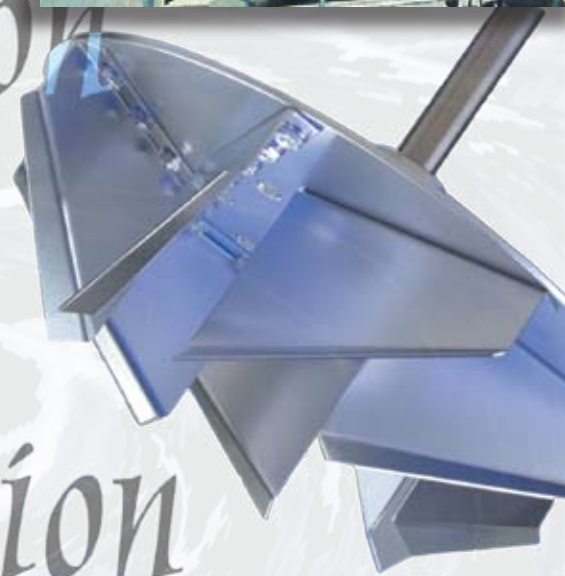


Water & Wastewater Treatment



Flocculation



Aeration



Mixing

LIGHTNIN FOR KNOWLEDGE, TECHNOLOGY AND SERVICE

In Water and Wastewater Treatment

Knowledge: With over 80 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: 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.

Mixer Models

Series 10



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

- Unmatched durability – long gear and bearing life
- Fewer moving parts simplifies maintenance
- Unique output shaft connection
- Ideally suited for mixing and flocculation applications

Series 70/80



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
- Mechanical seals are 100% factory tested and feature a cartridge design for easy, convenient replacement
- Helical change gears are easy to replace to meet new or changing processing requirements
- Available in 1 to 200 hp with speeds from 11 to 280 rpm

Series 98



Series 98 Mixers optimize productivity and reduce downtime.

- Available from 20 to 150 HP with AGMA speeds from 20 to 100 RPM
- Compact drive design requires significantly less oil for lubrication - eliminates need for large oil sump
- Parallel shaft, double-reduction design provides maximum installation flexibility

Series 700/800



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
- Independent bearing support isolates the gear box from mixer bending loads
- Ideally suited for aeration and sludge mixing applications

LIGHTNIN FOR KNOWLEDGE

We understand every phase of water and wastewater treatment, and apply LIGHTNIN mixing techniques and process know-how to optimize results.

Just about every step in a water or wastewater treatment process depends on suspending solids, or flow stream being mixed uniformly with a liquid or gas. The right degree of fluid motion and shear stress is critical during each stage.



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.

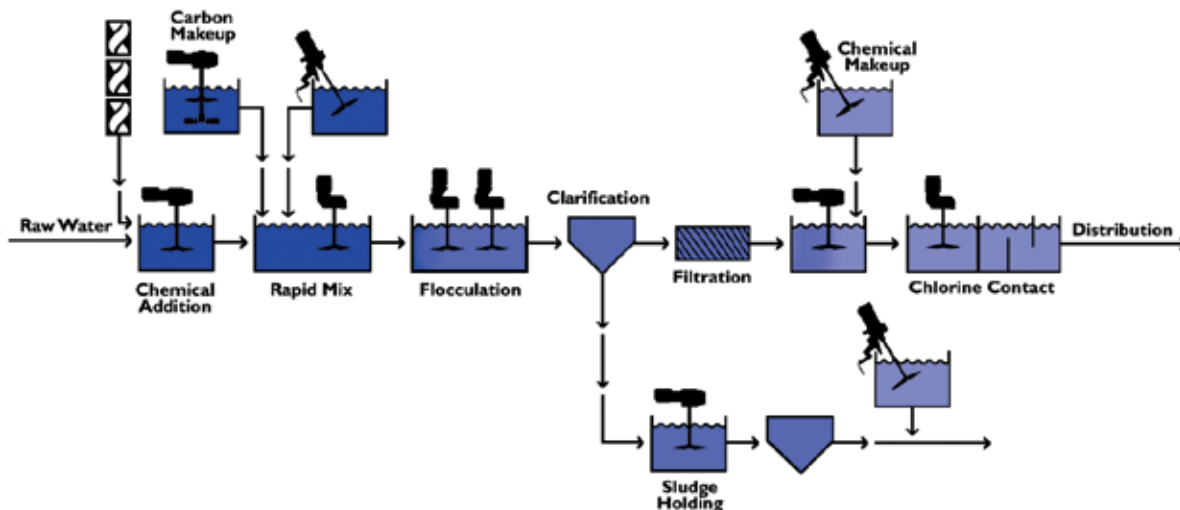
Chemical Makeup and Storage

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.

Water 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 dispersement means more economical use of applied chemicals. Corrosion-resistant mixing equipment is recommended to handle wide pH swings.

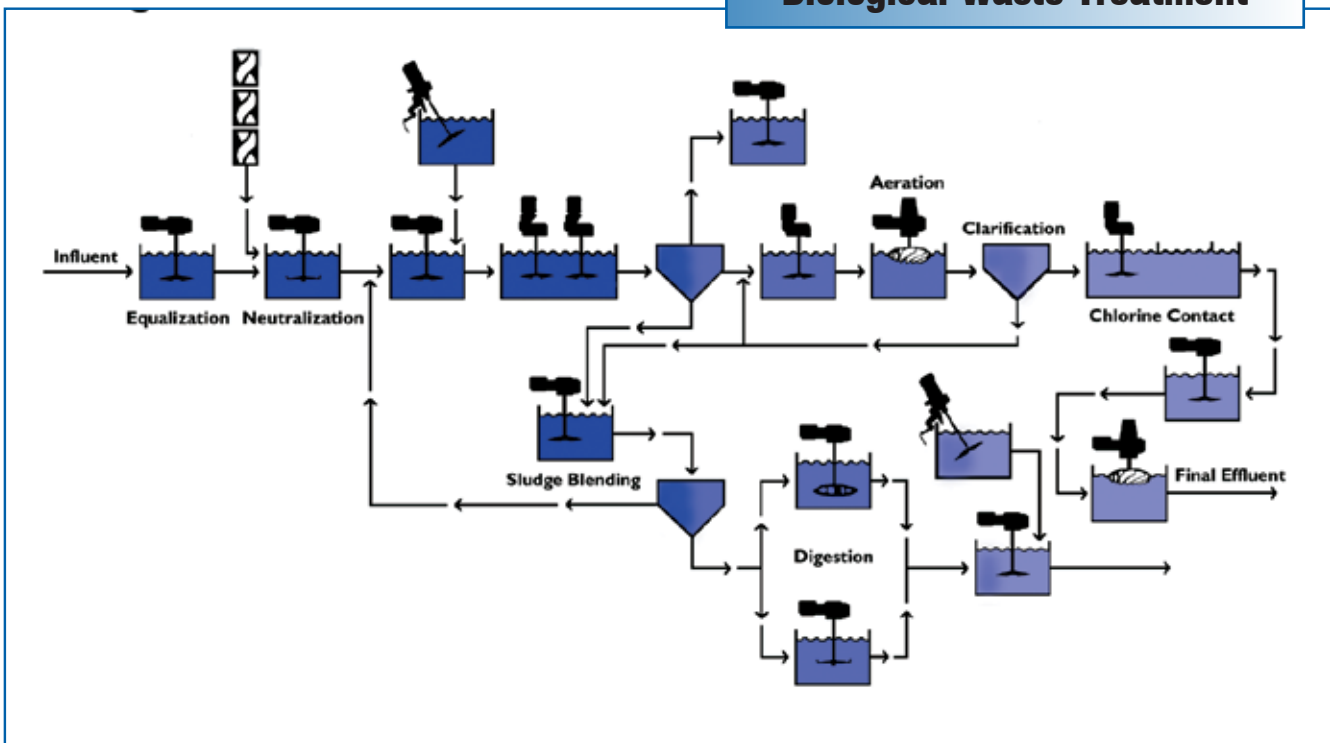
Sludge Mixing

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 also may 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.

Biological Waste Treatment



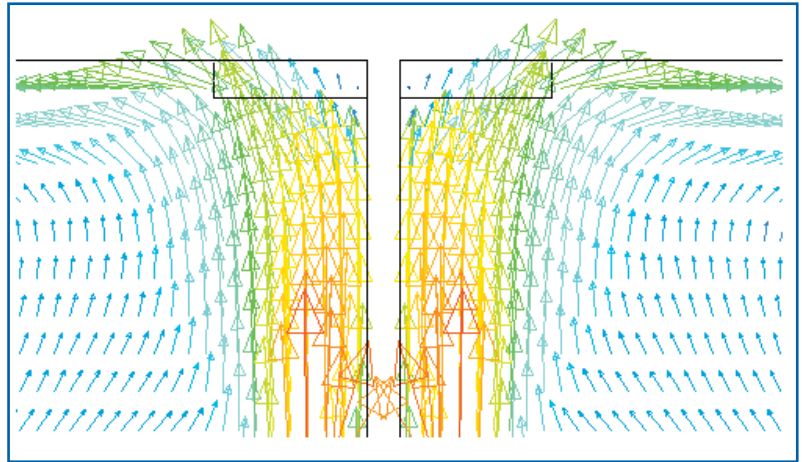
LIGHTNIN FOR TECHNOLOGY

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

Everyday we're discovering new ways to improve performance and life of many LIGHTNIN products installed at water and wastewater treatment facilities around the world. Innovative research and testing for many mixing applications continues to maximize process efficiency.

LIGHTNIN test facilities are the most modern in the world. We're the only manufacturer today with a fully integrated laser lab that simultaneously measures flow, power, and mechanical loads.

Computational Fluid Dynamics



Laser Doppler Velocimeter:
Fluid flow pattern of surface aeration testing.

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



Aeration - Impellers

A240 Impeller

- Uniquely suited for surface aeration
- Designed to lift and throw fluid versus pushing (PBT)
- Efficiency improvement of up to 15% versus a PBT
- Patented technology



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



Quality Assurance Documentation (QAD) Ensures Good Manufacturing Practices

To help ensure that FDA-mandated cGMP guidelines have been met, many pharmaceutical, biotechnology and specialty chemical customers require extensive supporting documentation when they purchase mixers. In addition to product specs, drawings and operating and maintenance manuals that are delivered with every LIGHTNIN mixer, customers may also order Quality Assurance Documentation (QAD) to fulfill their cGMP validation requirements.

To order a QAD, talk to your LIGHTNIN Sales Representative or authorized LIGHTNIN Service Center.



LIGHTNIN Aftermarket Services: 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're 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

Global Headquarters: SPX Process Equipment, Delavan, WI USA

For more information about our worldwide locations, approvals, certifications, and local representatives, please visit our web site.

Web Site: www.spxprocessequipment.com • **E-Mail:** lightnin@processequipment.spx.com

SPX Process Equipment
Your local contact

LIGHTNIN
An SPX Process Equipment Operation

135 Mt. Read Blvd., Rochester, NY 14611 Telephone: (888) 649-2378 (888-MIX-BEST), (U.S. and Canada) or +1 (585) 436-5550 (Worldwide)

SPX Process Equipment reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing. Certified drawings are available upon request.