

Rheonics, Inc. · Portland · Houston · USA  
Rheonics GmbH · Winterthur · Switzerland  
<http://www.rheonics.com>

Rheonics' products are already used in a broad range of markets from food processing to downhole oil & gas exploration and production by core brand customers like Shell, BASF, Baker Hughes, Nestle, Sulzer and Buhler. We are growing our markets through a combination of innovative technology, robust products and focus on ease of use.

We believe the fluid sensing market for density and viscosity is on the cusp of revolution through the introduction of stable, reliable, robust, plug-and-play instruments.

## Corporate Overview

Rheonics delivers real time process optimization solutions based on the industry's best in-line viscosity and density measurement, even under extreme conditions. Rheonics solutions are backed by more than 30 years of research from ETH Zurich, one of world's top 10 universities. Rheonics application-tailored systems are aimed at up- and downstream oil and gas, high-value lubrication monitoring, printing, food – any process where fluid properties make or break the quality and economics of the product.

Rheonics designs, manufactures and markets innovative fluid sensing and monitoring systems. With more than 150 years collective experience, it brings together seasoned experts in the fields of mechanics, electronics, and fluid dynamics whose mission is to build customer-driven application-specific fluid sensing solutions. The founders of the company are Professor Juerg Dual, Professor at the Institute of Mechanical Systems at ETH; Professor emeritus Mahir Sayir, ex-head of IMES at ETH; Dr. Joe Goodbread, Chief Technology Officer and inventor of numerous innovative fluid sensing systems, Dr. Klaus Haeusler, who has developed a wide range of novel fluid solutions for medical, food and polymer applications, and Ueli Marti, electronics engineer at the ETH Zurich.

We produce robust and reliable solutions based on a foundation of time- and field tested technologies, backed by a broad & expanding portfolio of intellectual property. Our current palette of products includes a series of process density & viscosity instruments, a groundbreaking sensor for simultaneous density & viscosity measurement.

## Markets and Solutions

Rheonics has developed the world's first commercial HPHT viscosity and density solution used during drilling operation under pressures and temperatures in excess of 2000 bar (30,000 psi) and 250 °C (500 °F) as well as the first commercial inline system to operate repeatably in non-Newtonian, multi-phase fluids.

Rheonics products are focused on enabling fluid intelligence and have made inroads in diverse markets:

**Oil & Gas:** product for fluid analysis and sampling during drilling operations and reducing the water requirement during fracking by monitoring and controlling fracking fluid viscosity

**Pharma, Food and Cosmetics:** solution for process monitoring of non-newtonian fluids to reduce energy use and assure intermediate and end product quality during raw material transformation

**Process Management:** robust plug-and-play viscosity and density monitoring instrumentation providing accurate and repeatable fluid monitoring in demanding environments filling a gap in current process monitoring offerings

## History

Prior to the founding of the company, the core group has been active in sensor research and design at ETHZ since the early 1980's, when Joe Goodbread with Juerg Dual and Mahir Sayir designed and patented their first vibrational viscometer. This design was commercialized by Anton Paar-Physica under the trade name "Rheoswing". The group subsequently invented and patented their "Gated phase-locked loop" technology and developed an inline process viscometer which is marketed by Brookfield as the commercially successful AST-100 process viscometer finding wide acceptance for process monitoring and control in food, chemicals, coatings, & printing.

## Product and Technology Pipeline

Rheonics markets and owns intellectual property in a range of domain-specific products based on the application of its core technology:

- **Novel compact and highly configurable process fluid sensors able to operate in harsh environments**  
For OEM and standalone measurement of viscosity and density in process environments (patented)
- **Robust, reliable and inline process viscometer**  
An inline design geared for accurate, reliable and repeatable measurement of fluid viscosity in a wide range of applications involving non-Newtonian and multi-phase fluids (Patents pending)
- **Large-scale process instrumentation**  
A range of inline tubular sensors that can be made in diameters large enough to provide obstruction free online viscosity measurements in nearly any process environment (Patented)

## The Rheonics Advantage

Rheonics is rapidly providing application-specific fluid sensing solutions for a wide variety of measurement challenges in the most demanding and aggressive environments. Clients can select from standard solutions based on our established technologies, or partner to develop bespoke solutions.

We also have expertise in high temperature electronics enabling co-location of the electronics and sensing element in the same environment. We have built electronics for downhole application that operates to 150 °C (300 °F) and are developing electronics operating at 225 °C (440 °F).

## Strategic Alliances

Rheonics count some of the largest oil & gas, food, and petrochemical companies as customers to whom they provide fluid sensing solutions based on patented viscosity and density measurement platforms.

Rheonics maintain close ties with the ETH Zurich, where they collaborate with a team of experts in the fields of electronics, mechanics, computational fluid dynamics, and fluid-structure interactions. Production and assembly of Rheonics products is carried out by a strategic partner, a Switzerland based ISO 9001 certified precision engineering firm.

We are growing our market base in US and Europe through collaboration with market leaders in multiple industries. The focus of the company is on further expanding the customer base and capturing **leader** market share.