quick to transport on-site.
- Simple in use, fixed speed settings so that little training is required to use this device.
- Powerful fixed speed motor of 1725 revolutions/minute, suitable for heavy duty cleaning.
- System can be used with or without water. It can therefore also be used for dry pipe cleaning projects, for example for firetube boilers.
- Only rotate clockwise with threaded brushes and tools for the strongest connection.

Specifications RAM-4X

- Motor power: 1 HP
- The 230V model is available in 50 Hz or 60 Hz
- Speed: 1725 revolutions/minute
- Direction of rotation: clockwise only
- Easy to transport thanks to the mobile dolly with 2 large wheels
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Dimensions: 43 x 51 x 94 centimeters (L x W x H)
- Weight: 27,0 KG (59 lbs)

★★★★★

"We have used the Goodway RAM-4X tube cleaner in combination with flexible shafts, flex hub scrapers, and nylon abrasive brushes to successfully clean the tubes (80 mm) of our larger process heat exchangers on-site. The device works very well in combination with the tools and allows us to remove hard deposits in no-time."

***GMB BioEnergy** – The Netherlands*

Learn more about the RAM-4X on our website. →

PRODUCT

AWT-100

The Goodway® AWT-100 tube cleaning system has been developed for the cleaning of heat exchangers and boilers, with medium to hard deposits. The AWT-100 is equipped with a robust air powered motor (1 HP) and does have a speed- and torque control, allowing the operator to optimally set the speed and torque settings based on the application. The AWT-100 is the lightest and most compact tube cleaning system available, with a weight of only 13 KG. It's able to run with and without water, and is most popular within the maritime industry, for tube cleaning of exhaust gas boilers of different types of vessels. Learn more in chapter 4, pages 42-43.

Features AWT-100

The AWT-100 is a powerful and compact tube cleaning system, developed to clean heat exchanger tubes and piping. The system can be used with or without water and has useful features, such as:

- Compact and lightweight (13 KG) - easy to carry around and transport, weighs less than half of other tube cleaners. Ideal for tight workspaces.
- Powerful motor with a maximum power of 1 HP. Ability to change speed and torque (500-3000 revolutions/minute) to get the ideal setting to suit the cleaning application.
- Air powered motor is very reliable and offers extra safety, especially on industrial sites and factories.
- System can be used with or without water. It can therefore also be used for dry pipe cleaning projects.
- Only rotate clockwise with threaded brushes and tools for the strongest connection.

Specifications AWT-100

- Motor power: 1 HP
- Speed: 500-3000 revolutions/minute (adjustable)
- Direction of rotation: clockwise only
- Very compact size and lightweight device
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Air requirements: minimum 4,1 BAR - 0,5 m3/min air, maximum 7 BAR - 2,0 m3/min air
- Noise during use: 90 - 100 dB
- Dimensions: 48 x 15 x 26 centimeters (L x W x H)
- Weight: 13 KG (29 lbs)

★★★★★

"We use the AWT-100 tube cleaning system in combination with flexible shafts and spider brushes to remove accumulation of fouling within our transportation piping, without water. We have already used the system multiple times, it's really a great product!"

UNILIN

***Unilin BV** – Belgium*

Learn more about the AWT-100 on our website. →

PRODUCT

AWT-100X

The Goodway® AWT-100X tube cleaning system is the most powerful tube cleaner in the portfolio, developed to effectively clean heat exchanger- and boiler tubes, with medium to hard deposits. The system is equipped with a robust air powered motor with a maximum power of 4 HP. It does have a speed- and torque control, allowing the operator to optimally set the speed and torque settings based on the application, and can be used with or without water. The AWT-100X is the absolute favorite for heavy-duty tube cleaning jobs in the industry, for heat exchangers and boilers. Learn more in chapter 4 and 5, pages 38-47.

Features AWT-100X

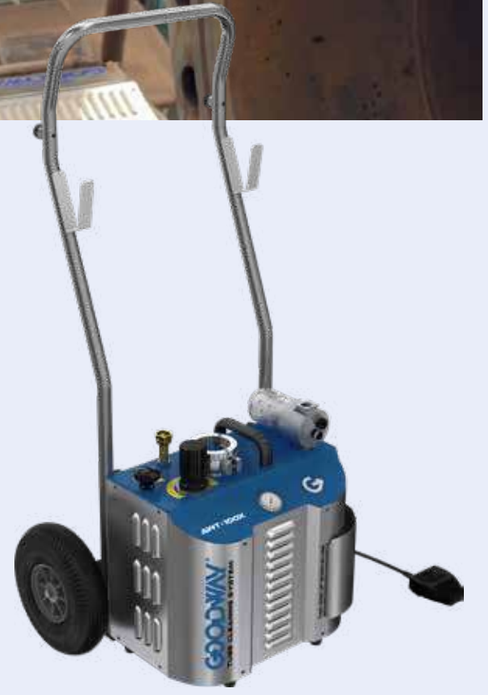
- Equipped with a mobile dolly with 2 large wheels, making it easy and quick to transport on-site.
- Powerful motor with a maximum power of 4 HP. Ability to change speed and torque (500-3000 revolutions/minute) to get the ideal setting to suit the cleaning application.
- Air powered motor is very reliable and offers extra safety, especially on industrial sites and factories.
- System can be used with or without water. It can therefore also be used for dry pipe cleaning projects.
- Only rotate clockwise with threaded brushes and tools for the strongest connection.

★★★★★

"We purchased the AWT-100X from Goodway Benelux to clean falling film evaporator tubes at one of our factories. After some initial testing we were able to clean the evaporator tubes ourselves easily and effectively. The equipment is powerful and allows us to remove (harder) fouling and/or blockages inside the tubes whenever necessary. After half a year, we have decided to purchase another AWT-100X system. This one will be used to clean our firetube boilers."

bel for all for good

***Bel Fromageries** – Portugal*



Specifications AWT-100X

- Motor power: 4 HP (air powered)
- Speed: 500-3000 revolutions/minute (adjustable)
- Direction of rotation: clockwise only
- Easy to transport thanks to the mobile dolly with 2 large wheels
- Water requirements: minimum 2 bar at 7,5 litres/minute
- Air requirements: minimum 5 BAR - 3,0 m3/min air, maximum 7 BAR - 3,6 m3/min air
- Noise during use: 90 - 100 dB
- Dimensions: 43 x 51 x 94 centimeters (L x W x H)
- Weight: 25 KG (54 lbs)

Learn more about the AWT-100X on our website. →

Flexible shafts

Flexible shafts are used to connect a cleaning brush or -tool to a rotary tube cleaning system. Inside the blue casing, a high-quality galvanized steel core is rotating to power the brush or tool. Water is also fed through the shaft to cool the core and flush out the loosened deposits. Available in various lengths and diameters with standard threading or quick-connect brush fittings.

The operator is cleaning a water-cooled chiller. The brush removes the deposits, the (blue) flexible shaft enables the brush to move through the tubes from begin to end. At the same time, low-pressure water flows through the shaft to flush out loosened deposits, while cooling the brush and shaft core.

The other side of the flexible shaft is connected to the tube cleaning system. The tube cleaner powers the core of the flexible shaft, which enables the brush to rotate. Water is flushed through the flexible shaft by the tube cleaning system, and comes out on the brush side.

Flexible shaft for wet tube cleaning

- With standard threading or quick-connect brush fitting
- For wet tube cleaning of chillers, condensers, and heat exchangers
- Applicable for tube inner diameters from 6,4 millimeters and up
- Available in various lengths and diameters
- Can be used with all Goodway® tube cleaning systems

More info: pages 38-47

Flexible shaft for dry tube cleaning

- With standard threading only
- For dry tube cleaning of heat exchangers, boilers, and more
- Applicable for tube inner diameters from 25,4 millimeters and up
- Available in various lengths and diameters
- Mostly used with RAM-4X, AWT-100 and AWT-100X systems

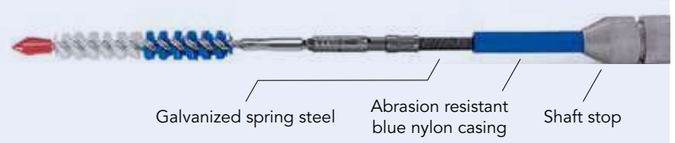
How to select a flexible shaft?

- Depending on the application, you need to select a shaft which can be used with or without water.
- If a shaft with water flush is used, determine if you need it with quick-connect or standard threading, you can read more about this on page 15.
- The shaft needs to be longer than the tube length since you also need to cover the distance from the machine to the tubes.
- The shaft outer diameter should be close to the tube inner diameter. That makes for the strongest combination. Also, make sure it's not too close, otherwise the water and loosened deposits cannot exit the tubes. (Example: use a GTC-703 shaft for a 16 mm tube I.D.)

More about flexible shafts

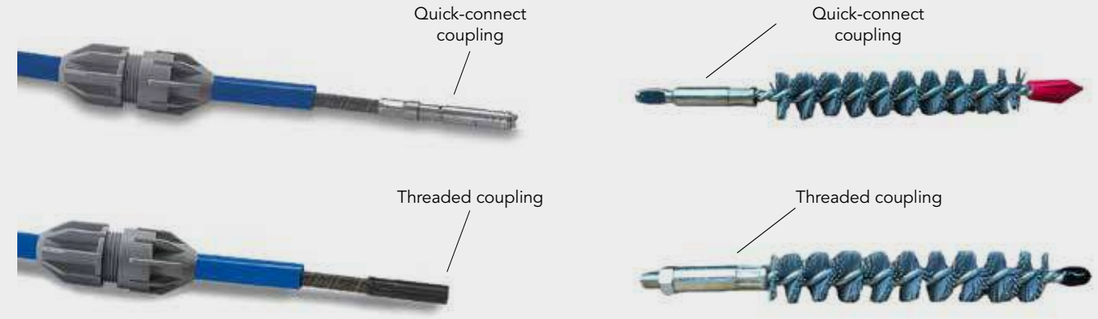
Goodway® flexible shafts are available in various lengths:

- 3,6 meters (12')
- 5,2 meters (17')
- 7,6 meters (25')
- 10,7 meters (35')
- 13,7 meters (45')
- 15,2 meters (50')



FLEXIBLE SHAFT DIMENSIONS		
Shaft no.	**Casing O.D.**	**Tool End Thread**
701	6,4 mm	8-32 female
702	9,5 mm	1/4-28 female or Quick-connect
703	12,7 mm	1/4-28 female or Quick-connect
704	14,3 mm	1/4-28 female or Quick-connect
720	19,0 mm	1/2-12 female
704G / 721G (dry use)	25,4 mm	1/2-12 female

Example: a "GTC-704-35" shaft has an outer diameter of 14,3 millimeters and a length of 10,7 meters (35'). It has a threaded connection type. In case you would need a quick-connect connection type, the correct product code would be "GTC-704Q-35".



Quick-connect versus standard threading

Goodway Benelux offers brushes and flexible shafts with standard threading or with quick-connect brush fittings. These different coupling types are used to connect the cleaning brush or tool onto the flexible shaft. Quick-connect is the latest development and is seen as the easiest and fastest way to connect brushes with shafts.

This short blog explains the difference between standard threading and quick-connect. Furthermore, it explains when to use which type of connection.
Reading time 2 minutes. →

GSL-705 maintenance tool

Use with Goodway® blue flexible shafts

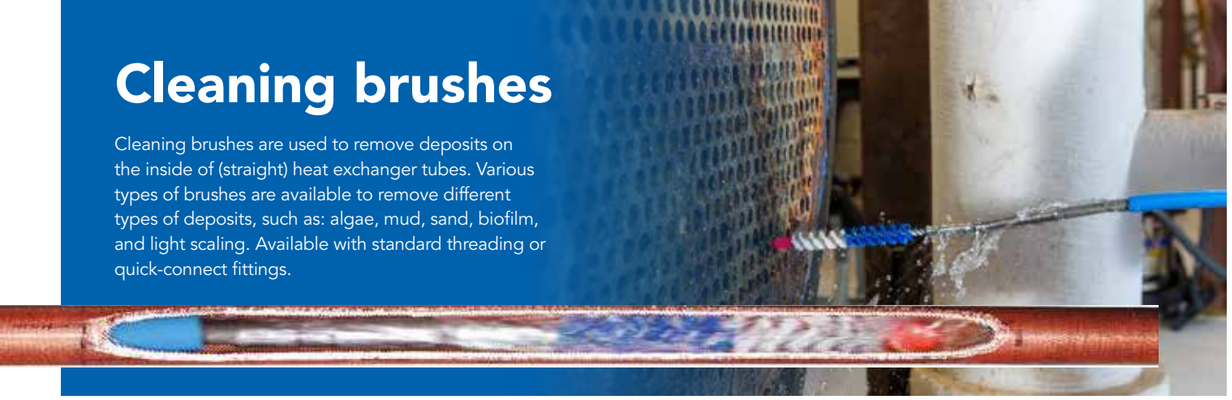
Maintenance of wet (blue) flexible shafts

After a wet tube cleaning of a chiller or heat exchanger, some left over water will always remain inside the blue casing of the flexible shaft. If this water is not removed quickly after the cleaning, it will cause corrosion and oxidation inside the shaft. By using the GSL-705 and GSL-LU1 products, the lifetime of the flexible shafts will be increased significantly.

This blog further explains the important of flexible shaft maintenance and how to do it.
Reading time 2 minutes. →

Cleaning brushes

Cleaning brushes are used to remove deposits on the inside of (straight) heat exchanger tubes. Various types of brushes are available to remove different types of deposits, such as: algae, mud, sand, biofilm, and light scaling. Available with standard threading or quick-connect fittings.



GTC-211 Blue Nylon Brush

- For tubes 6,4 – 25,4 millimeter I.D.
- For deposits like algae, silt, mud, and sand.
- X-filament bristles for improved cleaning effect.

SGB Spin-grit Nylon Brush

- For tubes 15 - 28 millimeter I.D.
- For deposits like algae, mud, silt, shells, barnacles, and light scaling.
- Abrasive nylon bristles for greater cleaning effect and tube polishing.

ESGB Spin-grit Nylon Brush

- For tubes 12,7 – 28 millimeter I.D.
- For deposits like algae, mud, silt, shells, barnacles, and light scaling.
- Dual diameter for better cleaning of enhanced tubes.

ENN Patriot Nylon Brush

- For tubes 15,9 and 23,8 millimeter I.D.
- For deposits like algae, silt, mud, and sand.
- Dual diameter for better cleaning of enhanced tubes.

GTC-210 Stainless Steel Brush

- For tubes 6,4 – 25,4 millimeter I.D.
- For medium hard deposits like rust, manganese, and light scaling.
- Stainless steel bristles remove hard deposits.

GTC-200B Brass Brush

- For tubes 6,4 – 25,4 millimeter I.D.
- For medium hard deposits such as light scaling.
- Ideal when the GTC-210 is too hard for the tube material.

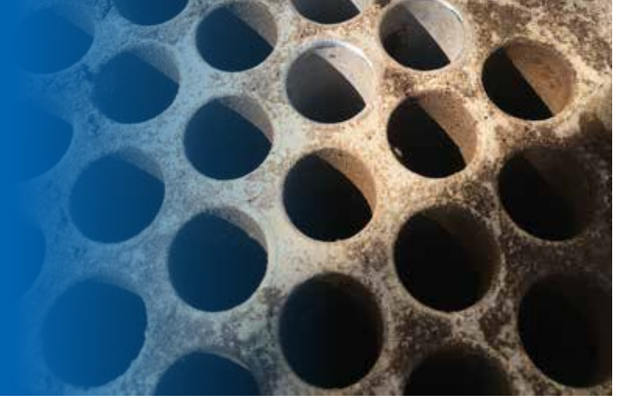
Spin-Grit brushes removed organic deposits from river water cooled condenser tubes.

Note

1. Tube cleaning brushes and flexible shafts with quick-connect fittings are available for tube inner diameters starting at 11,1 millimeters (7/16") and up.
2. Quick-connect brushes and flexible shafts are generally recommended in combination with the RAM-PRO, RAM-4, RAM-PRO-XL, and RAM-5 tube cleaning systems.
3. Standard threading brushes and flexible shafts are generally recommended in combination with the RAM-4X, AWT-100, and AWT-100X tube cleaning systems.

Large brushes

These large cleaning brushes are used to remove deposits inside of (straight) heat exchanger tubes starting from 30 millimeter inner diameter. Various types of brushes are available to remove different types of deposits, ranging from soft, medium to hard. These larger brushes are fitted with 1/2-12 male thread and can therefore only be connected to (wet) GTC-720 and (dry) GTC-721G flexible shafts.



Tube cleaning brush, stainless steel

Recommended for removing all kinds of hard deposits in straight, ferrous, and nonferrous (heat exchanger) tubes. Often used in combination with a powerful tube cleaning system like the RAM-4X, AWT-100, and AWT-100X.

- For tubes 31,8 – 127 millimeters I.D.
- Only available in standard threading.
- Use to remove all kinds of hard deposits in tubes.

Tube cleaning brush, brass

Recommended for removing all kinds of soft to medium type deposits in straight, ferrous, and nonferrous (heat exchanger) tubes. Often used in combination with a powerful tube cleaning system like the RAM-4X, AWT-100, and AWT-100X.

- For tubes 31,8 – 127 millimeters I.D.
- Only available in standard threading.
- Use to remove soft to medium type deposits in tubes.

Tube cleaning brush, nylon

Recommended for removing all kinds of soft deposits in straight, ferrous, and nonferrous (heat exchanger) tubes. This brush type is often used when all brushes, including the nylon abrasive brushes (NAB), are too hard for the tube material and/or cause scratches in the tube. The TCB-N brushes have soft nylon bristles which will remove soft deposits, without scratching the tube material.

- For tubes 31,8 – 127 millimeters I.D.
- Only available in standard threading.
- Use to remove soft type deposits in tubes.

Nylon abrasive brush (NAB)

Nylon abrasive brushes, also known as NAB, are used for general tube cleaning and polishing of larger heat exchanger tubes. These brushes are ideal to remove medium-hard deposits inside tubes. Due to their oversize, they create more friction than regular brushes and thus have a higher cleaning effect. They also have a longer lifetime due to the oversize.

- For tubes 25 – 90 millimeters I.D.
- Only available in standard threading.
- Remove deposits on the tube walls and polish the tubes at the same time.

Note: this product is manufactured only by Goodway Benelux BV and is not part of the Goodway® Technologies product range.

Removal of hard deposits/incrustations from heat exchanger tubes, with nylon abrasive brushes and the AWT-100X tube cleaner.

Cleaning tools

Cleaning tools are used to remove medium to hard deposits inside (straight) heat exchanger tubes. These tools can be used prior to brushes to remove the outer hard layer of deposits such as scale formation. These cleaning tools are often used with our powerful tube cleaning systems, like the RAM-4X, AWT-100, and AWT-100X.

Flex hub scraper

Centrifugally activated cleaning tool. Will automatically adapt to the tube inner diameter. Remove hard deposits on the tube walls or open blocked tubes.

- Available for tubes 13,0 – 102 millimeter I.D.
- Available in standard threading only.
- Use for removing hard deposits and blockages in tubes.

Buffing tool

Remove medium to hard deposits such as light scaling and rust in straight tubes. Can be used to open blocked tubes.

- Available for tubes 7,9 –76,2 millimeter I.D.
- Available in standard threading or quick-connect.
- Use for drilling open blocked tubes, wires ensure drill head remains centralized.

Flare brush

Flare Brushes incorporate centrifugally activated wire cables with cobalt tips that lightly "whip" around on the inside of tubes removing scale and deposits.

- Available for tube I.D. range 25,4 - 203,2 mm (1" - 8")
- Only available in standard threading.
- Use for removing hard deposits in vertical applications, such as reformer tubes.

Flex Hone Tool (FHT)

Flex-Hone abrasive tools are used to remove stubborn deposits stuck to the walls of straight, ferrous heat exchanger tubes. The FHT-tools consist of 180 grit silicon carbide abrasive globules (stones) which are highly effective in removing hard deposits, such as scaling. Use with Goodway tube cleaners for maximum effect.

- Remove hard (scale) deposits in heat exchanger tubes.
- Use for tube inner diameters 6,4 – 76,2 millimeters.
- Available in standard threading or quick-connect.

Note: Use Flex Hones with a water flush to ensure maximum lifetime.

★★★★★

"We have purchased the flex hub scrapers to remove hard deposits in our boiler fire tubes. The scraper tools are simple and very effective. It's ideal that they automatically adjust themselves based on the tube diameter."

TopEggs *TopEggs – The Netherlands*

2-pass cleaning of heavy fouling in tubes

With heavily deposited tubes, it is recommended to work with a 2-pass cleaning process. It is easy to perform and almost always leads to an even better cleaning result. The cleaning process is divided into 2 steps:

1 Use the flex hub scraper to remove the initial, heavy layer of deposits from the tubes. After cleaning with these scrapers, it is possible that a small amount of deposit remains inside of the tubes.

2 After that, use an oversized NAB brush to remove the last remaining layer of deposits. These oversized brushes generate a high amount of friction in the tubes, creating a polishing effect. After the NAB brushes, the tubes are as clean as possible, and the heat transfer will be at optimal levels.

Flex Hub Scraper

Goodway® flex hub scrapers are very effective at removing hard deposits. More information and videos can be found here. →

Most relevant tube cleaning accessories

Below, you will find some of the most used and supplied accessories by Goodway Benelux. With these accessories, tube cleaning jobs can be carried out more efficiently, and the lifetime of the equipment is maximized.

Chiller bib frame kit

Use the chiller bib kit to collect fouling and wastewater during chiller- and heat exchanger tube cleaning jobs. Easily connect the bib kit to the tube plate.

Flexible shaft maintenance kit

Use the GSL-705 tool with GSL-LU1 oil to flush out left over water inside the shaft casing, to increase lifetime and reduce the chance of corrosion and oxidation.

Flexible shaft repair kits

Repair kits for flexible shafts include couplings and pressing tools to repair shafts in the field yourself.
Note: the repair kits also include the GSL-705 tool and GSL-LU1 oil.

Flexible shaft carrying bag

Use this convenient carrying bag for flexible shafts, brushes, and other accessories. This 66-centimeter diameter carrying bag will fit all sizes of flexible shafts.

Tube cleaner service kits

Service kits include illustrated instructions and replacement wear items. Available for the RAM-PRO, RAM-4, and RAM-5 tube cleaning systems.

Air lubricator/filter and regulator

The GTC-705-4 ensures that incoming air is filtered, lubricated, and regulated before it enters the system. An optimized air supply ensures that the system performs better and has a longer lifespan. Use with the AWT-100 tube cleaning system.

Highlight: water-cooled chillers

Water-cooled chillers can be found in all kinds of industries and facilities. Over time, the tubes of the chillers will become fouled with various types of deposits. Both the evaporator- and condenser tubes require regular tube cleaning, to ensure optimal heat transfer and achieve good efficiency. An efficient chiller leads to reduced energy costs, so the return on investment for cleaning (equipment) is rather short. Tube cleaning with rotating brushes is one of the most effective methods for cleaning chiller systems.

Advantages

- √ **Increase chiller performance/efficiency:** clean tubes lead to a better heat transfer, which increases the efficiency of the chiller. This will allow the system to run at near peak efficiency, consume less energy, and have less technical errors due to fouling issues.
- √ **Rotating brushes do not damage the tube material**, even with copper/nickel and titanium alloys. Furthermore, it's safe to use for operators with near zero risks of harm.
- √ **Easy-to-use equipment** which service technicians and engineers can easily use with minimal training. It's also a oneman job to clean tubes, reducing the required workforce.
- √ **Multi-purpose equipment:** Goodway® tube cleaning systems can be used for all kinds of chillers, as well as other heat exchangers. In some cases the client only needs to purchase other shafts/brushes to match the application.

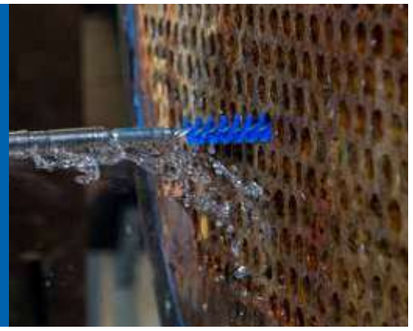
Operator cleaning chiller condenser tubes with RAM-PRO system

Do you want to learn more about chiller tube cleaning?

More detailed information can be found at our water-cooled chillers page. →

More about chiller tube cleaning

Goodway Benelux supplies high quality, easy-to-use equipment for chiller tube cleaning. This equipment is used to remove deposits from the inner tube walls. By cleaning those tubes regularly, the tubes remain in optimal state and a potential scenario of blocked tubes by hard fouling or blocked tubes is prevented. The rotary tube cleaning technology is based on high speed, oversized rotating brushes, combined with an integrated low-pressure water flush. Due to the high friction, the deposits get loosened, and are flushed out of the tubes with the water flush. The most used brushes are from nylon material, and therefore safe-to-use for your applications.



Applications and fouling

Goodway® chiller tube cleaning systems are often used to remove soft- and medium deposits from chiller condenser- and evaporator tubes, like; algae, silt, mud, biofouling, light scale, and more. If harder deposits like scaling are primarily found within the tubes, cleaning with brushes will have a minimal effect. In this case, it is recommended to perform a chemical cleaning (descaling). More info on pages 30-37.

- Use to clean chiller condenser- and evaporator tubes.
- Remove soft-medium fouling, safely and effectively.
- Applicable for tube inner diameters between 7 - 28 mm.
- Applicable for tube lengths up to 12 meters.
- Only applicable for straight tubes.
- Use to clean smooth and/or enhanced tubes.

★★★★★

"Recently we have purchased a RAM-PRO system to increase the efficiency of our chillers after a periodic tube cleaning. The projects have gone very well this winter/spring, we are very satisfied with our new machine."

Göteborg Energi

***Göteborg Energi** – Sweden*

★★★★★

"We used older Goodway machines to clean water-cooled chillers and decided to replace them with the newer RAM-4 models. These tube cleaning systems are easy to use and very effective. We just bought a second RAM-4 package."

BENNDORF HILDEBRAND KÄLTE UND WÄRME

***Benndorf und Hildebrand GmbH** – Germany*

Tube cleaning packages

Goodway Benelux supplies custom-made chiller tube cleaning packages. These include:

Tube cleaning system 1

Flexible shaft(s) 2

Cleaning brushes 3

Several recommended accessoires 4

Remove energy robbing deposits

Any amount of deposit on the tube wall will lead to a reduced efficiency. The more deposits, the lesser the efficiency gets. Often, soft deposit buildup can easily be removed with rotating brushes. On the right side you will see an example of condenser tubes before and after being cleaned by spin-grit (SGB) brushes.

Highlight: falling film evaporators

Falling film evaporators are used in the food industry and in particular at factories active in the dairy industry. These installations have a relatively large number of tubes that will become fouled over time with the product that flows through them. Over time, this deposit can form into a very hard substance, sometimes resulting in blocked tubes. A rotary tube cleaning is an effective technology to remove built up deposits and opening up blocked tubes. The concept is simple, a tube cleaning system powers a flexible shaft, which then rotates a brush and/or tool. Due to the rotating action of the brush, there is continuous friction on the tube wall, which will cause the fouling to quickly come off. The integrated low-pressure water flush rinses the loosened deposits out of the tubes. The water also acts as coolant for the internal shaft core and brush strands.

Evaporator tube cleaning is used for:

- Removal of soft, medium, and hard deposits
- Opening of fully clogged evaporator tubes
- Inner diameters between 30-90 millimeters
- Horizontal- and vertically positioned tubes

Operator cleaning evaporator tubes at dairy factory

Do you want to learn more about evaporator tube cleaning?

Check out this short 2-minute video which was made at a food production plant during an evaporator tube cleaning job. →

More about evaporator tube cleaning

Goodway Benelux supplies an innovative solution for falling film evaporator tube cleaning and maintenance across various industries. This system is used to remove deposits from the inner tube walls, as well as preventing them to grow into hard deposits which leads to blocked tubes. The technology is based on high speed, oversized rotating brushes, and other cleaning tools, with a low-pressure water flush. Due to the high friction, the deposits get loosened, and the water flushes them out of the tubes.

Applications and fouling

Lactose evaporator

Goodway Benelux supplies its rotary tube cleaning equipment regularly to the food processing industry, where falling film evaporators and heat exchangers are frequently found. Common deposits are residues from milk-related products (dairy industry). Over time, these deposits tend to form into a hard substance, and possibly blocked tubes. This bad scenario can be prevented by regular tube cleaning.

- Falling film evaporators and heat exchangers.
- Frequently found at food production companies.
- Applicable for tube inner diameters between 25 - 90 mm.
- Applicable for tube lengths up to 12 meters.
- Applicable for vertical- and horizontal tubes.

★★★★★

"We purchased the AWT-100X from Goodway Benelux to clean falling film evaporator tubes at one of our factories. After some initial testing we were able to clean the evaporator tubes ourselves easily and effectively. The equipment is powerful and allows us to remove (harder) fouling and/or blockages inside the tubes whenever necessary. After half a year, we have decided to purchase another AWT-100X system. This one will be used to clean our firetube boilers."

***Bel Fromageries** – Portugal*

★★★★★

"We tested the AWT-100X on our falling film evaporators and our employees were immediately impressed. The device is light, easy, and safe to use. After a short introduction, we were able to get started with the device on our own. In addition, the support of Goodway Benelux was very polite and well prepared. After the short test phase, the device was immediately ordered."

***Frieslandcampina** – Germany*

Advantages

- √ **Increase tube cleanliness** due to mechanical cleaning with rotating brushes or tools.
- √ **Remove blockages in tubes** without having to close weld them.
- √ **Easy-to-use equipment** which operators can use themselves, no third party required.
- √ **Multi-purpose systems** can also be used to clean other heat exchangers and piping.

Tube cleaning packages

Goodway Benelux supplies custom-made tube cleaning packages for falling film evaporators. These include:

Tube cleaning system 1

Flexible shaft(s) 2

Scraper tools 3

Cleaning brushes 4

2 PROJECTILE TUBE CLEANING

Tube cleaning with projectiles is one of the fastest methods to clean large amounts of heat exchanger tubes. Often used for high volume tube cleaning at (power plant) surface condensers, this method provides an excellent balance between speed, safety, and cleaning effect. Projectiles are specifically selected for the tube material and deposit hardness. This projectile is then shot through the tube by either a pneumatic or hydrostatic propulsion system. Projectile tube cleaning is a low-pressure cleaning technology, which ensures maximum safety for the tubes and the operators using the equipment.

Projectile tube cleaning is used for:

- (Steam) Surface condensers
- Shell and tube heat exchangers
- Chillers and industrial heat pumps
- Airfin process coolers (tube side)

Do you want to learn more about projectile tube cleaning?

Check out this short 1,5-minute video which was made at a power generation plant during a condenser tube cleaning job. →

High-speed tube cleaning

Goodway® projectile tube cleaning solutions are designed for tube cleaning processes of large (industrial) heating- and cooling systems. Large could refer to the amount of tubes of an installation, the length of the tubes, or a combination of both. Projectile tube cleaning could also add value in case many small-sized heat exchangers or coolers have to be cleaned in a short timeframe. This tube cleaning technology is most effective and efficient when soft to medium types of deposits have to be removed, such as sediment, silt, algae, slime, sand, mud, sludge, shells, zebra mussels and barnacles.

Applications

Steam surface condensers

Tube heat exchangers

Airfin process coolers (tube side)

Advantages

Projectile tube cleaning is a proven technology that has been used for many years in various industries, such as power plants, district heating- and cooling plants, and the petrochemical industry. Some advantages compared to other (traditional) technologies, such as high-pressure tube cleaning, are described below.

- √ **Speed:** with the right conditions and preparations the time savings with projectile tube cleaning are substantial. Regardless of the tube length, it takes about 5-10 seconds to clean a tube.
- √ **Wastewater:** projectile tube cleaning uses relatively little amounts of water compared to traditional cleaning technologies, such as high-pressure cleaning. Because the projectiles are shot through the tubes at high speed, the total amount of water used per tube is very limited.
- √ **Safety:** projectiles are shot through the tubes at low-pressure which ensures safety for the operators, as well as the integrity of the tubes.
- √ **Costs reduction:** due to savings on time, manpower, wastewater, and cleaning equipment in general, overall costs to clean the heat exchanger or (surface) condenser are reduced significantly.

Fouling

Projectile tube cleaning is perfectly suited for removing various types of soft-medium deposits. Examples: sediment, silt, algae, slime, sand, mud, shells, zebra mussels, and barnacles. In case of harder deposits, for example scaling, heavy-duty projectiles are required for cleaning.

2 propulsion systems

Goodway Benelux offers 2 main propulsion systems. These systems are used to shoot the projectiles through the tubes. Depending on the type of deposits and projectile, as well as some other variables, one of these propulsion systems is recommended. Both pieces of equipment generate the same result; a projectile being shot through the tube.

QS-300 system in use

Check out this short video of 2 operators using the QS-300 and nylon coiled brush projectiles to remove biofouling and stuck cleaning balls. →

QS-300 Quick-Shot

The QS-300 Quick-Shot is an easy-to-use and highly effective system for cleaning a large number of tubes in a short timeframe. Due to its compact design, it can be used in tight workspaces, such as the water boxes of surface condensers. The QS-300 combines compressed air with a relatively low flow of water to shoot projectiles through the tubes. The air to water ratio is 90/10, meaning 90% air is used to propel the projectile through the tube. The QS-300 is often used to remove soft to medium deposits in condenser- and heat exchanger tubes, in combination with the polyethylene tube scrubbers and nylon coiled brushes.

QS-300

- Uses compressed air (90%) and water (10%) to push projectiles through tubes.
- Ideal for soft/medium deposits, like algae, mud, sand, sediment, and barnacles.
- Frequently used to clean heat exchangers and condensers at power plants.
- Compact and lightweight propulsion system (ca. 2 KG of weight).
- Air requirements of 8-10 BAR with 1,5 m3/minute flow.
- Water requirements of 8-10 BAR with 18-20 liter/minute flow.
- Comes with a 3-meter air- and water hose with industrial claw couplings.
- Includes a carrying case for safe transport and storage.

★★★★★

"We successfully used the QS-300 and polyethylene tube scrubbers for a tube cleaning of our heat pump condensers. Due to the speed of the device, we were able to reduce the cleaning time from 6-7 to 1-2 days! That's an 80% reduction, revolutionary."

VATTENFALL

***Vattenfall Uppsala** – Sweden*

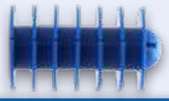
★★★★★

"To clean our condenser tubes, we use nylon coiled brush projectiles and QS-300's from Goodway Benelux. It's a very effective and efficient cleaning method for water-cooled condensers at power plants. After cleaning, we see a clear improvement in cooling capacity."

VATTENFALL

***Vattenfall** – The Netherlands*

The QS-300 is used with



Polyethylene tube scrubbers

Nylon coiled brushes

The QS-300 uses an air/water ratio to shoot projectiles through the tubes. It's possible to remove soft to medium deposits, such as: sediment, silt, algae, slime (biofilm), sand, mud, sludge, zebra mussels and barnacles. These types of deposits are commonly found in heat exchanger- and condenser tubes that use sea-, river-, or lake water as their cooling media.

- Very compact device, easy-to-use for plant technicians and operators
- High-speed cleaning, takes less than 5 seconds to clean a tube, regardless of the length

Learn more about the QS-300 on our website. →

BFP Big-Shot System

The BFP Big-Shot System has been specially developed to clean condenser- and heat exchanger tubes with medium-hard deposits. It's a kinetic-hydrostatic technology; with a waterflow of 132 liters per minute, it is able to shoot through heavy-duty projectiles. The BFP-system is commonly used for removal of scaling deposits inside tubes, in combination with carbon steel scraper projectiles. Goodway Benelux standardly supplies the BFP-system with a 1000-liter IBC container, which offers stable water supply to the pump. Water is also filtered inside the IBC container, before it enters the pump and application.

2 operators using the BSL-50 gun, to shoot nylon coiled brush projectiles through the tubes. Combined, they can clean 500-1000 tubes per hour.

The BFP-system uses a high waterflow of 132 liter per minute, at 28 BAR of pressure. The 1000-liter IBC container offers stable water supply to avoid pump cavitation.

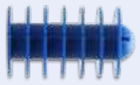
★★★★★

"At our site we had problems with a titanium heat exchanger that was fully blocked with soft deposits. After having had contact with the experts of Goodway Benelux we concluded that the BFP system was the best solution to open and clean the tubes. The softer, plastic projectiles were selected to not cause any damages to the titanium material. We were able to perform the majority of the cleaning with the big shot, fast and easily."

eramet

***Eramet** - Norway*

The BFP-system is used with



Polyethylene tube scrubbers

Nylon coiled brushes

Carbon Steel Scraper

The BFP-system uses 100% waterpower to shoot projectiles through heat exchanger- and condenser tubes. The cleaning is performed at a low-pressure of 28 bar and a high waterflow of ca. 132 liters/minute. It's possible to remove soft, medium, and harder deposits with the BFP-system. Generally, Goodway Benelux recommends the BFP-system when medium-hard deposits have to be removed, for example scaling.

Specifications

- Possible to connect 1 or 2 BSL-50 cleaning guns.
- Use 1000-liter IBC container for proper water supply.
- Electrical use: 12 Amps, 380V, 50Hz.
- Water output: 132 liters/minute at 28 bar.
- Weight ca. 275 KG.

Learn more about the BFP-3510 pump on our website. →

Cleaning projectiles

Goodway Benelux offers different types of cleaning projectiles, to clean condenser- and heat exchanger tubes. For soft-medium hardness deposits, such as sediment, mud, sand, algae, shells, zebra mussels, and barnacles, the polyethylene tube scrubbers and nylon coiled brushes are perfectly suited for cleaning of the tubes. These types of deposits are commonly found in river-, sea-, and lake water cooled applications, which are part of a regular tube cleaning program. In case of harder deposits, for example scaling, Goodway Benelux supplies carbon steel scrapers to clean the tubes.

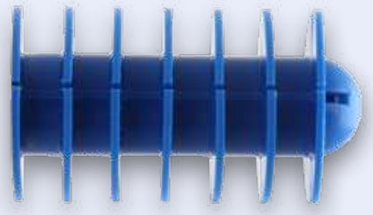
More specifications

- Projectiles can only be used for straight, smooth tubes.
- Tube scrubbers and coiled brushes are often used to clean surface condenser tubes at power plants, and are safe to use for titanium and Cu/Ni tube alloys.

★★★★★

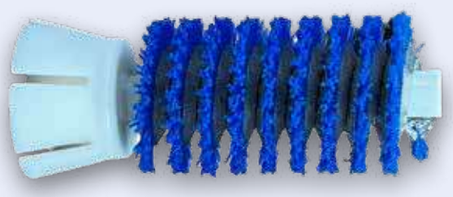
"We have been using Goodway Benelux polyethylene tube scrubbers for years in order to clean our condenser tubes. The projectiles scrape the deposits off the tube walls, but do not damage them. Ideal for preventive maintenance."

***Uniper Benelux** – The Netherlands*



Polyethylene tube scrubbers (TS)

- Applicable for tube inner diameters 13 - 30 mm.
- To be used for soft, loose deposits.
- For soft deposits like sediment, sand, mud, and algae.
- Can be reused 1-2 times depending on several factors.
- Can be shot through with the QS-300 and BFP systems.



Nylon coiled brushes (CB)

- Highest cleaning effect for a mix of soft-medium deposits.
- Applicable for tube inner diameters 12,6 - 30,6 mm.
- For soft-medium deposits like algae, mud, mussels, and barnacles.
- Can be reused 3-5 times depending on several factors.
- Can be shot through with the QS-300 and BFP systems.

Carbon steel scrapers (SSM)

- Best fit for removing harder deposits, like scaling.
- Applicable for tube inner diameters 12,6 – 30,0 mm.
- Can be reused 6-10 times depending on several factors.
- Can only be shot through with the BFP system.

This blog further explains the use of projectile tube cleaning, for (steam) surface condensers. →

BLOG

Learn more about the projectiles on our website. →

Projectile tube cleaning explained in 7-steps

Projectile tube cleaning is a low-pressure, high-speed method for cleaning large numbers of (surface) condenser- and heat exchanger tubes. Special projectiles are shot through the tubes with low-pressure pump systems. Projectile tube cleaning is currently the fastest technology available: 2 operators are able to clean roughly 500-1000 tubes/hour. This figure is easily scalable by increasing the operator count.

Step 1

Heat exchanger or condenser tubes will become fouled over time. Often times, deposits like algae, mud, slime, silt, barnacles, mussels, sediment, and (light) scaling will adhere to the tube walls. By doing so, they create an isolating barrier which negatively impacts the heat transfer coefficient. In other words, the system's performance will decrease due to deposits inside the tubes. Even heat exchangers with automatic (online) ball cleaning systems will become fouled over time. An offline cleaning will be necessary to get the tubes clean again.

Step 2

After deciding to perform an offline cleaning to restore efficiency levels, it is possible to choose from different cleaning technologies. Projectile tube cleaning is a safe, fast, and cost-effective technology to clean heat exchanger and condenser tubes. When opting to clean with projectiles, it is important to gather all necessary data of the installation, such as the tube outer and inner diameters, tube length, quantity of tubes, tube material, medium type, and the expected deposits.

Step 3

When all data has been collected, it is time to choose the right type of projectile which will be used to shoot through the tubes and remove the deposits. The experts of Goodway Benelux are able to assist with recommendations based on your information and our experience. Projectiles are reusable and travel through the tubes at high speed. Often times, they remove all deposits inside the tube within a single pass.

Step 4

Projectiles are loaded into the tubes and shot through with specialized equipment, also known as propulsion systems. With the QS-300, a combination of wate r and air pushes projectiles through the tubes. With the BFP-system, it's mainly the high waterflow of 130 liters per minute. Goodway Benelux is able to recommend the best suited propulsion system for your heat exchanger or condenser. Both propulsion systems work at low-pressure, which greatly contributes to the safety of the operations and equipment.

Step 5

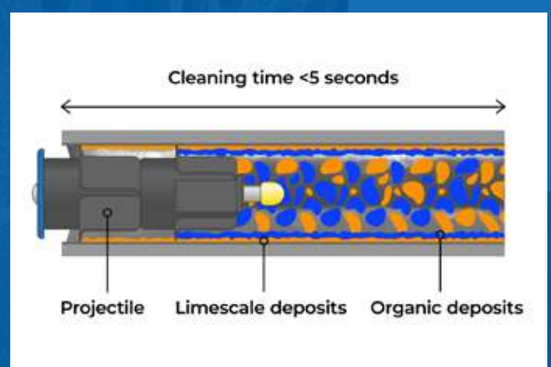
A special catching net is attached to the other side of the heat exchanger or condenser. This net is used to catch the projectiles when they exit the tubes. By catching the projectiles safely, maximum reusability is ensured. After projectiles are caught and cleaned, they can be reused. The amount of times a projectile can be used, depends on the type of projectile which is used, as well as other variables such as deposit type, tube length, and more.

Step 6

After cleaning, it is important to inspect all tubes for potential blockages or stuck projectiles. By performing a light test, a large number of tubes can be inspected in a short period of time. Often times a blockage is just a tube that had been missed during cleaning. By flushing it, the blockage or stuck projectile is often removed right away. In case this doesn't work, the deposit/projectile can be pushed out with a fiberglass rod.

Step 7

When the cleaning and inspection has been completed, the heat exchanger or condenser can be returned to operation. With the tubes now being clean, it is wise to consider implementing a preventive mechanical tube cleaning strategy. For example, every 1 or 2 years the heat exchanger or condenser is cleaned with projectiles, ensuring maximum efficiency and less hard deposit buildup over time. Furthermore, by doing this, potential tube leaks caused by under deposits- or microbiologically induced corrosion is prevented as much as possible.



3 CHEMICAL CLEANING

Chemical cleaning-in-place (CIP) is an effective and fast method to clean various types of heat exchangers. Cleaning-in-place means that the system is cleaned on-site with minimal disassembly. A pump system is used to circulate a chemical cleaner through the application. Goodway Benelux offers industrial descaling systems and descalers, for cleaning of water-formed fouling. Cleaning-in-place is especially interesting for plate- and tube heat exchangers. Cleaning-in-place of a heat exchanger requires very little disassembly, which significantly saves on time, effort, manpower, and overall costs of a cleaning.

Chemical cleaning is used for:

- Plate type heat exchangers
- Shell and tube heat exchangers
- Chillers and condensers
- Cooling towers
- Boiler systems (outer tube side)

Do you want to learn more about chemical cleaning-in-place?

Check out this short 1-minute video which was made during a chemical cleaning in place (CIP) of a plate heat exchanger. →

More about chemical cleaning

Scale and other water-formed (mineral) deposits in heat exchangers have a negative effect on the heat transfer and efficiency of the equipment. A preventive cleaning and maintenance program is important to make sure the heat exchanger runs optimally. Chemical cleaning-in-place, with Goodway® CIP-pump systems and descalers, could be the answer. Dissolve and remove deposits, without disassembly of the entire application. Regular cleaning will lead to optimal efficiency levels, reduced energy- and running costs, an increase in equipment lifetime over time, and a lower chance of unplanned downtime.

Applications

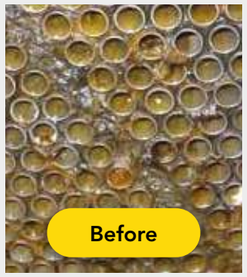
Goodway® industrial descaling systems and chemicals are used to chemically clean water-cooled/water-heated applications, for example plate heat exchangers. Any type of application can be cleaned-in-place with a chemical, as long as a closed-loop circulation process can be created.

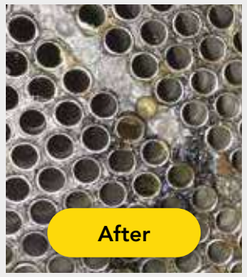
- Brazed-, welded-, and gasketed plate heat exchangers
- Water-cooled chillers and condensers
- Shell and tube heat exchangers
- Cooling towers, evaporative condensers, and fluid coolers
- Boilers (firetube and water tube)
- Cooling water lines, piping, and more.

Fouling

Goodway Benelux supplies industrial descalers, which are effective to dissolve and remove different types of water formed deposits.

- Scaling (calcium and lime)
- Biofouling (mud, film, barnacles)
- Rust (Fe2O3)
- (Other) Mineral deposits
- Degraded water-glycol mixtures





Advantages

- **Minimal disassembly** reduces the cleaning time by a significant amount. In many cases, customers have gone from a downtime of 2-3 days to a few hours. This reduction could allow for more regular cleaning.
- **Less manpower** is required due to minimal disassembly and work in general. The pump system circulates the chemical, there's almost no manual work to be done. This saves costs and allows technicians/operators to perform other tasks during cleaning.
- **Optimal results** can be achieved when a heat exchanger is cleaned on a regular basis. For example, it will allow the system to run at near peak efficiency, consume less energy, and have less technical errors due to fouling issues.
- **Lower costs** due to less time and manpower required, longer lifetime of the equipment (for example gaskets), and reduction in energy- and operating costs. Downtime is also shortened significantly, meaning the equipment can get back in operation sooner.

Small industrial descaling systems

Goodway Benelux offers small- and medium sized CIP-pump systems, for descaling and cleaning-in-place of different types of heat- and cooling systems. The CIP-pump system circulates a chemical cleaner through the application, with the aim of dissolving and removing the deposits, without complete disassembly of the application. It's important to use a pump system with a good flow rate, relative to the size of the application.

GDS-C40

- 56,7 liters/minute flow rate
- 37,8 liters tank capacity
- For systems with up to 250 liters volume

GDS-C92

- 79,4 liters/minute flow rate
- 56,7 liters tank capacity
- For systems with up to 400 liters volume

★★★★★

"For a CIP-program of our plate heat exchangers, we purchased the GDS-C92 pump system and ScaleBreak-MP descaler. We now carry out preventive cleaning activities of the PHE's, without having to disassemble the entire heat exchanger. This saves us a lot of time and work, leading to less downtime due to cleaning."

Nitto **Nitto** – *Belgium*

Flow Reversal Valve

The GDS-C40 and GDS-C92 are very effective at removing significant amounts of scale deposits from heat exchangers. The secret to success lies in the innovative flow reversal valve. During a descaling process, scale dissolves and creates foam and gas inside the heat exchanger, which acts as a barrier to further scale reduction. By reversing the flow, this foam and gas is discharged into the tank, which eliminates the barrier inside the heat exchanger, and speeds up the descaling process.

Additional specifications

The GDS-C40 and GDS-C92 are easy-to-use pump systems, and very effective for cleaning small heat exchangers of all sorts.

- Heavy-duty polyethylene and acid-proof components (pump and fittings).
- Innovative flow reversal valve for faster cleaning.
- Compact design for easy transport and storage.
- Run dry, powerful pumps with high flow.
- Venting cap for closed systems.
- Easy-to-use even with minimal training.

Check out all the Goodway® descaling systems here. →

GDS-100 industrial descaling system

The GDS-100 industrial descaling system is a portable, powerful CIP-pump system, which has been designed for cleaning of medium-sized applications. With a maximum flow rate of 360 liters per minute, it is able to effectively clean and descale applications with over 3000 liters of volume. It is possible to adjust the flow rates of the GDS-100, meaning that this CIP-pump system can also be used for small-sized heat exchangers and cooling systems.

GDS-100

- High flow rate of 360 liters per minute, and a polyethylene, integrated, 190 liter acid resistant tank. It's possible to connect a 1000-liter IBC to the GDS-100, and bypass its 190-liter tank.
- Two pressure gauges offer simple performance feedback indicators, while built-in check valves offer safety against liquid flood back, should there be a loss of power.
- Y-strainer and bypass valve functions increase performance by catching particulates for easy disposal, and to offer variable flow to match specific applications.
- Includes 2x large 1-1/2" x 7,6 meter hoses with locking camlock fittings and isolation valves for ease of use and high performance.
- Mobile pump system with 170 x 80 x 90 cm dimensions (L*W*H).
- The flow rate allows to clean systems with up to 3600 liter of volume. Maximum head pressure of 15 meters.

Descaling of water cooled chillers

When significant scale deposits occur in water-cooled chillers or tube heat exchangers, a chemical cleaning with descaler is usually the right approach for cleaning. The GDS-100 pump system is frequently used by HVAC- and industrial contractors, as well as end clients, for such descaling processes. Below, a picture of the GDS-100 can be found, while descaling a chiller system.

★★★★★

"We use the Goodway® GDS-100 system to chemically clean and flush different types of (plate) heat exchangers, on location or in our workshop. The system is ideal for such projects due to the large tank, option to connect 1000-liter IBC containers, and high flow rate. It's a great asset to our company."

ABALCO est. 1995 **Abalco Group** – *The Netherlands*

★★★★★

"Halfway 2022, we purchased a GDS-100 descaling pump system for our CIP (cleaning-in-place) activities. We have already used the system several times for the cleaning and descaling of the tubes in water-cooled chillers. The GDS-100 is an easy-to-use, but professional and effective descaling pump system."

ROCCA IMPIANTI **Rocca Impianti** – *Italy*

Learn more about the GDS-100 on our website. →

ScaleBreak-MP industrial descaler

ScaleBreak-MP is a unique blend of citric acid with corrosion inhibitors, wetting, and penetrating agents. It is designed for descaling a wide range of metals, plastics, and other materials, including stainless steel, and offers excellent cleaning results and speed without compromising the long-term integrity of equipment base metals. The biodegradable descaling solution safely dissolves scale- and rust (Fe2O3) deposits into a liquid suspension and allows them to be flushed out of heat exchangers, leaving no residual solution. During the production process of ScaleBreak-MP, ingredients are added in precise amounts at specific sequence within mixing vessels, leading to minimal corrosion rates, peak saturation points, and optimal dissolving speeds of the product.

20-liter cannister

1000-liter IBC

Specifications

- Citric acid based descaler, with the inclusion of corrosion inhibitors.
- Minimal corrosion rates, peak saturation points and optimal dissolving speed.
- Biodegradable and non-hazardous for transportation.
- Very effective against scaling, rust (Fe2O3), biofouling, and other water-formed deposits.
- Dissolves 3,5 KG of scale per 10 liters of product.
- Blending process takes place in The Netherlands.

(Brazed) Plate Heat Exchangers

ScaleBreak-MP descaling liquid and GDS-C40 pump system used to remove rust and scaling from a small brazed plate heat exchangers. Those deposits caused a much higher energy consumption and loss of heat transfer for the end-client.

★★★★★

"We purchased a GDS-C40 pump system from Goodway Benelux, for cleaning and descaling of 30 small plate heat exchangers in our hospital. In combination with ScaleBreak-MP descaler, we can remove our limescale deposits quickly and effectively."

***Kreiskrankenhaus Prignitz GmbH** - Germany*

Material safety

ScaleBreak-MP is a "Multi-Purpose" industrial descaling product. It can be safely used on many different base material types. Some of the most common examples are listed below.

- Brass
- Copper/Nickel
- (Stainless) Steel
- Plastic
- Titanium
- Rubber
- Glass
- EPDM
- Nitrile
- Santoprene
- Teflon
- Fiber
- Ceramic
- Silicone

Learn more about ScaleBreak-MP on our website. →

Step-by-step guide for cleaning brazed plate- and gasketed heat exchangers

1. Isolate the heat exchanger from the system by closing the supply- and return water valves.

2. Position a ball valve on the low point of the heat exchanger. This valve will function as your entry point for your ScaleBreak cleaning and can be closed to prevent backflow.

3. Attach your circulation hoses so you are pumping into the bottom of the heat exchanger and returning the fluid out the top.

4. Your exit point on top needs to be at the highest point of the exchanger. If the exit point is lower than the top of the plate pack, position the hose at a higher point. This action will insure the entire plate pack is flooded and ScaleBreak comes in contact with all the interior wetted surfaces. It will also insure upper interior areas do not become air bound with CO2 or foaming resulting from the cleaning.

5. Fill your exchanger with water and perform a hydrostatic test by turning your pump on and circulating the water. This action assures the exchanger is isolated and none of the ScaleBreak will be needlessly lost.

6. You will need to bleed off enough water equal to the volume of ScaleBreak required for the cleaning. If you relieve too much water, you can add some back to complete your circulation loop.

7. Water formed deposits will occupy volume, as a result, additional water may need to be added during the cleaning duration as deposits are dissolved.

8. During cleaning it is recommended to regularly reverse the flow. In other words, pump in from the top, instead of the bottom. This ensures that the scale is removed more quickly and that any gas formation and blockages are flushed out of the heat exchanger. With the GDS-C40 and GDS-C92 you can do this by simply reversing the flow valve. With the GDS-100, you have to swap the hoses.

9. Circulate the ScaleBreak solution for the recommended timeframe as indicated by our calculation tool or experts.

10. During your ScaleBreak cleaning you will want to make sure your solution remains active. For this step, please follow our "Testing ScaleBreak's Effectiveness" procedure.

11. Once you have reached the recommended circulation time and your ScaleBreak solution has completed the job, you can begin your flushing process.

12. Though ScaleBreak is a biodegradable solution, most facilities need to conform to pH discharge limits. ScaleBreak® Neutralizer can be utilized to safely elevate your pH to meet your discharge limit so it can be flushed to the drain. Please follow the instructions for this process in the ScaleBreak Neutralizer information sheet.

13. To flush your heat exchanger, turn off your circulation pump, remove the return hose from your recirculation system and put it in a drain.

14. Add a fresh water hose to your recirculation bucket on your pump system and turn the pump back on.

15. Continue running clean water through the heat exchanger for 10-15 minutes or until the return water is running clear. This action will also flush out your pump system.

16. As an added safeguard you can reverse your hoses so you pump into the top and out the bottom. This action will flush away any debris that may have settled out the bottom of the exchanger.

17. Disconnect your hoses, close the valves you performed your circulation through and open the valves for the exchanger supply water.

18. Your heat exchanger can now be returned to service.

Please note:

- Follow all local regulations for discharge.
- Follow all plant personal protective equipment guidelines as determined by your health & safety team.
- ScaleBreak formulas have very minimal corrosion rates, however, the application of ScaleBreak may reveal pre-existing under-deposit corrosion (UD) or microbiologically induced corrosion (MIC). These types of corrosion can present themselves in the form of pitting, pin holes or similar types of damage.

DESCALING SOLUTIONS FOR SWEP HEAT EXCHANGERS

Preventative maintenance is an integral part of any water operated piece of equipment's efficient operation. SWEP & Goodway® Technologies have partnered to bring customers a safe cleaning product and methodology to insure your heat transfer remains optimal.

SWEP brazed plate heat exchangers transfer energy (heat) with high efficiency and minimal thermal loss. When operating with hard water or with high temperatures, scale deposits derived from mineral within a water source may fall out of suspension and plate onto the heat transfer surface. These deposits increase the pressure drop and insulate the heat transfer surface, decreasing the heat exchanger efficiency. As scaling builds up it may act as a breeding ground for particulate fouling and even creating a microclimate for corrosion.

Goodway® Technologies ScaleBreak-MP is a unique blend of citric acid with the inclusion of corrosion inhibitors, wetting and penetrating agents. It offers excellent cleaning results and speed without compromising the long term integrity of equipment base metals. The biodegradable descaling solution that will safely dissolve scale deposits into a liquid suspension allowing them to be flushed out of BPHE's leaving no residual solution.

BPHE cleaning instructions with ScaleBreak-MP are available. SWEP have tested and verified the compatibility of ScaleBreak-MP with their products.

DESCALING SOLUTIONS FOR HEXONIC HEAT EXCHANGERS

HEXONIC® has been inspiring people to save our planet's resources through efficient heat transfer. Implementing a preventive maintenance schedule is essential to retaining optimal heat transfer and flow. HEXONIC® And Goodway® Technologies have formed a partnership to ensure peak heat transfer efficiencies continue with approved preventative maintenance solutions and proven cleaning methodologies.

When reliability is essential, HEXONIC offers heat exchange solutions ranging from Brazed Plate Heat Exchangers (BPHE), Gasketed Plate Heat Exchanger (GPHE), Plate and shell, shell & tube, and shell & coil. For over 30 years, HEXONIC has been perfecting their products to give customers the confidence in making the best choice for their heat exchanger needs. HEXONIC provides heat exchange solutions for almost every industrial application imaginable, these industries include chemical, food & beverage, HVAC & refrigeration, oil & gas, marine, and power generation. Hexonic heat exchangers are designed specifically to meet the needs of the respective machine or equipment system, ensuring energy efficiency and reliability regardless of market segment.

Goodway® Technologies is a leader in innovative maintenance solutions. Our ScaleBreak-MP liquid descaler is a unique blend of citric acid with the inclusion of corrosion inhibitors, wetting and penetrating agents. Scale deposits fall out of suspension and adhere to the heat transfer surface and prevent proper heat transfer. Scale deposits also insulate the heat transfer surface, thus preventing efficient operation. ScaleBreak-MP offers excellent cleaning results and speed without compromising the long term integrity of equipment base metals. This biodegradable descaling solution will safely dissolve scale deposits into a liquid suspension allowing them to be flushed out of the PHE leaving no residual solution.

4 BOILER TUBE CLEANING

Boiler tube cleaning equipment is used to remove fouling within all kinds of boiler tubes, both in horizontal and vertical placed installations. The concept is simple, a tube cleaning system powers a flexible shaft, which then rotates a brush or tool inside the tubes. Due to the rotating action of the brush/tool, there is continuous friction on the tube wall, which will cause the fouling to quickly come off. Boiler tube cleaning processes with Goodway® equipment are performed without water and can be utilized to clean tubes between 30-90 millimeters inner diameter.

Boiler tube cleaning equipment is used for:

- Removal of soft, medium, and hard deposits
- Opening of fully clogged boiler tubes
- Inner diameters between 30-90 millimeters
- Horizontal- and vertically positioned tubes

Do you want to learn more about boiler tube cleaning?

Check out this short 1-minute video which was made at a food production plant during a boiler tube cleaning job. →

More about boiler tube cleaning

Depending on the circumstances, boiler (fire) tubes are often quickly fouled which leads to negative effects in terms of efficiency and operating costs. A powerful tube cleaning system will help remove the deposits in a quick and effective manner. Often times, boiler (fire) tubes have different types of deposits, sometimes they can be soft or medium hard, and sometimes the tubes can become fully clogged with hard deposits. Goodway® rotating tools and brushes are designed to handle all kinds of deposits; it is even possible to open fully clogged tubes with special scraper tools.

★★★★★

"After cleaning our fire tubes with high-pressure water, a lot of deposits remained inside the tubes. That is why we have opted for a mechanical technique to remove the deposits by means of rotating brushes and tools. An employee of Goodway Benelux helped us during the delivery with an explanation and demonstration. An extra advantage is that we will use less fuel to produce the same heat. The more deposits inside the tubes, the more energy it takes to make steam. We are satisfied."

ARGENT ENERGY

***Argent Energy** – The Netherlands*

★★★★★

"We rented an AWT-100X tube cleaner from Goodway Benelux to clean the fire tubes in our boilers. These are normally cleaned with a different system, but the level of fouling was too high. The AWT-100X in combination with the flex hub scraper and nylon abrasive brushes is ideal for removing (hard) deposits. We received support and service from Goodway Benelux and were able to carry out the cleaning very well. It was the first time we worked with this device."

***Schlossbrauerei Friedenfels GmbH** – Germany*

Complete packages

Goodway Benelux often recommends and supplies complete boiler tube cleaning packages to customers. These packages always consist out of the following products:

Boiler tube cleaning system 1

Flexible shaft to connect brushes 2

Scrapers and brushes to remove deposits 3

Fouling

Goodway® boiler tube cleaning equipment is suited to remove the following types of deposits from boiler tubes:

- Soot
- Scaling
- Hard, burnt materials
- Fine powders

Advantages

- √ **Powerful equipment** which is able to remove soft, medium, and hard deposits – it is even possible to open fully clogged tubes.
- √ **Optimal results** due to mechanical cleaning which creates friction on the tube wall and therefore easily releases deposits.
- √ **Increased efficiency** because of cleaner tubes which leads to a higher heat transfer and thus less operating costs.
- √ **Versatile equipment,** since the same systems and shafts can be used for other piping (for example extraction piping in factories).

Tube cleaning systems

Goodway® dry tube cleaning systems are an ideal match for removing various types of deposits within boiler firetubes. Rotating brushes and scraper tools can remove soft, medium, and hard deposits going up to blocked tubes. An operator pushes the flexible shaft with cleaning tool through the tubes, while a vacuum system removes loosened deposits during cleaning, leaving clean tubes behind. Goodway® boiler tube cleaners can be used for tubes with inner diameters between 30-90 millimeters.

Industrial favorite

AWT-100X

- Adjustable speed between 500-3000 RPM
- Air-powered tube cleaner
- Requires 3,5 m3/min at 5-7 bar pressure

RAM-4X

- Fixed speed at 1725 RPM
- Electrical tube cleaner
- Available in 230V and 50 or 60 Hz

Specifications

Goodway® boiler tube cleaners are designed for heavy-duty jobs and last for years with proper maintenance and care.

- For tubes 30-90 mm I.D.
- Remove soft, medium, and hard deposits
- Dry cleaning, no water required
- Open blocked tubes
- For horizontal and vertical tubes

★★★★★

"We use the AWT-100X and RAM-4X tube cleaners of Goodway Benelux to provide boiler tube cleaning services at our customers. The combination of flex hub scrapers and nylon abrasive brushes makes for good cleaning results, even if the deposits are harder."

Callens

***Callens** - Belgium*

Cleaning process

Goodway® tube cleaners use rotating brushes or tools to remove deposits within boiler firetubes. The cleaning process is done manually to allow the operator to adapt the correct cleaning process according to the level of fouling within the tubes.

Some tubes can be cleaned faster than others. The manual cleaning also allows for various applications, it's possible to clean both horizontally- and vertically placed tubes.

Flexible shafts

Goodway® flexible shafts are used for dry tube cleaning applications, such as boiler fire tubes. Goodway Benelux offers a flexible shaft type that is able to take considerable stress and torque, and is temperature resistant up to 140 °C. Flexible shafts are equipped with standard ½" threading to connect virtually any Goodway® tube cleaning tool.

GTC-721G

- Temperature resistant up to 140C°
- Available in different lengths, ranging from 5 to 15 meter
- For tubes 25,4 mm (1") and up

Goodway® boiler tube cleaning

More detailed information can be found at our firetube boiler page. →

Tools and brushes

Cleaning tools and brushes are used to remove soft, medium, and hard deposits inside of boiler fire tubes. Depending on the deposit type and hardness, the selection of the tool can be made. In some cases, a nylon abrasive brush will work fine by itself. In case of hard deposits, a 2-pass cleaning could be performed to increase cleaning results.

Before

After

Flex hub scraper

Centrifugally activated cleaning tool. Will automatically adapt to the tube inner diameter. Remove hard deposits on the tube walls or open blocked tubes.

- Available for tubes 13,0 – 102 millimeter I.D.
- Available in standard threading only.
- Most used tool for removing hard deposits and blockages in tubes.

Buffing tool

Remove medium to hard deposits such as light scaling and rust in straight tubes. Can be used to open blocked tubes.

- Available for tubes 7,9 –76,2 millimeter I.D.
- Available in standard threading or quick-connect.
- Use for drilling open blocked tubes, wires ensure drill head remains centralized.

Flare brush

Flare Brushes incorporate centrifugally activated wire cables with cobalt tips that lightly "whip" around on the inside of tubes removing scale and deposits.

- Available for tube I.D. range 25,4 - 203,2 mm (1" - 8").
- Only available in standard threading.
- Use for removing deposits on the tube walls. One-piece tool ensures long lifetime.

Nylon abrasive brush (NAB)

Nylon abrasive brushes are used for general tube cleaning and polishing. These brushes are ideal to remove soft to medium-hard deposits inside tubes. Due to their oversize, they create more friction than regular brushes and thus have a higher cleaning effect. They also have a longer ligetime due to the oversize

- Available for tubes 25 – 90 millimeters I.D.
- Only available in standard threading.
- Use for preventive cleaning and removal of partial deposits on the tube walls.

Note: this product is manufactured only by Goodway Benelux BV and is not part of the Goodway® Technologies product range.

2-pass cleaning of heavy fouling in boiler tubes

With heavily deposited tubes, it is recommended to work with a 2-pass cleaning process. It is easy to perform and almost always leads to an even better cleaning result. The cleaning process is divided into 2 steps:

1 Use the flex hub scraper to remove the initial, heavy layer of deposits. After cleaning with these scrapers, it is possible that a small amount of deposit remains inside of the tubes.

2 After that, use an oversized NAB brush to remove the last remaining layer of deposits. These oversized brushes generate even more friction in the tubes, creating a polishing effect. After the NAB brushes, the tubes are as clean as possible, and the heat transfer will be at optimal levels.

Nylon abrasive brushes

The nylon abrasive brushes are very effective at removing deposits and polishing tubes. More information and videos can be found here. →

Highlight: exhaust gas boilers

Goodway Benelux supplies its boiler tube cleaning equipment to different types of vessels in the maritime industry, for example container- and ferry ships. These vessels have exhaust gas boiler (EGB) systems on board. Those boilers recover the heat from the exhaust gas of auxiliary diesel engines, to generate steam and/or hot water, or useful heat for process heating. A big part of the efficiency of the system is determined by the state of fouling within the EGB tubes. By using a Goodway® boiler tube cleaning system, deposits within the tubes can be removed quickly and effectively, thereby keeping the system consistently performing at peak efficiency levels.

Advantages

- √ **Increase exhaust gas boiler performance/efficiency:** clean tubes lead to a better heat transfer, which increases the efficiency of the EGB. This will allow the system to run at near peak efficiency, consume less energy, and have less technical errors due to fouling issues.
- √ **Easy-to-use equipment:** operators can easily use Goodway® equipment to clean exhaust gas boiler tubes by themselves. The equipment is designed to be "plug-and-play" meaning you only require compressed air to power the equipment.
- √ **Compact yet powerful equipment:** the Goodway® AWT-100 tube cleaner is lightweight (13KG) and compact, meaning it can be easily carried around and placed near the EGB tubes. Furthermore, the rotating brushes and tools are ideal for removing soft, medium, and hard deposits – it's even possible to open fully clogged tubes.

Do you want to learn more about EGB tube cleaning?

Check out this short 2-minute video which was made at a container vessel during an EGB tube cleaning job. →

Using Goodway® tube cleaning equipment on board

When the tube cleaner is activated by using the footswitch, the flexible shaft core (internally) is powered and rotates the brush or tool inside the tubes. Due to the high-speed rotating action of the brush/tool, the deposits will quickly be removed from the tube walls. The simultaneous vacuum of the EGB ensures all loosened deposits are removed from the tubes.

Operator cleaning EGB tubes with AWT-100 and NAB's.

Flexible shafts (GTC-721G)

- Connect to tube cleaning system (AWT-100).
- Connect brushes/tools to shafts.
- Available in lengths 5 – 15 meters.
- Standard fitted with 1/2-12 female thread.

Flex hub scraper

- Use for removing hard deposits and blockages in tubes.
- Available for tubes 13,0 – 102 millimeters I.D.
- Automatically adapts to the tube inner diameter.
- Standard fitted with 1/2-12 male thread.

Nylon abrasive brush (NAB)

- Remove deposits on the tube walls and polish the tubes at the same time.
- For tubes 25 – 90 millimeters I.D.
- Use after flex hub scraper to remove last remaining deposits.
- Standard fitted with 1/2-12 male thread.

Note: this product is manufactured only by Goodway Benelux BV and is not part of the Goodway® Technologies product range.

2-pass cleaning of heavy fouling in tubes

With heavily deposited tubes, it is recommended to work with a 2-pass cleaning process. It is easy to perform and almost always leads to an even better cleaning result. The cleaning process is divided into 2 steps:

1 Use the flex hub scraper to remove the initial, heavy layer of deposits from the tubes. After cleaning with these scrapers, it is possible that a small amount of deposit remains inside of the tubes.

2 After that, use an oversized NAB brush to remove the last remaining layer of deposits. These oversized brushes generate a high amount of friction in the tubes, creating a polishing effect. After the NAB brushes, the tubes are as clean as possible, and the heat transfer will be at optimal levels.

AWT-100 tube cleaner

A lightweight, air-powered tube cleaning system which is preferred by many maritime engineers and technicians for cleaning EGB tubes.

- Compact and lightweight (13 KG). Easy to store/carry at vessel.
- Powerful motor with 1HP, change torque and speed between 500-3000 rotations per minute.
- Reliable air-powered motor, only (enough) compressed air is required to operate the system.
- AWT-100 is used without water, perfect for EGB tube cleaning jobs.
- Rotate clockwise for use with threaded tools and brushes.

Practical information

- The lower the temperature within the boiler, the easier it is to clean. It is required (depending on the size of the boiler) to get inside to clean the tubes. We recommend lowering the temperature to < 50 degrees Celsius for cleaning.
- During cleaning a vacuum (airflow) should be created to ensure all loosened deposits are sucked out of the tubes, otherwise tools might get stuck in loosened built up materials and cause equipment breakdowns.

5 INDUSTRIAL DRY PIPE CLEANING

Dry pipe cleaning equipment is used to remove dry deposits within different piping applications, such as extraction- and production pipes in factories. The concept is simple; a tube cleaning system powers a flexible shaft, which then rotates a brush or tool. During this cleaning process, no water is used. Due to the rotating action of the brushes and tools, at high speed, there is continuous friction on the pipe wall, which will cause the fouling to quickly come off. Goodway® pipe cleaning equipment is generally used for pipes with 90-400 mm inner diameters.

Industrial dry pipe cleaning is used for:

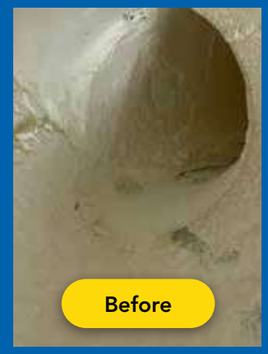
- Production piping
- Extraction piping
- Vacuum piping
- Reformes tubes

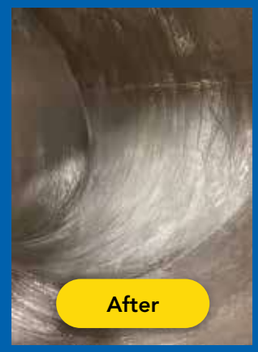
Do you want to learn more about industrial dry pipe cleaning?

Check out this short 2-minute video which was made at a production plant during a dry pipe cleaning job. →

More about dry pipe cleaning

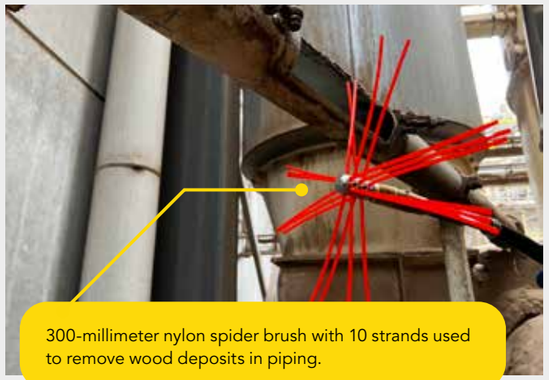
Regardless of the industry or application, fouling within tubes or pipes causes negative effects in terms of efficiency, hygiene, and other factors. Therefore, it is important to be able to remove deposits quickly and effectively, with as little downtime as possible. Dry pipe cleaning solutions offer a mechanical cleaning action by means of a rotating brush. Depending on the application, the rotating brushes or tools which are required can be different. The benefits are that (1) no water is required for the cleaning and (2) almost no disassembly is required. This significantly decreases cleaning downtime.



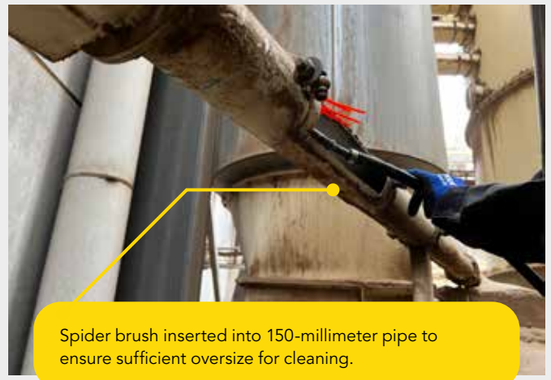


The basics of dry pipe cleaning

Dry pipe cleaning solutions of Goodway® Benelux are used in various types of industries, ranging from food production plants, to other industrial manufacturing facilities. These places usually have all kinds of piping throughout the factory. Dry pipe cleaning is frequently used to remove soft to medium-hard deposits which are dry or powdery of nature. Since this is a rotating cleaning method, it will generally not work for greasy or wet substances.



300-millimeter nylon spider brush with 10 strands used to remove wood deposits in piping.



Spider brush inserted into 150-millimeter pipe to ensure sufficient oversize for cleaning.

Cleaning piping with bends: the flexible shafts which are connected to the tube cleaning machine and the brushes/tools can also be used to clean inside of bent tubes. It's possible to pass through 90-degree bends.

Fouling

Goodway® dry pipe cleaning equipment is often used to remove the following types of deposits:

- Leftover product residues
- Product buildup or blockage
- Dry powders or ingredients
- Soot, rust, and limescale

Advantages

- √ **Easy-to-use equipment** allows for your own technical department to clean tubes and piping on-site, without having to call for a professional contractor or company.
- √ **Decreased downtime** due to being able to clean by yourself. Furthermore, very little disassembly is required since flexible shafts can go through (90 degree) bends and curved tubes.
- √ **Optimal results** due to mechanical cleaning, which creates friction on the tube wall and therefore easily releases deposits.
- √ **Less manpower** is required due to minimal disassembly, this saves costs and allows technicians to do other things during the cleaning.

Tube cleaning systems

Goodway® tube cleaning systems are an ideal match for removing various types of deposits, within different types of industrial piping. The tube cleaning system powers a brush or tool, which removes deposits inside the piping due to the friction from quick rotation. To decide which system is best suited to an application, the type and hardness of the deposits matter. With the AWT-100X and RAM-4X, Goodway Benelux is able to offer both an air-powered and electrical system for dry pipe cleaning processes.

Industrial favorite

AWT-100X

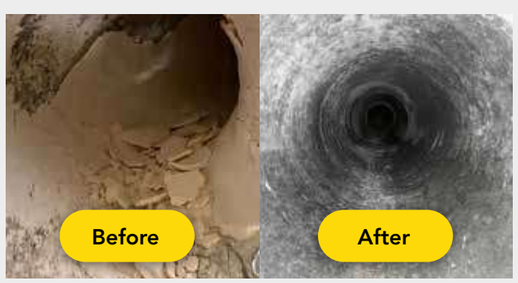
- Adjustable speed between 500-3000 RPM
- Air-powered tube cleaner
- Requires 3,5 m3/min at 5-7 bar pressure

RAM-4X

- Fixed speed at 1725 RPM
- Electrical tube cleaner
- Available in 230V and 50 or 60 Hz

Cleaning process

Goodway® tube cleaning systems use rotating brushes or tools, to remove (dry) deposits within various types of piping applications. During this cleaning process, no water is used. The cleaning process is done manually, to allow the operator to adapt the cleaning process whenever necessary. The operator can switch between different brushes (nylon or stainless steel), and in case of difficult deposits switch to other heavy-duty tools. Generally speaking, the softer the deposits, the easier the cleanings go. Dry deposits like flour, powders, and dust are a great fit for Goodway® dry pipe cleaning equipment.



Specifications

Goodway® dry pipe cleaners are designed for heavy-duty jobs and last for years with proper maintenance and care.

- For pipes 90-400 mm I.D.
- Ideal for soft deposits, such as powders and dust
- Medium-hard deposits can also be removed
- Dry cleaning, no water required
- Open blocked tubes
- For horizontal and vertical tubes
- Use centralizer tools for larger pipe diameters

Customer feedback

Check out what our customers have to say about Goodway® dry pipe cleaning equipment!

★★★★★

"We have purchased an AWT-100X system and accessories from Goodway Benelux for the dry cleaning of various piping in our factory. With the heavy-duty flex hub tools and brushes it is possible to remove different types of fouling. The advantage is that the system does most of the work and we ourselves have less labor and downtime."

Belcolade **Belcolade NV** – *Belgium*

★★★★★

"We use the AWT-100 tube cleaning system in combination with flexible shafts and spider brushes to remove accumulation of fouling within our transportation piping, without water. We have already used the system multiple times, it's really a great product!"

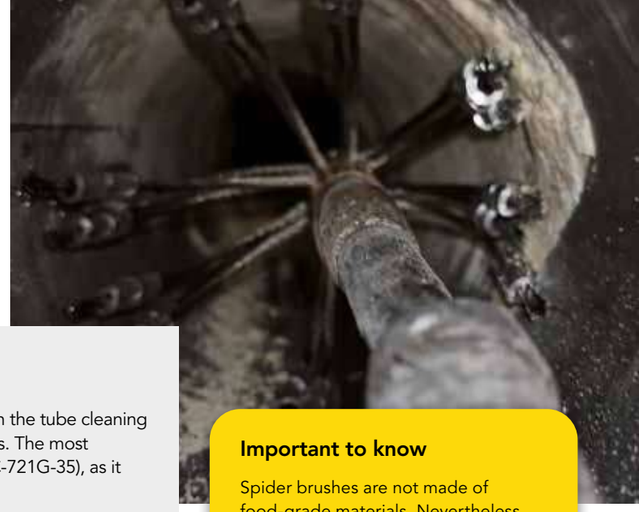
UNILIN **Unilin BV** – *Belgium*

Goodway® dry pipe cleaning

More detailed information can be found at our dry pipe cleaning page. →

Tools and brushes

Cleaning tools and special spider brushes are used to remove soft, medium, and hard deposits inside of various pipes and tubes. Depending on the deposit type and hardness, as well as the material type of the pipes, the brush or tool is selected. In most cases, our nylon and/or stainless steel spider brushes are able to remove the deposits quickly and effectively.



Flexible shafts

Goodway® dry flexible shafts are used to make the connection between the tube cleaning system and brushes/tools. The shaft type is available in different lengths. The most popular length for dry pipe cleaning processes is 10,7 meter long (GTC-721G-35), as it offers a good balance between length, durability, and user friendliness.

GTC-721G

- Shaft OD of 25 mm, strong enough to be used for all spider brush sizes.
- Available in lengths from 5 – 15 meters
- Strong, durable shafts for dry pipe cleaning

Important to know

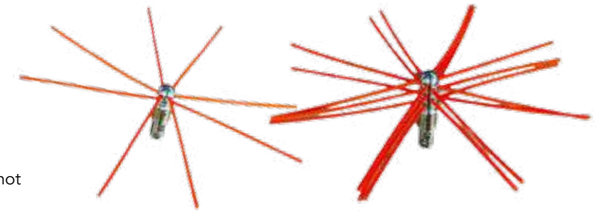
Spider brushes are not made of food-grade materials. Nevertheless, these types of brushes are often used in factories where food products are made. This is because the brushes are often used to clean extraction/vacuum pipes, where any possible loosened materials cannot come into contact with the food products.

Nylon spider brush

Oversized nylon brush with hexa type strands for extra cleaning effect. Remove soft to medium deposits in pipes, such as dry powders.

- For tubes from 90 millimeter and up
- Available with 4 or 10 strands
- For soft to medium type deposits

Note: this product is manufactured only by Goodway Benelux BV and is not part of the Goodway® Technologies product range.



Stainless steel spider brush

Oversized stainless steel brush to remove medium to hard deposits. When the nylon spider brushes don't offer enough cleaning effect, the stainless steel spider brush comes into play.

- For tubes from 90 millimeter and up
- Available with 4 or 10 strands
- For medium to hard type deposits

Note: this product is manufactured only by Goodway Benelux BV and is not part of the Goodway® Technologies product range.

Cleaning of 400+ mm piping

For horizontal- and vertical pipes with diameters larger than 400 mm, Goodway Benelux strongly recommend usage of a centralizer tool. By keeping the spider brush central inside a large pipe, the strands come in contact with all parts of the pipe and are able to remove the deposits. Goodway Benelux has developed its own centralizer tool, which has been tested and approved in the work field.

- Use for 400-900 mm pipe inner diameters.
- Use with Goodway® GTC-721G black flexible shafts.
- Manually push the tool through the pipe during cleaning.

6 COOLING TOWER CLEANING

Regular and preventive cleaning and maintenance of cooling tower systems should be a top priority. Scaling and other types of (mineral) deposits within cooling towers cause efficiency levels to drop, and do offer a breeding ground for various types of bacteria, with legionella being one of them. Low-pressure cleaning systems and chemical cleaners (descalers) are supplied by Goodway® Benelux, to clean the cooling tower fill and air intake louvers. Additionally, water vacuum systems are offered to remove (macro) fouling within the cold water basin or central collection tank (sump), avoiding the need to drain the entire water contents before cleaning. Lastly, Goodway® Benelux can assist with cleaning processes of the entire cooling circuit, which would include not just the cooling tower, but also connected piping and other equipment.

Cooling tower cleaning is used for:

- Open- and closed cooling tower systems
- Evaporative condensers and fluid coolers
- Complete cooling circuits

Do you want to learn more about cooling tower cleaning?

Detailed information can be found at our cooling tower page. →

Cleaning entire cooling circuit

When cleaning a cooling tower system, you are only cleaning one component of the cooling circuit. It is also good to take a look at the connected piping, pumps, compressors, and heat exchangers. These systems also contain deposits which in turn can foul the cooling tower in a short timeframe after the cleaning. There are various possibilities to clean these components separately. However, it is also possible to clean the entire cooling circuit at once, by circulating a chemical cleaner such as ScaleBreak-MP.

ScaleBreak-MP

Cleaning process explained

- Calculate the total water volume of the entire cooling circuit. This includes the cold water basin, piping, heat exchangers, and more.
- Depending on the type- and amount of deposits, and the alloys in play, a cleaning agent has to be selected. ScaleBreak-MP descaler is often a good fit while cleaning cooling towers and cooling circuits.
- Decide on the dilution rate of ScaleBreak-MP, and insert it into the cold water basin. Turn on the entire system and use the system itself to circulate ScaleBreak-MP.
- Monitor the pH-level of the water and add ScaleBreak-MP if necessary. After the recommended circulation time has expired and no activity is seen anymore, you can finish the cleaning process.
- Increase the pH-level if the fluid is still acidic by using neutralizer powder, and then discharge the solution according to local regulations.
- Flush your system with clean water and then discharge once more to remove all left over product. Return your equipment back to service.

Evaporative condenser descaling

Evaporative condensers have tubes that over time become fouled on the outer side with scale deposits and other types of fouling This has a negative effect on the heat transfer between the two media, which ultimately leads to a lower efficiency and thus a reduced output.

Goodway Benelux regularly supplies ScaleBreak-MP descaling liquid to contractors and end customers, for chemical cleaning and descaling of those condensers. ScaleBreak-MP is added to the water basin of the cooling tower, and circulated through the the entire installation by the existing pump. This way, all components of the evaporative condenser are cleaned, including the tubes and nozzles.

Advantages

Chemical cleaning-in-place of the entire cooling circuit adds significant value. In one pass, all connected equipment is cleaned, including piping, pumps, compressors, and heat exchangers.

- One cleaning for all systems, at the same time.
- No disassembly of equipment required for cleaning.
- No separate pump system is required for circulation of the chemical.
- Significantly increase the heat transfer, by removing (scale) deposits inside the entire circuit.

ScaleBreak-MP descaler

ScaleBreak-MP is a unique blend of citric acid with corrosion inhibitors, wetting, and penetrating agents. It is designed for safe descaling of a wide range of alloys, and offers excellent cleaning results and speed.

- Safe for many alloys (incl. galvanized steel).
- Remove scaling, minerals, rust (Fe2O3), and biofouling.

Cleaning cold water basin and sumps

Over time, (macro) fouling such as slime, biofilm, mud, leaves, sand, scale, and more, could occur in cold water basins and central collection- and distribution tanks (sumps) of cooling tower systems. Even with a water treatment program in place, preventive cleaning is still required. If these deposits are not removed from time-to-time, it will migrate into piping and other connected installations, like heat exchangers or chillers.

CTV-1501

The CTV-1501 is a powerful water vacuum system, with a flow up to 189 liters per minute. This system removes (macro) fouling on the bottom of water basins or central sumps without having to drain the entire water contents. The water loss during cleaning is around 10% of the total water volume in the basin. The cleaning job can be done while the cooling tower remains in operation.

- Remove fouling without draining the system.
- Water loss during cleaning around 10%.
- Adjustable flow rate of up to 189 liters/minute.
- Semi-automatic pump priming system.
- Connect to CTV-F2 filter system for 0% water loss.
- Commonly used to clean cooling towers from EVAPCO and BAC.

CTV-F2 water filtration system

In countries or areas where water is scarce and expensive, filtering the water basin water can be an ideal solution. For this application, the CTV-F2 can be used in conjunction with the CTV-1501 water vacuum system. Two 5-micron filters ensure that the collected water is filtered and can be returned into the water basin, making sure that no water is being lost during the cleaning process. Please note that eventually the water will have to be drained whenever it reaches the maximum TDS levels.

Fouling in cold-water basin

(Macro) fouling inside the cold-water basin can have a detrimental effect to the cooling tower and loop. Some potential issues:

- Fouling can settle in “dead zones” with little flow and form a breeding ground for micro-organisms.
- Fouling can enter connected installations to the cooling tower, such as the piping, condenser tubes of the chillers, or plates of the plate heat exchangers.
- Polluted water can contaminate the other components of the cooling tower, such as the fills and drift separators.

Learn more about the CTV-1501 on our website. →

Cleaning louvers and fill

Scale-, mineral-, and biological deposits on air intake louvers and fills of cooling towers negatively impact the efficiency levels and hygiene safety of cooling towers. Goodway Benelux offers different solutions to clean and descale those louvers and fills of cooling towers.

TFC-JR

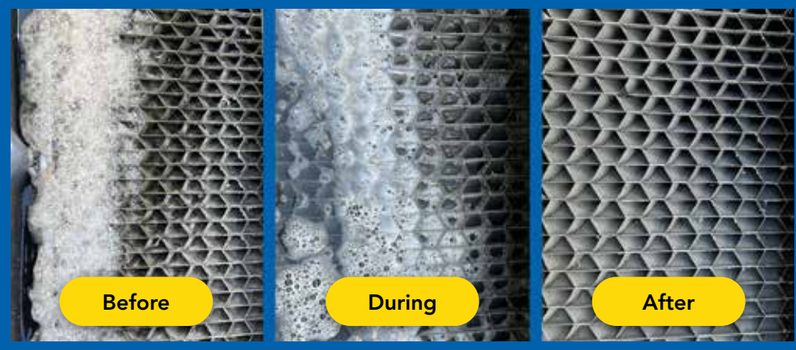
- Use to apply ScaleBreak-Gel
- Low-pressure spray

CC-400HF

- Remove chemical/deposits
- High flow, low-pressure

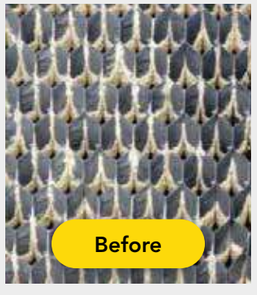
Cleaning louvers by submersion

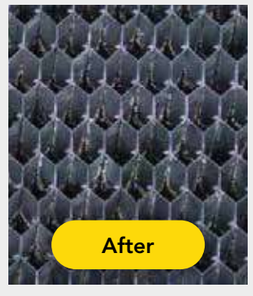
When cooling tower louvers are heavily fouled with scale deposits, it can take too long while cleaning with ScaleBreak-Gel. In that case, it is easier and faster to submerge the louvers into a basin or sump filled with ScaleBreak-MP descaler. Make sure to fully submerge the louvers and create a flow/circulation in the basin to make sure the descaler remains active.



ScaleBreak-Gel

ScaleBreak-Gel is a very effective cleaner designed to remove thorough scale- and mineral deposits on vertical surfaces, such as cooling tower fill and air intake louvers. The low viscosity, acidic formula adheres to the application and does not immediately ‘‘fall off’’ due to the gel-like substance. This significantly increases the effectiveness compared to other descaling products.





Cleaning process

Removing scale- and mineral deposits from the cooling tower fill and air-intake louvers is an easy and safe process with ScaleBreak-Gel and the cleaning systems.

1. Rinse the surface with the CC-400HF system.
2. Apply ScaleBreak-Gel on the surface with the TFC-JR system.
3. Remove ScaleBreak-Gel from the surface with the CC-400HF system, after a few minutes.
4. Repeat this process, until the deposits have been removed from the surface.

Video of the TFC-JR in use

Check out this page to see how a cooling tower fill can be cleaned. →

7 COIL CLEANING

Air-cooled installations, such as chillers and condensers, do have coils which require regular cleaning and maintenance. If left unchecked, deposits will build up on the coils. Those deposits will cause a drop in efficiency quickly, due to a reduction in airflow. Goodway Benelux supplies low-pressure coil cleaning equipment for service companies and end-customers, to be able to clean the coils of those air-cooled installations effectively and safely. Optimize your maintenance program by cleaning the coils of your air-cooled installations regularly.

Coil cleaning is used for:

- Chillers and condensers
- Dry coolers
- Gas coolers
- Air handling units

Do you want to learn more about coil cleaning?

Check out this short 1,5-minute video was made at a HVAC/R rental company during an air-cooled chiller coil cleaning. →

More about coil cleaning

Regular and preventive coil cleaning of air-cooled installations is crucial to maintain optimal efficiency and lifetime of the installation. Fouling on coils reduces the airflow, and therefore heat transfer of the installation. This reduction leads to an increase in energy- and running costs. Common pollution on the cooling coils consists of pollen, flies, dust particles and more. When regular high-pressure cleaning systems are used to clean the coils, results are often counterproductive. Due to the higher pressure, fragile fins can be easily flattened and damaged. Goodway Benelux offers something different, namely; low-pressure and high-flow coil cleaning equipment.

Applications

Goodway® coil cleaning systems can be used to clean different types of heat- and cooling systems. In general, the maximum thickness of the coils which can be cleaned is 200 millimeters.

- Chillers
- Dry coolers
- Gas coolers
- Condensers
- VRF/VRV systems
- (Outdoor) Heat pumps

Low-pressure coil cleaning

Goodway® coil cleaners combine a low-pressure spray with a high flow of water. This combination ensures a maximum (deep) cleaning, while minimizing risk for potential damages to fragile fins. With Goodway® coil cleaning systems, it's also possible to clean microchannel coils.

Fouling

Goodway® coil cleaning equipment is used to remove all kinds of deposits from air-cooled installations.

- Pollen
- Dust particles
- Biological fouling (flies etc.)
- Other macrofouling

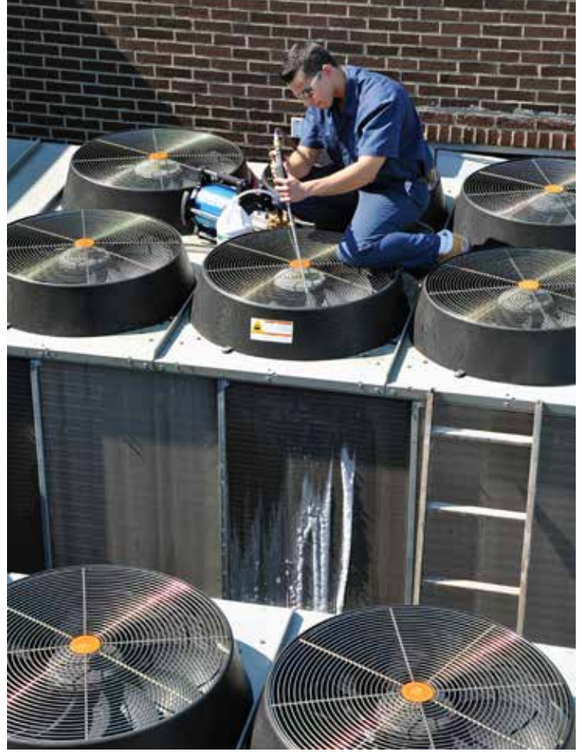
Advantages

- √ **No damage to coils** due to low-pressure systems that operate at 30 BAR, or less. Compared to high-pressure cleaners with 80-100 BAR the safety is considerably higher.
- √ **Optimal results** due to specialized equipment and accessories such as the 90 degree spray lance "wonderwand" which allows for cleaning from the inside out.
- √ **Degrease coils** during cleaning when using Goodway®'s coil cleaner; coilshine. This cleaner also degreases the coils which is essential to regain optimal heat transfer.
- √ **Multi-purpose** systems, the CC-400HF coil cleaner can also be used to clean cooling tower components, such as the fill and air intake louvers.

CC-400HF coil cleaning system

The CC-400HF coil cleaning system is perfect for effective and safe coil cleaning processes. This system combines a low-pressure spray of 30 BAR with a high flow of water at 12 liters per minute. The low-pressure spray ensures that the fragile coils and fins of air-cooled installations aren't damaged. The high flow of water offers a strong deep cleaning, due to the amount of water that is flushed through the coils. The CC-400HF coil cleaning system is used with several accessories, which make the cleaning process much easier and quicker for the operators.

CC-400HF



★★★★★

"We use the CC-400HF to periodically clean a large number of air-cooled condensers. Due to the low-pressure jet and high flow, we can clean the coils well without damaging them. In combination with Coilshine, we can also degrease the coils immediately, which ensures better heat transfer after cleaning."

SIEMENS energy ***Siemens Energy** – Belgium*

Complete package

Goodway Benelux regularly supplies a complete coil cleaning package to its clients. This often consists of the following products.

Coil cleaning system

1

Various nozzles and lances

2

Coil cleaner and degreaser

3

Inside-out cleaning

Larger v-shaped installations can be cleaned from the inside out, with the "Wonderwand" lance. This allows for the pollution to be sprayed out of the coils, instead of it being flushed into the system. The Wonderwand is a special, thin spray lance with a 90 degree nozzle for this purpose. These fit between the grilles of the fans, so they do not have to be dismantled for a coil cleaning job.

- Flush deposits out of the system
- Reduce labor, no need to remove fans
- Improve on cleaning result and speed

Learn more about the CC-400HF coil cleaning system on our website. →

Coil cleaning accessories

The (CC-400HF) coil cleaning system(s) can be supplemented with various accessories. These accessories range from different types of spray nozzles, to extension lances and flexible spray tools. The following parts are recommended.

QDN-45
SKU: QDN-45

This 45-degree spray angle tool allows operators to clean difficult areas or hard to reach spots.

QDN-90
SKU: QDN-90

This 90-degree spray angle tool allows operators to clean difficult areas or hard to reach spots.

Extension lance
SKU: 9657, 9658, 9659

This tool is designed to clean surfaces at longer distances without having to put the gun right near the coil.

Wonderwand
SKU: 8945-36, 8945-48, 8945-60

The Wonderwand is a thin lance with a 90-degree spray head. It is thin enough to go through the grills of the fans, therefore eliminating the need to remove them.

Flexible spray tool
SKU: 9650

This flexible tool allows operators to clean difficult areas or hard to reach spots and can be bent according to the needs. It has a total length of 25 centimeters.

Coilshine

This biodegradable, non-acidic, concentrated coil cleaner easily removes fouling and degreases coils at the same time.

CoilPro Junior for smaller applications

Smaller (outdoor) air-conditioning systems and heat pumps can be found in all types of buildings. Goodway Benelux offers a portable, lightweight, battery-powered coil cleaning system, to clean those smaller air-conditioning systems easily and effectively. The CoilPro Junior is equipped with an onboard water- and chemical tank. The CoilPro Junior combines a high flow and low-pressure, to safely clean air-cooled applications.

- Low-pressure, 9 BAR.
- Waterflow of 2,5 liters/minute.
- Weight of 10KG.
- Battery powered.
- Onboard water- and chemical tank.

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