COLUBRIS

Advanced Water Solutions

Engineering water beyond compliance



When conventional
treatment reaches
its limits

Additional treatment? But my effluent already looks crystal clear.

Crystal-clear water can still contain invisible contaminants. Although biological treatment removes almost all visible contaminants, traces of PFAS, pharmaceuticals, industrial chemicals, pesticides, and other persistent compounds may remain. These contaminants are often present at extremely low concentrations, yet they can accumulate in the environment and increasingly determine whether water is suitable for discharge, reuse or drinking water production.

At the same time, regulations continue to evolve. Compounds that were ignored a decade ago may become tomorrow's compliance challenge.

Removing these contaminants requires technologies that go beyond conventional wastewater treatment. Depending on the challenge, this may involve advanced oxidation, selective adsorption, membrane processes, ion exchange, crystallization, evaporation or other specialized treatment concepts.

Some technologies destroy contaminants. Others recover valuable resources. Some simply concentrate the contaminants, requiring a carefully designed downstream solution. Success rarely depends on selecting a single technology. It depends on selecting the right combination for your specific water quality, business objectives and future requirements. That's where Colubris adds value.

Innovation with confidence

Sometimes conventional treatment simply cannot solve a new water quality challenge. Innovative technologies may offer the answer—but investing in an unfamiliar process requires confidence that it will perform reliably and deliver the expected results and business value. Colubris reduces this uncertainty through a structured validation approach. Depending on the challenge, we combine laboratory studies, on-site pilot trials and full-scale demonstrations to verify technical performance before major investment decisions are made.

Our process specialists work closely with universities, research institutes and our own R&D team to evaluate emerging technologies and translate scientific innovation into practical, reliable solutions. Innovation creates value only when it delivers reliable results in practice.

No room for expansion?

Environmental requirements continue to evolve. Stricter nutrient limits, newly regulated contaminants, greenhouse gas reduction and resource recovery often require additional treatment capacity—but many treatment plants have little or no space available for expansion.

Colubris helps industries and utilities unlock additional performance within their existing infrastructure. Depending on the challenge, this may involve compact retrofit technologies, process optimization or targeted process upgrades that increase treatment capacity, reduce energy consumption, improve nutrient recovery or minimize greenhouse gas emissions. Rather than replacing existing infrastructure, Colubris helps you unlock more value from your existing assets. For example, membrane-aerated biofilm reactor (MABR) modules can be installed inside existing biological reactors, significantly increasing nitrogen removal capacity without constructing additional tanks or disrupting the existing treatment process. Similar retrofit concepts can increase treatment capacity, improve effluent quality or recover valuable resources while making maximum use of existing assets.

Some of tomorrow's challenges are already influencing today's investment decisions. Greenhouse gas emissions such as nitrous oxide (N_2O) are one example. Colubris continuously develops new process concepts that help customers stay ahead of future regulations rather than reacting to them.



Engineering Tomorrow's Water Solutions

Wastewater treatment is changing rapidly. Climate change, urbanization, increasing water reuse, emerging contaminants and stricter environmental regulations continue to raise the standard for wastewater treatment. Challenges that received little attention only a few years ago—such as PFAS, pharmaceutical residues, hormones, greenhouse gas emissions such as nitrous oxide (N_2O), and resource recovery—are becoming key drivers for future investment decisions.

At Colubris, innovation is guided by business value. We believe new technologies should not only solve environmental challenges but also strengthen your competitive position through lower operating costs, improved resource efficiency or new revenue opportunities. That philosophy drives our continuous investment in research and development, helping our customers stay ahead of changing regulations, rising costs and future market demands.

Staying ahead is not about adopting the latest technology. It is about making the right investments before tomorrow's challenges become today's problems.

Tomorrow's **challenges** deserve more than yesterday's **technologies.**

Creating value throughout the entire water cycle.
Discuss your challenge with one of our specialists.

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Explore our complete water cycle series
- Advanced Water Solutions
- Biological Water Treatment
- Sludge Solutions
- Smart Pretreatment
- Water Reuse

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