Wastewater Treatment
Mixing

Engineered for life
Did you know that liquid pressure at a certain depth increases with the mass concentration of suspended solids? And that the total mass of suspended solids increases with the thrust of the mixer until complete suspension is achieved?

It’s based on facts like these that we have developed a great deal. Among them a fast and accurate method of measuring the total amount of suspended solids.

This is just one of the many scientifically ascertained, documented facts about mixing gathered through extensive study on tons of mind-boggling amounts of wastewater.

ITT Water & Wastewater have always maintained a highly advanced mixing laboratory and invest millions of US dollars on R & D yearly. We are collaborating with governmental institutions, like Cemagref, a public institute, with whom we are currently working on modeling (CFD) combined mixing and aeration systems in oxidation ditches.

PASSION AND EXPERTISE
Yes, indeed. You could say we’re passionate about the science and technology of mixing.

It is the focus of many of our scientists and engineers who are devoted just to the study of mixing components, suspension, viscosity and rheology, mixing pattern, fluid dynamics. And it finds proof in reports, scientific papers, databases and more.

All this extensive study means that the system designs we propose are grounded on qualified studies.

OUR BRAND HERITAGE
Our profound knowledge of wastewater and sludge is the bedrock of all ITT Water & Wastewater breakthrough innovations within mixing.

To us, our innovative technology should be translated into hardworking practicality for you: absolute performance, cost efficiency and reliability.

We invented the submersible mixer and thereby truly revolutionized the industry. We are definitely the world’s largest supplier of submersible mixers. To date, there are more than 100,000 Flygt submersible mixers installed in wastewater treatment plants around the world.

Our N-technology has advanced both the reliability and efficiency of jet mixers in demanding sludge mixing the world over. And we are proud to say that even now, after 25 years, our mixers with self cleaning banana blade propellers remain unmatched in long life, high efficiency and reliable operations.

TIMELINE OF INNOVATIONS

1958 first submersible mixer, the SP300

1977 first submersible mixer for wastewater applications, the 4500

Introduction of the thrust concept (ISO standard in 2007)

1984 first ultra high efficiency submersible mixer, the 4410
1992
first high-versatility, stainless mixer, the 4630

1998
first jet mixer for both dry and submersible installations with non-clog N-technology
The expertise behind every function

What is it ITT Water & Wastewater offers you that nobody else can within mixing? The deepest expertise together with a burning desire to deliver the best within wastewater and sludge treatment.

To us, it has all to do with functions. We look at a function as the specific mixing task that a particular product needs to perform at each particular stage of the treatment process.

Our emphasis on functions demands that we look beyond products, to an entire treatment plant, together with its operational challenges and goals. We make sure that the right functions are in place because this is key to smooth, cost-effective operations and trouble-free maintenance. And we set our focus on performance attributes.

After years of working closely with you, it stands to reason we have the expertise to think how you work.

THE POWER OF CFD

ITT Water & Wastewater are yet again leading the way into new mixing frontiers with the use of Computational Fluid Dynamics (CFD).

This powerful tool is today invaluable within all disciplines of fluid dynamics and mixing know-how. CFD enables masses of data and integrated parameters to be made available already in the planning stage of a project involving mixing design.

We are continuously developing the application of CFD in wastewater and sludge treatment using extensive verification of computational models for more precise results.
Mixing expertise in action

“We have used low speed mixers from ITT Water & Wastewater in our Gaobeidian sewage treatment plant for more than 10 years. Gaobeidian is one of the major treatment plants in Beijing, China. We are extremely happy with the performance of the products, and with the level of service and expertise that the company provides. We are now extending the treatment plant, and ITT Water & Wastewater is the obvious choice of partner for us.”

Mr. Yang, General Manager, Beijing Drainage Group, China

“We have ten low speed mixers from ITT Water & Wastewater in operation at the Brandholmen wastewater treatment plant. They’re in the secondary treatment, in a MBBR (Moving Bed Biofilm Reactor) process to keep the plastic carriers in motion. The mixers have been running 24/7 since 1997, and with a minimum of maintenance. The wear on them was very high, but ITT Water & Wastewater found a solution with a special paint that reduces wear significantly. The mixers have fulfilled their functions extremely well since the start.”

Mr. Anders Thunmarker, Brandholmen Treatment Plant, Sweden

“At the Duisberg-Rheinhausen treatment plant, we handle the waste from 220,000 inhabitants. After an expansion, sedimentation in the sedimentation ditches had become a costly problem for us, and cracks had appeared in the mixer stands, causing downtime. A replacement by the existing supplier failed to solve the problem. We needed a new solution, and ITT Water & Wastewater stepped in. Thanks to their wide knowledge, they were able to suggest improvements in tank design to increase the flow, which halved the required number of mixers. Sedimentation no longer occurs. Not only are we saving energy, but we are also clearly saving manpower. The mixers and the service have been excellent, and the investment has already paid for itself.”

Mr. Horst Zimmerman, Manager, Rheinhausen Sewage Treatment Plant, Germany
Mixers that get the job done

ITT Water & Wastewater offer a comprehensive range of mixers to cover every conceivable wastewater mixing need. Our products are specifically designed for wastewater and sludge, ensuring faultless performance under the toughest conditions.

All our mixers are built using self-cleaning technology to prevent clogging, which means that they deliver high reliability and easy maintenance. Our offering also includes installation as well as complete monitoring and control systems.

LOW SPEED MIXERS
Our low speed mixers effectively move and mix large volumes. All the while, they deliver very high reliability while incurring extremely low energy costs. They are the obvious choice in oxidation ditches and large tanks in biological treatments.

JET MIXERS
Our jet mixers feature both the sustained high-efficiency Flygt N-pump, and an engineered ejector. The result is a mixing system that is both easy to maintain and highly reliable. They are commonly used when dry installation is required and when mixing must be sustained during very low liquid levels.

COMPACT MIXERS
Our direct-drive stainless steel compact mixers provide cost-effective mixing solutions. Their compact design makes them easy to install in both new and existing tanks. These mixers work in a variety of tanks, biological treatment and sludge handling. The optional jet ring increases efficiency and reduces power consumption.

More information available at www.ITTtreatment.com
Mixing functions

Pump station mixing
Prevention of pump station wastewater sedimentation.

Grit chamber mixing
Mixing for maintaining suspension and grit washing.

Retention basin mixing
Mixing to prevent sedimentation.

SBR mixing
Homogenization in anoxic and anaerobic stages of the process.

Anaerobic zone mixing
Homogenization in anaerobic zone.

Anoxic zone mixing
Homogenization in anaerobic zone for denitrification.

Horizontal flow mixing
Flow making to achieve horizontal flow in oxidation ditches.

Flotation thickening mixing
Mixing of removed primary sludge going to stabilization.

Digester mixing
Homogenization of sludge in digester and blending of incoming raw (undigested) sludge with digester content.

Sludge storage mixing
Homogenization of sludge for dewatering and/or prevention of sedimentation.
What can ITT Water & Wastewater do for you?

Integrated solutions for fluid handling are offered by ITT Water & Wastewater as a world leader in transport and treatment of wastewater. We provide a complete range of water, wastewater and drainage pumps, equipment for monitoring and control, units for primary and secondary biological treatment, products for filtration and disinfection, and related services. ITT Water & Wastewater, headquartered in Sweden, operates in some 140 countries across the world, with own plants in Europe, China and North and South America. The company is wholly owned by the ITT Corporation of White Plains, New York, supplier of advanced technology products and services.

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