



Cooling Water Treatment Solutions

Dow does that.





Smart solutions for tough cooling issues.

In an environment where scarce water resources, tightening regulations and pressure to control operating costs present real challenges, Dow offers the industry-leading technologies and expert support you need to address the issues you face and operate more efficiently.



W O M

Microbial contamination

In addition to contributing to equipment fouling, heat transfer issues, flow restrictions and microbiologically-induced corrosion, biological fouling with organisms such as *Legionella* can pose a serious health hazard. Dow's comprehensive solutions include a broad portfolio of biocides and monitoring tools, bio-penetrants, dispersants, and ultrafiltration (UF) and reverse osmosis (RO) membranes.



W O M

Scaling

To help minimize problems with scale that can lead to reduced heat exchange and process efficiencies along with higher operating costs, Dow draws on a portfolio of technologies that include scale inhibitors, ion exchange resins and nanofiltration (NF) or RO membranes for softening or demineralization.



W O M

Fouling

Reducing thermal efficiency, damaging assets and increasing the total cost of water, fouling can be a problem for cooling water systems in virtually any environment. Dow has a powerful array of tools for minimizing fouling, from industry-leading biocides and antiscalant portfolios to advanced UF, RO and advanced particle filtration technologies and particulate dispersants.



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Corrosion

Not only can corrosion decrease heat exchange and process efficiencies, it can also increase the need for expensive cleanings, and even cause equipment failure. Dow offers integrated treatments for addressing corrosion issues and extending asset life, including non-oxidizing biocides and select scale inhibitors.



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Resistive, hard-to-clean fouling

Highly resistive fouling can be expensive to clean. Still worse, it can cause process upsets and costly downtime. Dow's solutions integrate targeted biocides with low-foam surfactants, chelants, solvents and amines to remove heterogeneous fouling layers with maximum efficiency.

Dow Cooling Water Solutions

W Dow Water & Process Solutions O Dow Oil & Gas M Dow Microbial Control

Industry-leading technologies. Problem-solving expertise.



From energy companies to industrial manufacturers, Dow's expertise in cooling water treatment is making a difference for companies around the globe. Together with your service provider, we can help you save money, prevent problems, and manage your water resources.

With dedicated experts and extensive portfolios in biocides, antiscalants, softening and demineralization products, and filtration technologies, we offer capabilities on a global scale. But our approach to cooling water management is distinctly local. We work hand in hand with individual customers, service providers and equipment manufacturers to provide solutions for improving operations and advancing business goals. Dow can help you:

- Protect your assets and equipment
- Maximize heat exchange and process efficiencies
- Cut chemical and mechanical cleaning costs
- Reduce water usage
- Minimize process upsets and unit downtime
- Comply with local regulations

At Dow, we want to be a resource for you in learning about solutions to cooling water challenges. Be sure to continue working with your service providers, distributors and OEMs to purchase our products and benefit from their expertise.

Dow runs through it.

Throughout the cooling water operation, Dow offers novel and advanced technologies to help companies achieve cost savings, operational efficiencies, and environmental goals.

1 COOLING TOWER MAKE-UP WATER TREATMENT

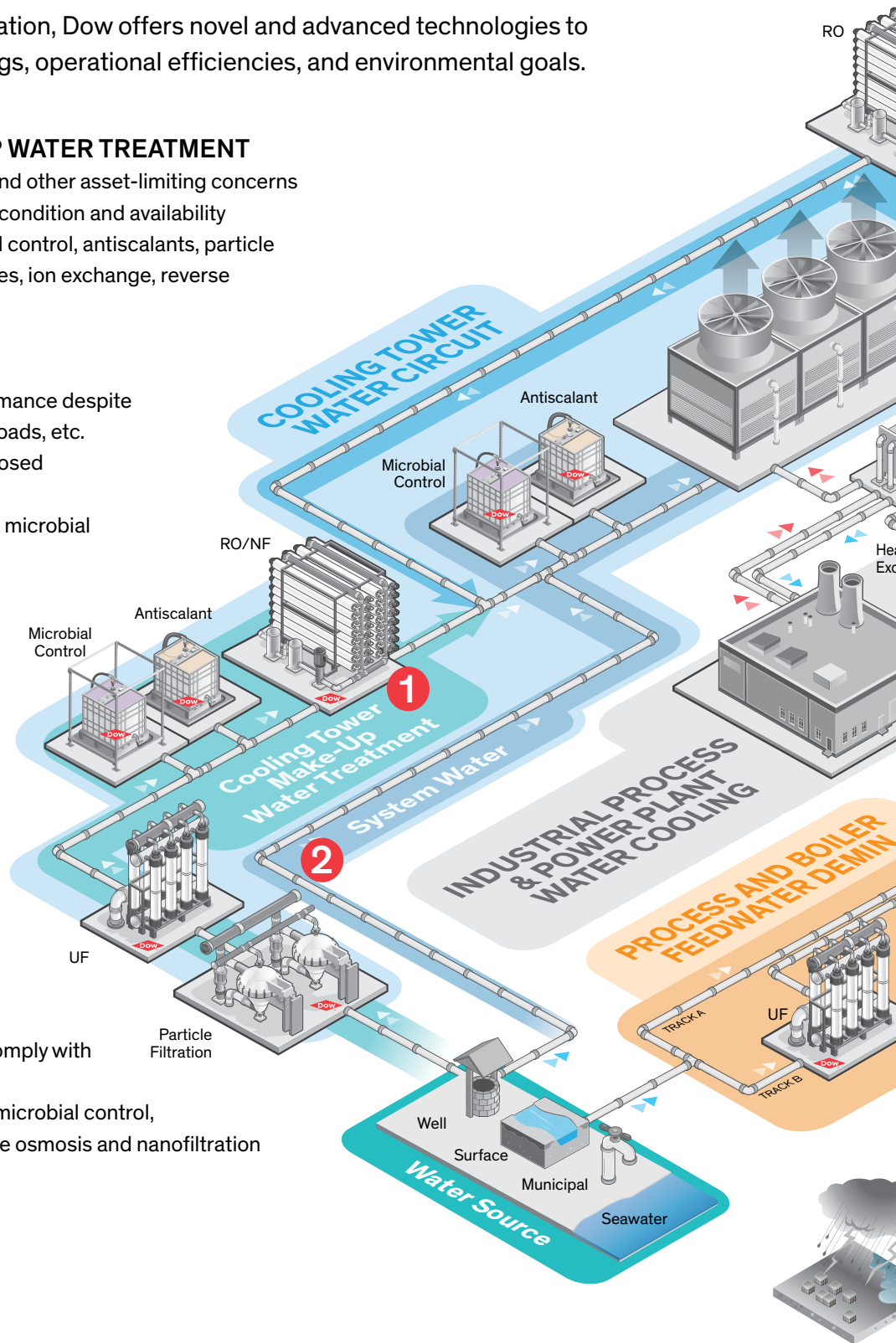
- Reduce corrosion, scale, fouling and other asset-limiting concerns
- Solutions to fit your water source, condition and availability
- Technology mix includes microbial control, antiscalants, particle filtration, ultrafiltration technologies, ion exchange, reverse osmosis and nanofiltration

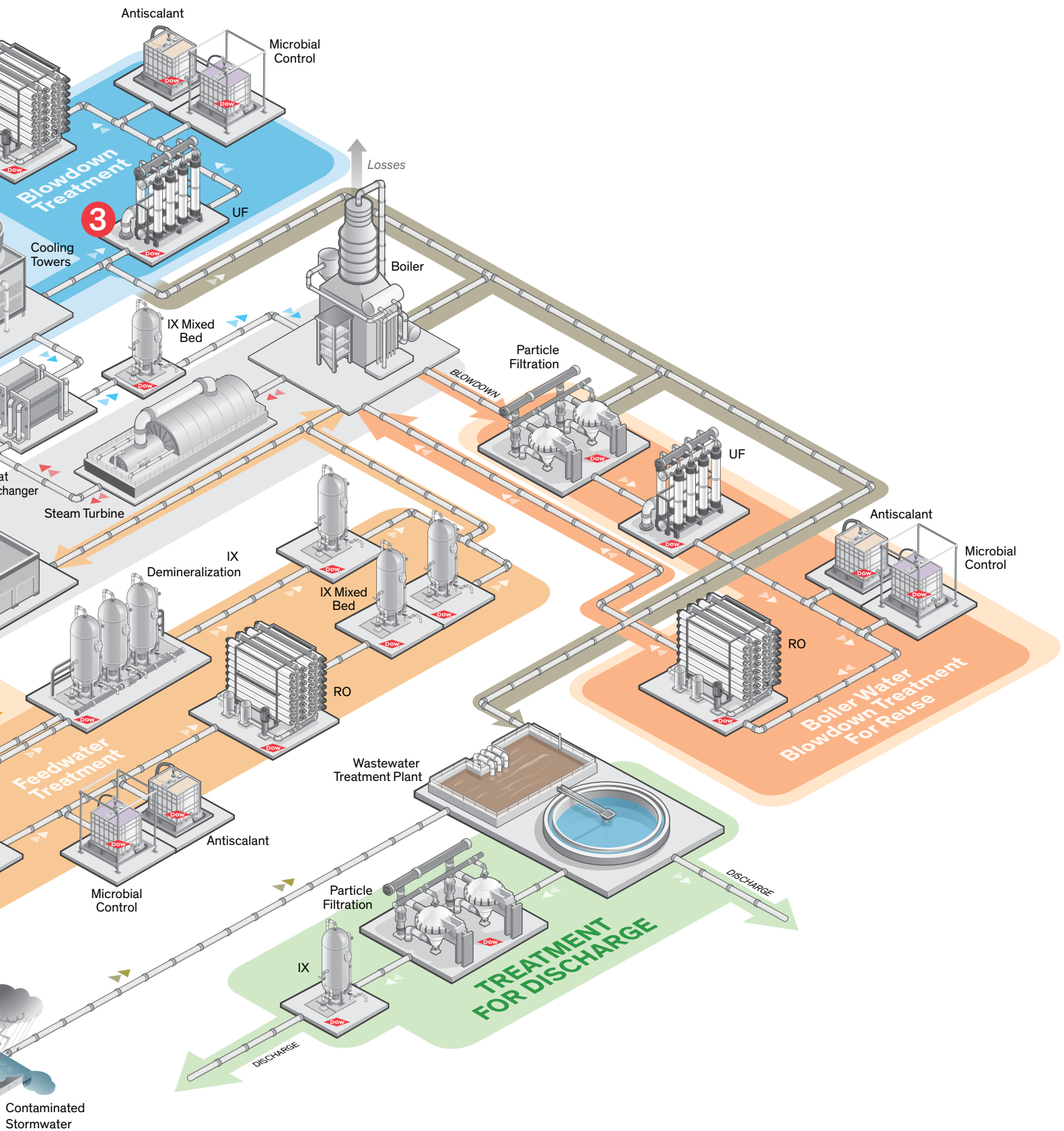
2 SYSTEM WATER

- Achieve consistent system performance despite variability in water, process, heat loads, etc.
- Optimized solutions for open or closed cooling tower systems
- Integrated approach incorporates microbial control and antiscalants

3 BLOWDOWN TREATMENT

- Recover and return up to 90% of blowdown water for makeup
- Reduce water usage and costs; comply with regulations more cost-efficiently
- Solutions combine ultrafiltration, microbial control, antiscalants, ion exchange, reverse osmosis and nanofiltration





Antiscalants



Antiscalants, with world-class performance, play a key role in helping keep operations running free of deposits, avoiding heat transfer loss and downtime. Dow's patented OPTIDOSE™ dosage monitoring system facilitates safety without product overuse.

Recommended products:

- ACUMER™ 1000 series
- ACUMER™ 2000 series
- ACUMER™ specialty grades

Ion Exchange



Ion Exchange resins efficiently remove ionic impurities and can produce softened, partially or fully demineralized water up to ultrapure water quality. An excellent choice as a pretreatment or post-treatment to RO and UF units, ion exchangers reduce residual TDS for process, cooling and boiler feedwater systems. Selective removal of metallic, organic and ionic trace contaminants with Dow ion exchange resins can treat blowdown waste streams to render them safe for reuse or discharge.

Recommended products:

- AMBERLITE™ Ion Exchange Resins
- AMBERJET™ Ion Exchange Resins
- AMBERSEP™ Ion Exchange Resins
- DOWEX MARATHON™ Ion Exchange Resins

Microbial Control



Microbial Control solutions help reduce biofouling and control microbial challenges, reducing biofilm on heat exchangers and spray nozzles, with reduced risk of corrosion versus other technologies. This helps you improve the water quality to meet local regulatory requirements and reduce the risk of pathogens, with a portfolio of liquid and solid products to meet your handling, transportation and storage needs.

Recommended products:

- AQUACAR™ Water Treatment Microbiocides
- KATHON™ Microbiocides
- ROCIMA™ Microbiocides

Particle Filtration



Particle Filtration treats difficult feedwater up to 10,000 mg/L of suspended solids without frequent filter changes and in the presence of oil. Prevent or reduce fouling from entering the cooling system with a full or side-stream filtering. An excellent choice as either a stand-alone unit or as a pretreatment for downstream UF and RO, it helps significantly reduce fouling, maintenance, downtime and consumables costs, while extending asset life.

Recommended products:

- TEQUATIC™ PLUS F-75 Filter
- TEQUATIC™ PLUS F-150 Filter

Reverse Osmosis/Nanofiltration



Reverse Osmosis/Nanofiltration, using globally recognized Dow technologies, offers an excellent balance between efficient contaminant removal, demineralization, reliability and cost-effectiveness. Dow RO and NF elements remove a broad range of molecules and ions helping to increase the number of cooling tower cycles, reducing water intake and the need for chemicals, by enabling reuse and decreasing the impact of poor or variable make-up water on cooling system management.

Recommended products:

- DOW FILMTEC™ ECO-440i Elements
- DOW FILMTEC™ HRLE-440i Elements
- DOW FILMTEC™ BW30XFR-400/34i Elements
- DOW FILMTEC™ SEAMAXX™ Elements
- DOW FILMTEC™ SW30HR-370/34i Elements

Ultrafiltration



Ultrafiltration reduces colloids, particles and bacteria in a continuous system, helping to deliver higher reliability and lower maintenance with a smaller system footprint. An excellent choice as a pretreatment for downstream units like RO, UF helps reduce the impact of poor or variable make-up water on cooling system management.

Recommended products:

- DOW IntegraPac™ Skids
- DOW IntegraFlux™ Modules
- DOW™ Ultrafiltration SFP-2880 Modules

Global knowledge, local expertise.

Environmental conditions, regulations, business needs—every cooling operation has different requirements and goals. Dow's Application Centers are there to help, with locally focused problem solving and expert support in locations worldwide.



For more information about Dow Cooling Water Solutions, contact us at:

Dow Water & Process Solutions

Dow's exceptional portfolio of products and deep expertise in water separation technologies help improve businesses and lives worldwide.

waterandprocess.dow.com

Dow Microbial Control

As a leading provider of biocide and antimicrobial technologies, Dow plays a key role in helping protect enterprises from the effects of harmful microorganisms.

microbialcontrol.dow.com

Dow Oil & Gas

From exploration and production to refinery operations, Dow's industry-leading products and expertise help energy companies turn challenges into opportunities.

oilandgas.dow.com

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