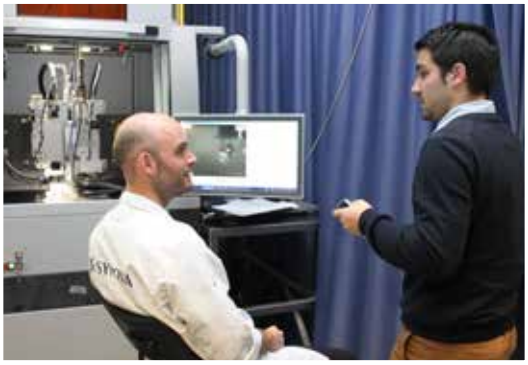


Company Profile

# SYNOVA

Cool Laser Micro-Machining

www.synova.ch


SYNOVA
LCS 300
SYNOVA
MCS300


# Innovative Micro-Machining Systems

Synova is the pioneer of a revolutionary water jet guided laser technology providing state-of-the-art cutting and dicing solutions as well as drilling and edge grinding systems for the semiconductor, electronic, automotive, energy, aerospace, watchmaking, tool, diamond and medical industries.

All Synova systems are based on our patented Laser MicroJet® technology and include:

- Laser Cutting System (LCS)
- Diamond Cutting System (DCS)
- Laser Dicing System/Laser Edge Grinding System (LDS/LGS)
- Metal Cutting System (MCS)
- Tool Cutting System/Turbine Drilling System (TCS/TDS)
- Laser MicroJet® Integration Package (LMJ-iP)

# The Synova Story

FROM START-UP TO GLOBAL COMPANY

Synova's story begins with the invention of the water jet guided laser developed in the 1990s at the Federal Institute of Technology (EPFL) in Lausanne, Switzerland. This innovation resolved a number of well-known problems associated with existing cutting technologies in industrial applications. Consequently, Synova was founded in 1997 in Lausanne to make the patented Laser MicroJet (LMJ) technology available to high-tech industrial manufacturers.

Since 1998, various industries worldwide have switched to this laser process for their production needs. In addition, the particular advantages have led to a number of new applications such as in the domain of sensitive material processing where Synova was the first company to introduce the laser into semiconductor wafer dicing in 2001.


Starting in 2003, the company established wholly owned local subsidiaries in the USA, Japan, India and Korea for optimized customer support. These have since been expanded to include micro-machining centers (MMCs) with Taiwan and China planned for the future.

Synova presently has 75 employees including 35 engineers focused primarily on researching new material cutting processes, further applications and laser cutting equipment. Aside from research, both the final assembly and testing of up to 100 machines a year are performed in Synova's modern, 3000 square meter facility in Ecublens.

In 2010 Synova successfully entered the gem diamond cutting business. Subsequently, the company was strategically re-organized according to market segments forming three distinct business units: Diamonds, Semiconductors and Metal Industry.

Synova has established several partnerships with leading industrial machine manufacturers for the production of LMJ machines, most recently with Makino and Willemin-Macodel. The company also cooperates with respected research institutions, universities and industry players on strategic projects to further the technology, including the Fraunhofer ILT and IPT, EMPA and Carl Zeiss Jena.

Synova is now a company with global reach focused on delivering high quality solutions and services to its customers wherever they are. We strongly believe that the motor of our success and growth are our technology, experience and dedication to our customers, today and tomorrow.

# Timeline

**1997**
- Foundation of Synova S.A.
- Numerous awards for LMJ breakthrough

**1993**
Invention of the water jet guided laser technology (LMJ) at the EPFL in Switzerland

**2001**
Introduction of Laser Dicing System (LDS) for electronics and semiconductor industry and Laser Cutting System (LCS)

**2003**
- First Laser Stencil (LSS) and Edge Grinding Systems (LGS)
- Relocation of international headquarters to Ecublens-Lausanne, Switzerland

**2006**
Beginning of global expansion efforts with implementation of micro-machining centers (MMCs) for customer application tests

**2007**
Extension of existing business model through technology licensing partnerships and LMJ Integration Package (LMJ-iP)

# Awards

**2014** Laser MicroJet recognized as one of "World's Most Amazing Breakthroughs in Science & Technology" – *McGraw-Hill Yearbook of Science & Technology, U.S.A.*

**2007** Second Best Tool for Wafer Processing – *EuroAsia IC Industry*

**2005** European Award for Technology Innovation – *Frost & Sullivan*

**2004** Entrepreneur of the Year 2004 (Finalist) – *Ernst & Young*

**1997** Förderpreis Technopark Zürich – *Technopark Zürich*

**1997** Technologiestandort Schweiz – *OSEC, Swiss Center for Trade Promotion*

**1997** Sonderpreis Espace Mittelland – *Cantons of Central Switzerland*

**1996** KTI-Label – *Swiss Innovation Promotion Agency, Bern*

# High-Precision Micro-Machining

## ACCURATE, VERSATILE AND EFFICIENT

Built upon its proven hybrid Laser MicroJet technology, Synova's high-precision cutting machines allow fast, precise and omni-directional processing without any chips, burrs, deposition, contamination, thermal damage, material changes and mechanical stress. Thanks to its versatile technology, the Laser MicroJet can be used for a broad range of processes, including cutting, drilling, edge grinding, grooving, scribing, milling, dicing, shaping in 3 and 5 axes, trenching, profiling and engraving.

Synova's equipment is recognized for its proven technology and ability to deliver fast, accurate and reliable material processing performance. High productivity is central to maintaining a competitive advantage and the reason behind Synova's intense dedication to develop cutting-edge systems capable of meeting cost of ownership and return on investment demands.

**2010**
Entry in gem diamond cutting business

**2011**
Launch of Diamond Cutting System (DCS)

**2012**
- Introduction of three business units: Diamonds, Semiconductors, Metal Industry
- OEM agreement with Makino for the manufacture of LMJ machines based on Makino platform (MCS)

**2014**
Partnership with GE and Makino for production of GE gas turbine parts

**2015**
- Over 250 LMJ systems sold worldwide
- OEM partnership with Willemin-Macodel (TCS/TDS)

# Industries We Serve

**Diamonds:**
Rough diamonds, synthetic diamonds (CVD, HPHT)

**Tool manufacturing:**
Tool inserts, super hard material such as PcBN, PCD, MCD and CVD

**Energy/Aerospace:**
Turbine blades, satellite sensors, solar cells for satellites

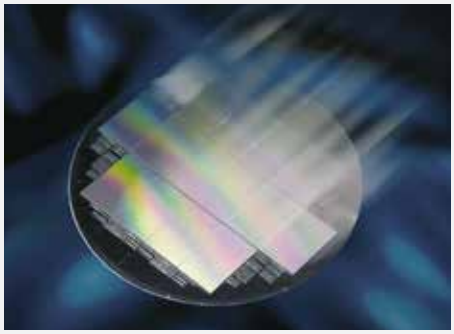
**Watchmaking:**
Watch hands, gear wheels, dials and other precision metal parts

**LED:**
Heat sinks for high-power LEDs

**Flat Panel Displays:**
OLED evaporation masks, high resolution TFT LCD substrates

**Consumer Goods:**
Shaver parts

**Electronics:**
High-voltage devices, metal masks (such as stencils for PCB, wafer bump stencils)



**Semiconductors:**
Integrated circuits, smart cards, sensor chips, MEMS

**Automotive:**
Fuel injection nozzles, catalytic converters, spark plugs

**Medical:**
Stents, needles, implants, scalpels

**Photovoltaics:**
Silicon solar cells, multi-junction cells, thin film cells

# Close to Our Customers

## AT YOUR SERVICE WITH A GLOBAL SUPPORT NETWORK

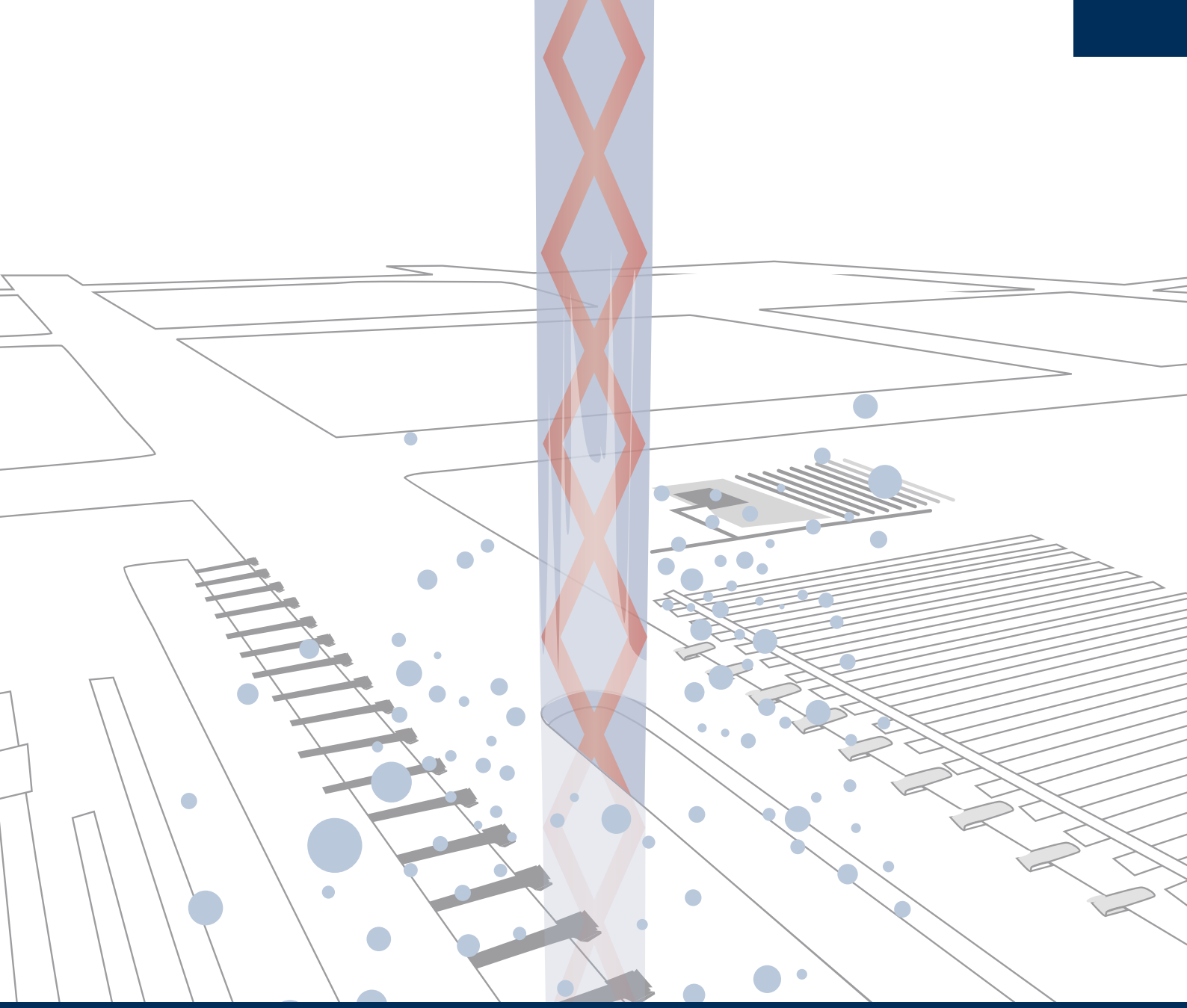
Synova is deeply committed to customer satisfaction. As part of our commitment, we have organized a global customer support network composed of micro-machining centers (MMCs), subsidiaries and distributors. Our aim is to provide our customers with fast and high-quality after-sales services around the globe.

Synova's worldwide customer support services allow companies to lower their cost of ownership across the lifetime of their Synova system. Our well-trained and experienced support engineers regularly visit customer sites to ensure proper system maintenance enabling customers to maximize efficiency and uptime. The support engineers can also adapt and extend a system's parameters for new applications.

Each Synova machine is equipped with a remote diagnostic system that allows our engineers to monitor a system's performance from our headquarters via Internet, providing customers with fast troubleshooting and support.

Synova's MMCs also serve as competence centers for demonstration, feasibility testing and application development and offer regional micro-machining services throughout Europe, Asia and the United States.


- Headquarters
- MMC (Micro-Machining Center) / Subsidiary
- Distributor



# The Fusion of Water and Light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