Industry-Leading Expertise
Pilot To Full Scale Mixing Solutions
Our Lab: Making Your Unknown Known

Philadelphia Mixing Solutions®, Ltd. is dedicated to mixing, and so is our extensive test lab. We will simulate your process in scale so you know our tests will work the same way as it does in your plant. We bring expertise, technological know-how, a proactive nature, and the dependability required to maintain your competitive edge while reducing maintenance costs, and improving operating efficiency.

UNMATCHED TESTING CAPABILITIES

Our fully-instrumented pilot scale test facility provides the ability to measure and characterize your specific fluid as it pertains to mixing. We characterize rheology and process parameters including power, torque and tip speed using state-of-the-art equipment custom developed for mixing applications. We will simulate your process in scale and scale up to your production vessel size so that the mixer performance will be the same in your plant. The information we learn from our testing will apply directly to your process upon implementation.

CFD MODELLING

Computational Fluid Dynamics (CFD) is a tool used to solve and analyze problems involving fluid flow. CFD modelling allows us to evaluate a process, identify issues, and test solutions to find the optimum results with a savings in time and money. With our CFD technology and expertise we can perform exact simulations with precise fluidity modelling, including flow patterns and other dynamics. CFD provides a visual representation allowing observation of occurrences that wouldn’t otherwise be visible. Understanding fluid flow is essential for scale up, process optimization, and equipment design. We apply real-world data to predict performance and provide solutions. Our CFD capabilities are extensive and can be applied to a broad range of vessel sizes and shapes, and processes.

TEST LAB SERVICES

- Process material characterization
- Rheology characterization
- Particle size analysis
- Flow field analysis using particle image velocimetry
- Blend time measurement
- Mixing processes
- Gas dispersion
- Solids suspension
- Heat transfer
- Mass transfer
- Multiple scale analysis
- Pilot to full scale test tank geometries on hand
- Pilot – 1 to 500 gallons (19 to 378 liters)
- Full scale – 5,000 to 750,000 gallons (19 to 2,839 m³)
- Specific processes
- Emulsification
- Crystallization
- Polymerization
- Fermentation
- Flue gas desulfurization
- Mechanical design
- Vibration analysis
- Load testing of full scale drives

In-house laser doppler impeller testing

40 ft. long shaft and impeller assembly ready for testing and final inspection in tank

Mixer testing facility, scale-up in 750,000 gallon [2,839 m³] liter test tank

Special impeller testing

In-tank laser doppler impeller testing
Our Team: Finding Your Mixing Solutions

With over 300 years of combined industry-leading experience between our engineers and PhD-level experts to ensure your process result is achieved, our group of mixing experts are well-versed and knowledgeable in all aspects of mixing across all industries.

Richard K. Grenville, PhD
Director of Mixing Technology
Richard Grenville has over 30 years of practical experience in the field of mixing, including 22 in DuPont’s corporate engineering department. He is an adjunct professor in the chemical engineering departments at Rowan University and the University of Delaware where he co-teaches a course on mixing. He earned his BSc in chemical engineering from the University of Nottingham and PhD from Cranfield University.

Jason Giacomelli
Research & Development Engineer
A graduate of Rowan University in Chemical Engineering, Jason has over 7 years of experience in design, analysis and troubleshooting of processes/unit operations involving agitators. He specializes in computational fluid dynamics (CFD), pilot scale modelling, mixing and Research & Development. Responsible for customer and internal research projects.

Wojciech Wyczalkowski, PhD
Technology Fellow
Wojciech has 30+ years with Philadelphia Mixing Solutions. He studied at the University of Wroclaw in Poland, receiving BS and MS degrees in Mechanical and Power Engineering, and PhD in Chemical Engineering. He is well known in his field for providing mixing expertise for customers and developing numerous technologies and patents.

Todd Hutchinson
Vice President of Technology
With over 30 years of experience at Philadelphia Mixing Solutions, Todd has been key on projects including: Savannah River Projects, IHI Project – JNFL Plant in Japan, Fluor Fernald Project – Oak Ridge TN, Bechtel Hanford WTP LAW, HLW Agitators as well as DuPont Chemicals projects for 15 years. Todd earned his BS in Mechanical Engineering from Widener University.

Bob Dowd
Director of Strategy & Risk Management
Bob has been with Philadelphia Mixing Solutions for 40 years and has held management positions in Sales, Marketing, Aftermarket Services, Design Engineering and Research and Development. Bob has a Bachelor of Science degree from Pennsylvania State University.

Janusz Roszczenko, PhD
Senior Product Development Engineer
Janusz has 20 years of experience in development of mixing equipment. He specializes in transmission design and is an active member of the American Gear Manufacturers Association (AGMA). Janusz has a BS and MS in mechanical engineering from the University of Bialystok in Poland and PhD degree in mechanical engineering from the University of Life Sciences in Lublin-Poland. Janusz is the author of many patents.

Robert W. Higbee, P.E.
Senior Analytic/Mech. Des. Engineer
Bob has 28 years of mixing experience, 4 impeller patents and is an expert in FEA, machine design, and rapid prototyping. Bob’s published in peer reviewed journals and is a frequent lecturer at AIChE North American Mixing Forums. He’s an adjunct professor in Mechanical Engineering at Penn State Harrisburg teaching introductory & advanced machine design and computer aided design. Bob’s BSME & MSME are from Penn State and the University of Wisconsin and he is a PA Professional Engineer.

Ed Gamber
Vice President, Chief Technology Officer
With 33 years of experience at Philadelphia Mixing Solutions. Ed has been a key contributor on the mechanical design of our equipment as well as the management of the engineering resources. In all cases the “Best Mixing Solution” is a combination of process and mechanical design expertise. Ed has a BS in Mechanical Engineering from Pennsylvania State University.

Benjamin Boyer
Process Technology Analytical Engineer
Ben has been with Philadelphia Mixing Solutions for 7 years and has held positions in application and design engineering. He now uses that experience to support internal and customer focused research through design of custom test equipment and CFD simulation. Ben received his BS in Mechanical Engineering from Lafayette College.