



Laser MicroJet Integration Package (LMJ-iP)

Turn your standard 3-axis vertical machining center into a multi-purpose milling/drilling and laser cutting machine with Synova's Laser MicroJet® Integration Package!

With the Laser MicroJet Integration Package (LMJ-iP), Synova offers manufacturing companies and system integrators a flexible, alternative solution to its complete turnkey systems. The integration package consists of hardware and software components and services designed for integration of the Laser MicroJet (LMJ) technology into new or existing 3-axis CNC machines or production lines. It includes the core components of our water jet guided laser technology: the laser source, the water pump with integrated water treatment and the optical head.

Synova has developed three different standard LMJ-iP kits for a variety of applications in different industries and also offers a customizable option for special machining applications. With a variety of component options, we can customize a package to meet your specific needs and application requirements, giving you the flexibility to integrate the modules directly into your production systems.



LMJ-iP Elements



Optical head

Laser and optical fiber

Laser power supply and chiller

High pressure water pump

Water treatment system



Example cabinet (Kit 1)

LMJ-iP Standard Kits

KIT 1

Micro-machining applications

- 100 W YAG laser (532 nm wavelength) with integrated chiller
- Optical fiber $\varnothing$ 150 μ m x 10 m
- Optical Head, microcoupling unit with Jet Protection System (JPS)
- Ultrapure water treatment
- Compact hydraulic WF pump
- Utility cabinet including laser, pump and water treatment

KIT 2

Semiconductor applications

- 200 W dual cavity YAG laser (532 nm wavelength) with integrated chillers and cabinet
- Optical fiber $\varnothing$ 200 μ m x 10 m
- Zeiss Optical Head, micro-coupling unit with Jet Protection System (JPS)
- Ultrapure water treatment with cabinet
- Compact hydraulic WF pump with cabinet

Key Industries



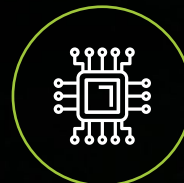
Aviation



Watchmaking



Electronics



Semiconductors



ICT

Benefits of LMJ-iP



Opportunity to integrate the innovative LMJ technology into existing CNC platforms



Increase revenue by introducing new products and expanding the sales portfolio



Access to Synova's knowhow & long-term experience in developing various applications



Lower manufacturing costs

KIT 3

High-speed machining applications

- 400 W YLF laser (527 nm wavelength) with integrated chiller
- Optical fiber $\varnothing$ 200 μ m x 10 m
- Zeiss Optical Head, microcoupling unit with Jet Protection System (JPS)
- Ultrapure water treatment with cabinet
- Compact hydraulic WF pump

KIT 4

Customized kit

- Tailormade LMJ-iP kit for customers with specific applications based on application testing at Synova's facilities.

All LMJ-iP standard kits come with the following other components and services:

- Gas Flow controller
- Starter kit with set of nozzles, windows and O-rings to set up the machine
- Set of tools
- Industrial PC with LMJ server and LMJ tester software
- Integration support and training
- LMJ-iP License



Industrial Machinery



Tool manufacturing



Medical



Automotive

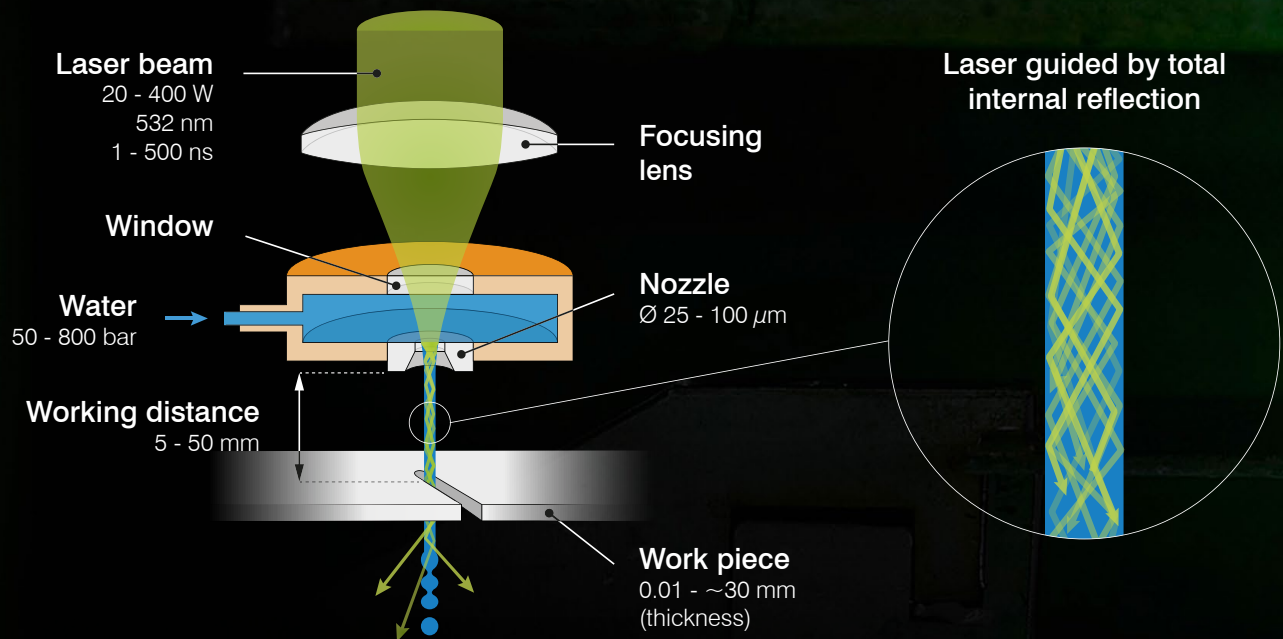


Diamond & Jewelry

Laser MicroJet technology

The LMJ-iP is based on Synova's unique water jet guided laser technology Laser MicroJet® (LMJ). The LMJ is a hybrid method of machining, which combines a laser with a "hair-thin" water jet that precisely guides the laser beam by means of total internal reflection in a manner similar to conventional optical fibers. The water jet continually cools the cutting zone and efficiently removes debris.

As a "cold, clean and controlled laser", Synova's LMJ technology resolves the significant problems associated with dry lasers such as thermal damage, debris deposition, taper and lack of accuracy.



Benefits



Cylindrical laser beam with parallel cuts (no taper)



No material damages due to water cooling (no HAZ)



Wide range of materials and applications



High quality and micrometer precision



Clean surfaces without debris deposition or burrs



High aspect ratio when hole-drilling



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