Lightnin®

WATER AND WASTEWATER TREATMENT

Lightnin Mixers

SPXFLOW®

LIGHTNIN FOR KNOWLEDGE, TECHNOLOGY AND SERVICE

A World Leader in Industrial Mixing since 1923, Lightnin has over 100 years of unrivaled experience in industrial mixing technology, process knowledge, and technological innovation.

In Water and Wastewater Treatment

Knowledge

With over 100 years of experience, Lightnin has developed many of the mixing techniques considered standard in the water and wastewater industry today and has the knowledge to lead the industry in developing the highest quality products.

Technology

We continually push the mixing envelope in water and wastewater treatment technology with innovative new impeller designs – putting us one step ahead of our competition. Our extensive R & D labs allow us to optimize process results.

Service

Fastest Route To Uptime

- **Expertise:** Experienced technicians are the backbone of our dedicated service organization. They're uniquely qualified to keep your Lightnin mixers running right.
- **Lightnin Certified Technicians:** Aftermarket technicians are certified via training courses to ensure that the work they do meets the highest standards for consistency and reliability.
- **Genuine Lightnin Parts:** All repairs follow original design specs and use only factory-authorized replacement parts.
- **Full Lightnin Factory Warranty:** We are so confident we'll do the job right that all authorized repair and service work is covered by a full factory warranty. Factory Service Program, Exchange Program = Minimal Downtime, Quick Turnaround.

Water and wastewater operations run efficiently for years as a result of Lightnin workmanship, durability, and long-term service support.

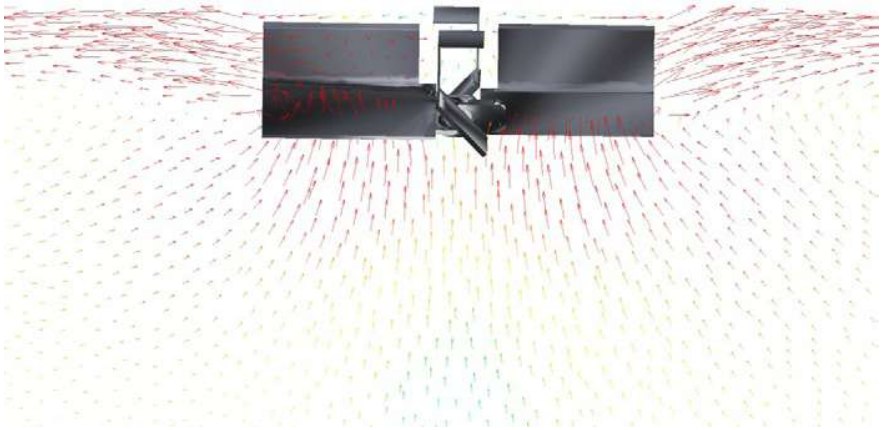
Lightnin for Experience

Our experience comes from applying Lightnin mixing expertise to water and wastewater facilities, large and small, in thousands of locations throughout the world.

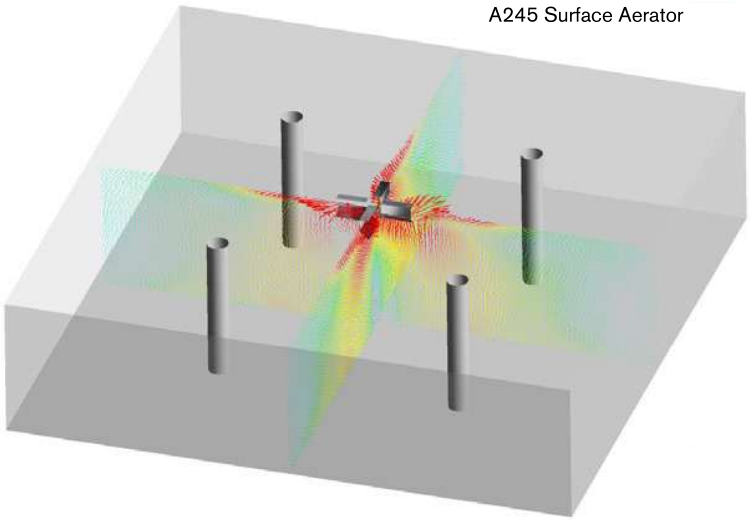
For many years we've been helping customers put together mixing operations that work for their needs.

Computational Fluid Dynamics

Fluid flow pattern of surface aeration



A245 Surface Aerator



Advanced Solutions for Optimized Process Performance

At the heart of SPX FLOW's continuous development program is its dedicated, industry leading research center. Used on a daily basis to support its customer base the extensively equipped facility is manned by highly talented researchers and engineers, producing innovative solutions for difficult mixing applications, ensuring that the Lightnin brand remains at the forefront of Mixing Technology.

Series 45 Inline Mixers

Inliners are near plug flow devices, and can provide significant advantages in many continuous mixing applications.

- An inliner in turbulent flow ensures a rapid blend time, and removes the risk of stratification that can occur if mixing is left to natural turbulence alone
- Ideal choice for continuous blending, dosing sampling systems, difficult mixing duties and many other applications

ECL Mixers

ECL Mixers provide high performance and enhanced process results.

- A mixer duty motor with standard mounting allows for many speed and enclosure variations
- Large output shaft bearings for longer allowable shaft lengths and long life
- Ideal for flash mixing
- Available in 0.25 - 4 kW (0.25 - 5 HP) with speeds up to 1800 rpm

Side-Entry Mixers

Side-Entry Mixers are designed for easy installation and high-efficiency operation.

- Bearings greatly exceed AGMA requirements for durability and long service life
- Shaft bearings are located outside the tank to prevent corrosion and contamination
- Available in 0.75 - 55 kW (1 - 75 HP) with speeds of 190 to 420 rpm for 60 Hz and 230 - 350 rpm for 50 Hz

Series 10 Mixers

The Series 10 delivers a superior combination of value and performance.

- Now available with a tall pedestal for easy oil change.
- Unmatched durability - long gear and bearing life
- Fewer moving parts simplifies maintenance
- Unique output shaft connection
- Ideally suited for mixing and flocculation applications
- Available in 0.75 - 22.5 kW (1 - 30 HP) with speeds from 9 rpm with double - 125 rpm

Series 70/80 Mixers

The most specified and most proven mechanical design technology in the world makes these mixers ideal for a wide range of applications.

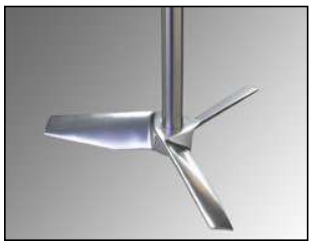
- Bearings are sized far beyond AGMA requirements for minimum maintenance and long service life
- Helical change gears are easy to replace to meet new or changing processing requirements
- Available in 0.75 - 110 kW (1 - 150 HP) with speeds from 11 to 280 rpm

Series 700/800 Mixers

The largest and heaviest standard duty drives made specifically for mixing.

- Built to withstand severe bending and high torque loads
- Independent bearing support for the Series 800 was originally developed by Lightnin and isolates the gear box from the mixer blending loads
- Ideally suited for aeration and sludge mixing applications
- Available from 15 - 450 kW (20 - 600 HP) with speeds from 12 to 200 rpm

FLOW - IMPELLERS



A510 Impeller

For low viscosity flow controlled applications.

- Combines performance and high flow efficiency
- 40% lower power requirements than pitch blade turbines
- Available in various blade angles to optimize process results

A6000 Impeller

A unique alternative to metal impellers for flow controlled applications.

- High grade vinyl ester resin system
- Offers strength and corrosion resistance in hostile environments
- Optimized air-foil design, 25% more efficient than A510

A333 Clean Edge Impeller

Designed for municipal waste treatment applications.

- Patented impeller prevents rag accumulation
- Achieves steady and stable operation in hard operating conditions
- Exhibits the same blending efficiency as a hydrofoil impeller

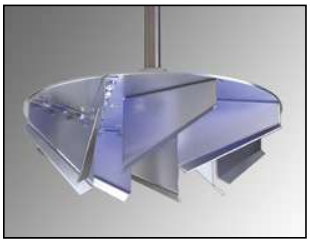
A540 Clean Edge Impeller

- For flash mixer tanks with flow inlets and outlets both located near the bottom of the tank, A540 impeller technology from Lightnin has been successfully applied to minimize short circuiting.
- The A540 pumps fluid upward in the tank and can be placed close to the tank bottom, thus forcing the incoming inlet flow upward into the tank allowing it to circulate through the tank before leaving.

AERATION - IMPELLERS

A245 Impeller

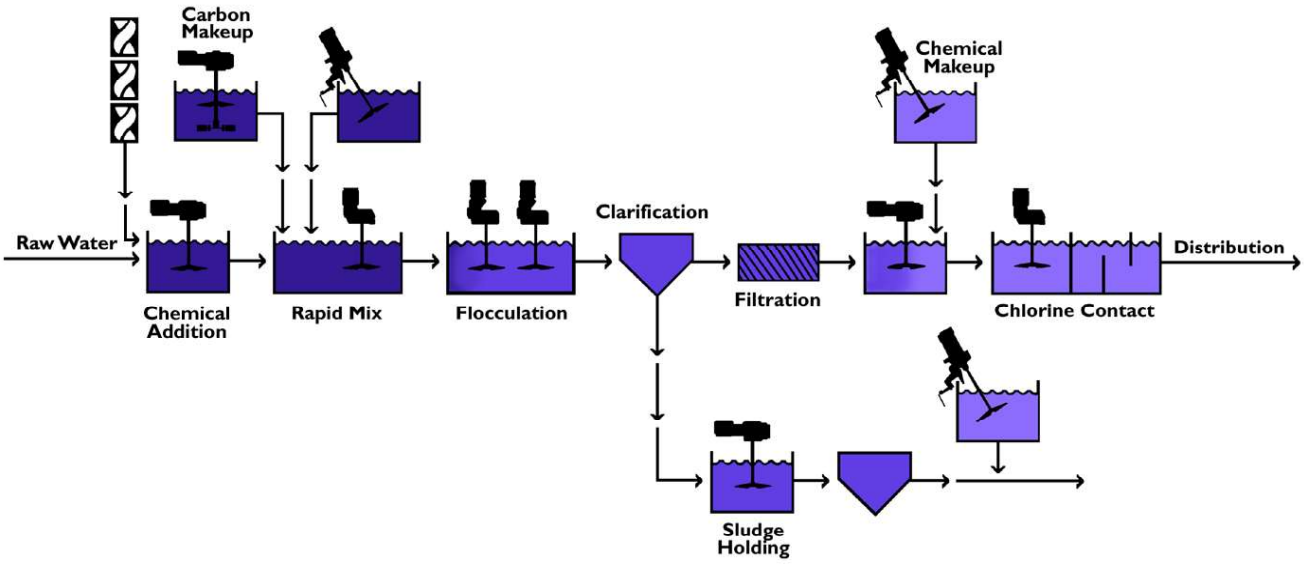
- Enhancement of the A240
- Additional “splash guard” improves aeration efficiency by channeling water
- Lower splash than A240
- Efficiency improvement of up to 20% versus PBT
- Patented technology



R335 Impeller

- Our most efficient surface aeration impeller
- Low discharge trajectory - reduced splash
- Liquid level sensitive - reduces torque requirements
- Efficiency improvement of up to 25% versus PBT

WATER TREATMENT



Flash Mixing

Liquid, gaseous or solid chemicals are instantaneously dispersed into a water stream. Horsepower (G Factor) alone is not appropriate when utilizing high-efficiency impellers Hydraulic capabilities and flow efficiencies give a more accurate measure. For flash mixing, maximum pumping capability is required with minimum shear. Too much shear before the flocculation step would damage the desired floc particles.

Flocculation

This step is the backbone of water and physical chemical waste treatment. Gentle agitation, maximizing flow and minimizing shear, is necessary to contact and agglomerate particles to form floc for sedimentation and filtration. As in flash mixing, a high-efficiency impeller is needed to prevent damaging the floc.

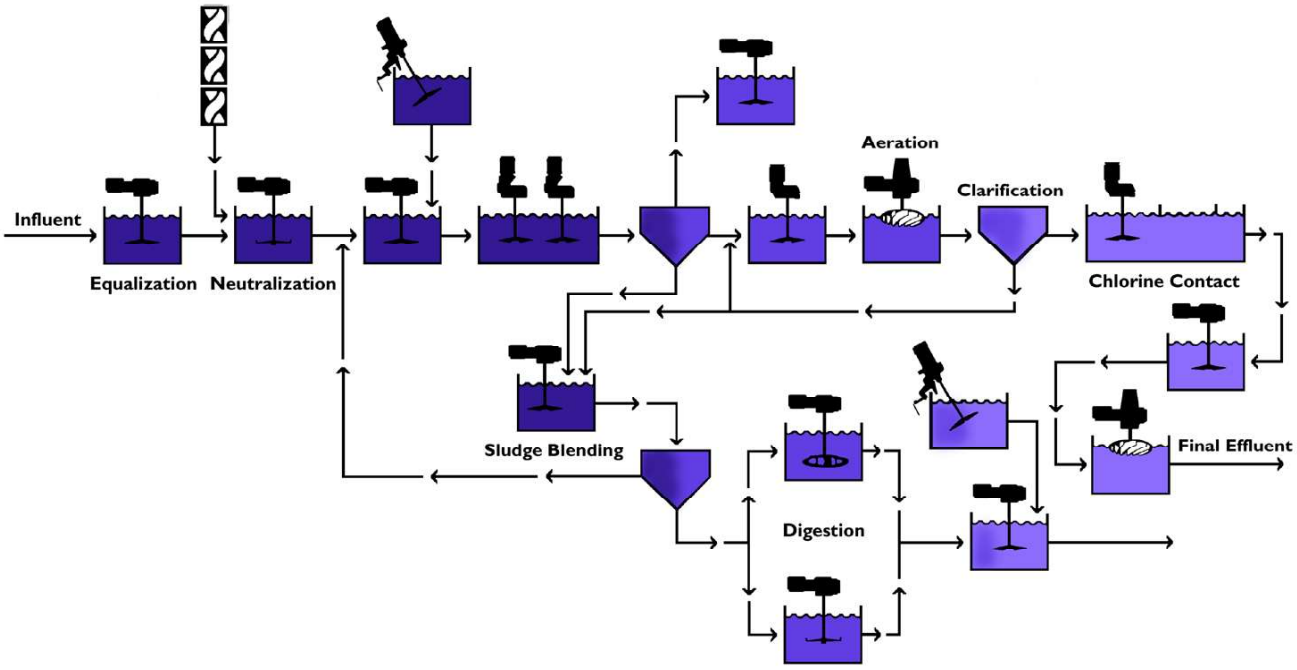
Chemical Makeup and Storage

The chemical additives required in water purification – carbon, chlorine, flocculating agents, and many other chemicals – can be handled more efficiently when added to a water stream in slurry or solution form.

Activated Carbon Slurry Mixing

Activated carbon – used to remove organics for taste, odor, and color control – has different requirements than other water treatment chemicals. Proper wetting during makeup is critical. Carbon must be drawn in and wetted with a high-flow impeller placed close to the surface. During storage it must be continuously suspended until pumped out for use.

BIOLOGICAL WASTE TREATMENT



Aeration

Effective aeration is critical to biological waste treatment. Aeration transfers the quantity of oxygen necessary to support biological growth, and also provides mixing to disperse the dissolved oxygen and suspend solids. Surface aeration is still the simplest and most efficient way to go. Submerged aeration technology, however, has undergone vast improvements to accommodate limited space or high strength waste in existing systems. In either case, equipment reliability during this stage is critical.

Neutralization

Influent water streams are neutralized by adding acid or caustic quickly in as small a basin as possible. Quick dispersion means more economical use of applied chemicals. Corrosion-resistant mixing equipment is recommended to handle wide pH swings.

Sludge Mixing

Uniform mixing to prevent solids settling is required in sludge holding tanks, sludge conditioning tanks, scum collecting tanks, and anaerobic digesters. A high efficiency impeller at slow speeds will generate the necessary flow. Corrosion resistance may also be important for equipment used in this process.

Equalization

Large lagoons or tanks are used to collect and hold waste streams for equalizing hydraulic or concentration variations. Dampening of pH fluctuations, temperature changes, concentration gradients, salt concentrations, etc., allow the design of downstream processes for average conditions rather than peak load periods. Floating mixers make installation simple and offer the flexibility of movement from one position to another, or from basin to basin.

Lightnin®

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SPXFLOW®

For more information, visit www.spxflow.com/lightnin.

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