

TECHNOLOGY

Fluid Dynamics

PURPOSE

The Fluid Dynamics team concentrates on solving problems concerning fluid flow in reactors, process equipment and rotating elements, as well as improving pipeline system capacity, gas flow measurement and dynamic performance of equipment. This team's expertise was instrumental in developing novel mixing techniques for our SCLAIRTECH™ reactors, which ultimately helped broaden our slate of polymer products. The group's research has led to:

- better design and performance of plant equipment, compressor and meter stations,
- more efficient plant operation techniques, such as purging, blowdown and pressure relief,
- reduced environmental emissions of pollutants and greenhouse gases.

Over the years, this team has developed in-depth expertise in experimental, theoretical and numerical fluid dynamics. The team can effectively carry out physical modeling of flows in pipeline elements and networks, compressors, reactors, separators and distillation towers. Physical flow simulation can be aided by visualization techniques, sophisticated non-intrusive optical measurements, image processing techniques and typical static and dynamic measurements.



Well-equipped fluid-flow labs at the NOVA Chemicals Research and Technology Centre allow the Fluid Dynamics team to test single and multiphase flows on air, water and other Newtonian and non-Newtonian fluids. Low-pressure results can be scaled up at a high-pressure test facility in Didsbury, 70 kilometers north of Calgary, where high-pressure tests are carried out in natural gas with piping up to 0.25 meters (10 inches) in diameter. This facility also has a unique gravimetric meter prover and a bank of 24 sonic nozzles for the calibration of flow meters.

Our experimental capabilities are reinforced through the application of Computational Fluid Dynamics (CFD) and other advanced, computer-based simulation tools. We have developed rigorous CFD-based models of pertinent chemical processes for scale-up and diagnostic purposes.



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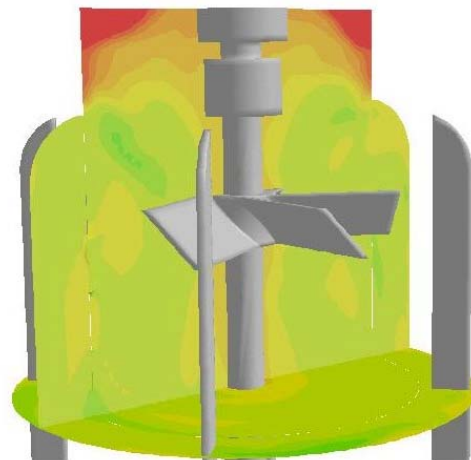
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PEOPLE

The Fluid Dynamics team consists of scientists, research technologists and engineering internship students. The following are the areas of their expertise:

- Flow & Thermodynamics
- Materials and Equipment Integrity
- Instrumentation, Measurement, and Diagnostics
- Advanced Numerical Simulations Tools



LAB AND TESTING FACILITIES

NOVA Chemicals' Testing Services labs in Calgary have a broad range of capabilities to provide support solutions to our customers. The labs are modern, state-of-the-art and are staffed to provide timely, cost-effective, and accurate testing support.

Testing capabilities include:

- Rheological characterization
- Thermal characterization
- Microscopic characterization

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