



exail

**PHOTONICS SOLUTIONS
FOR LASERS**

EXAIL, A EUROPEAN LEADER IN PHOTONICS AND LASERS TECHNOLOGIES

Exail is a leading high-tech industrial champion specializing in cutting-edge photonics technologies. The company helps engineers all around the world to get the most out of light by providing high performance, innovative and reliable photonic solutions dedicated to high speed communications, fibers-based sensors, space, science, medical, and quantum technologies.

Exail masters design and manufacturing of all the key components of a laser: from optical fibers and doped fibers, to LiNbO₃ modulators and their matching electronic components. The company has also developed integrated laser solutions such as: micro-optics assemblies to turn lab size experiments into compact systems, the ModBox as a sub-nanoseconde pulse shaper for high-energy laser, and high-power narrow-linewidth laser system for the manipulation of cold atoms.

exail at a glance

80

YEARS OF
EXPERIENCE

250+

MILLION EUROS
OF TURNOVER

80%

OF TURNOVER
ACHIEVED ABROAD

1500+

EMPLOYEES

100+

DOPED OPTICAL FIBER
REFERENCES IN STOCK

20%

OF TURNOVER
REINVESTED
EACH YEAR IN R&D

100 kHz

INTELLIGENT LASER
SYSTEM (ILS) MAXIMUM
FREQUENCY DRIFT
(RMS) PER DAY

60 dB

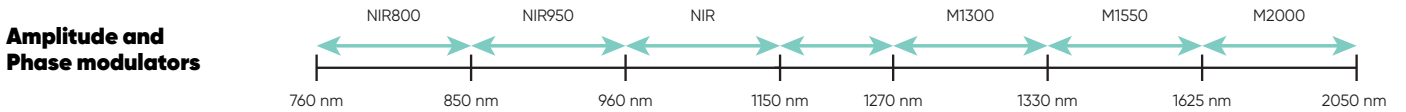
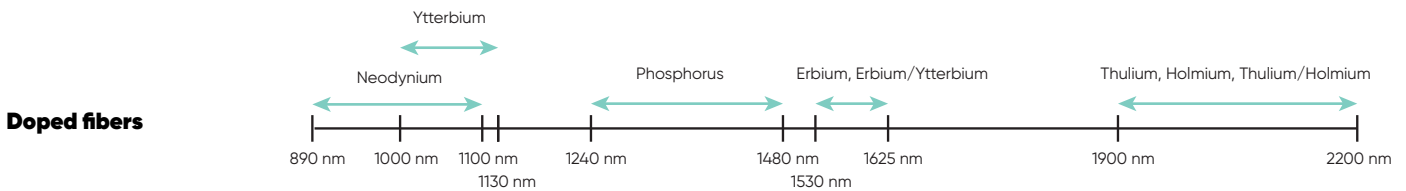
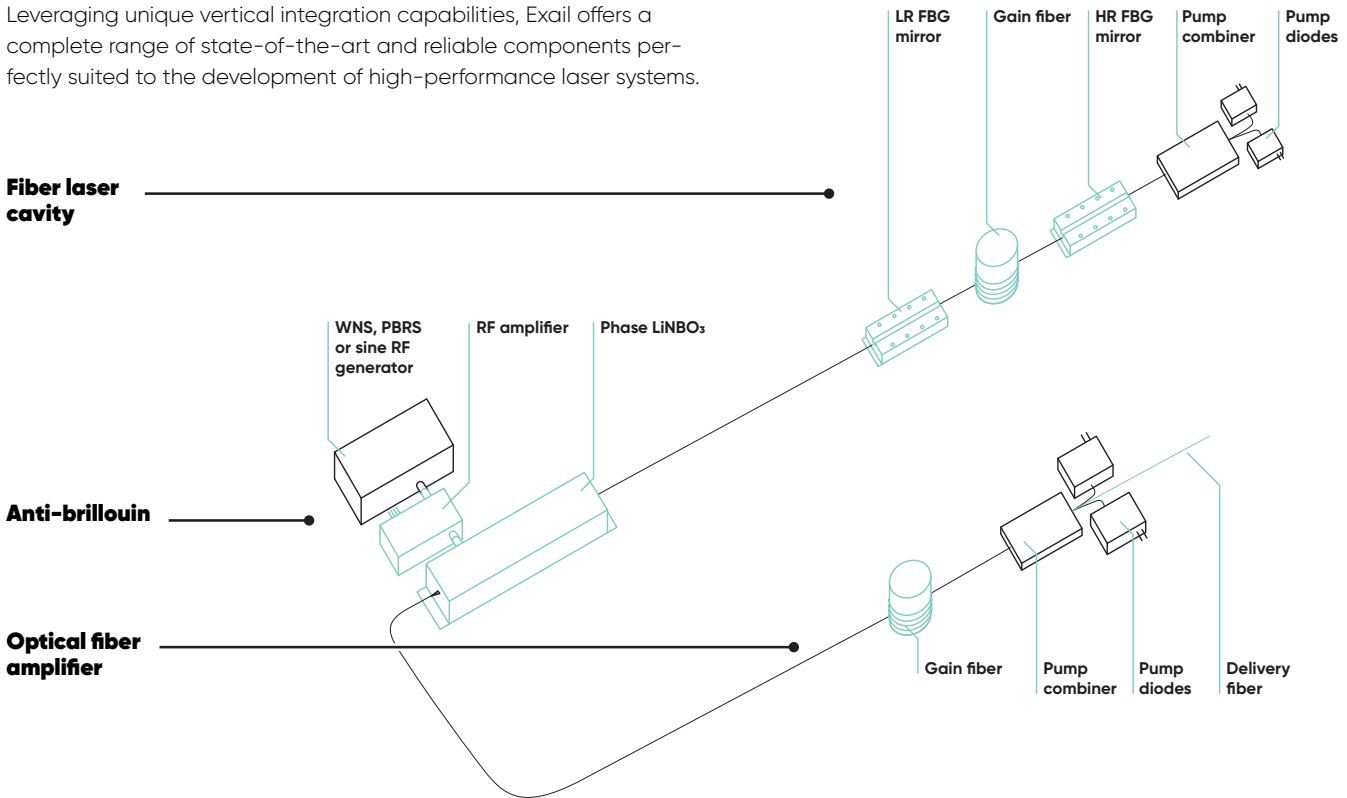
EXTINCTION
RATIO REACHED
BY INTENSITY
MODULATORS

100+

MODBOX FRONT-END
FOR SUB-NS LASER
PULSE SHAPING IN
OPERATION WORLDWIDE

MASTERING THE FULL VALUE CHAIN OF FIBER LASERS KEY COMPONENTS

Leveraging unique vertical integration capabilities, Exail offers a complete range of state-of-the-art and reliable components perfectly suited to the development of high-performance laser systems.



A LARGE PORTFOLIO OF SOLUTIONS DEDICATED TO FIBER LASERS

From 300 nm to 2200 nm - CW and pulsed Lasers

Laser systems

Intelligent Laser systems (ILS) Series



ILS

Integrated laser

Ultra-Stable Master Laser (USML) Series



Narrow linewidth single frequency fiber laser



USML

Sub-systems

iMOB Series and modulator unit



iMOB



ModBox

Components

Fibers, modulation solutions



Doped and polarizing optical fibers



LiNbO₃ and PPLN



Hybrid coherent demodulator

VERSATILE SOLUTIONS FOR A WIDE RANGE OF APPLICATIONS

Pulsed Lasers for lidars

Whatever the application (autonomous driving, wind lidars, telemetry, gaz monitoring, ...), Exail has developed key components that will help you to increase the performances of your LIDAR systems.

We have in stock a large variety of doped and passive fibers for laser cavity and amplifiers for $1\ \mu\text{m}$, $1.5\ \mu\text{m}$ and $2\ \mu\text{m}$, from $6\ \mu\text{m}$ to $30\ \mu\text{m}$ core and from single to triple clad to accommodate the most challenging environment.

Exail's very wide range of amplitude and phase LiNbO_3 modulators are key components to improve the pulse pattern shape, to increase range and definition of LIDAR systems.



Fiber lasers in the $1,500\ \text{nm}$ range for autonomous driving

Lasers for biomedical applications

With attractive pricing and low maintenance cost versus YAG lasers, Quasi Continuous-Wave (QCW) fibered lasers are rapidly being adopted by medical field.

Neodymium-doped fiber laser sources can emit near $900\ \text{nm}$ to be used as femtoseconds pulsed lasers in medical imaging for the "two-photon microscopy" technique (i.e cellular tissues).

At the other side of the spectrum range, Thulium fiber lasers could be used in urology for kidney stone treatment. Whereas $1,550\ \text{nm}$ laser could be used for tattoo removal.

Exail components as FBGs laser mirrors and doped fibers would be key to provide you high efficiency, high power output and robustness over time.

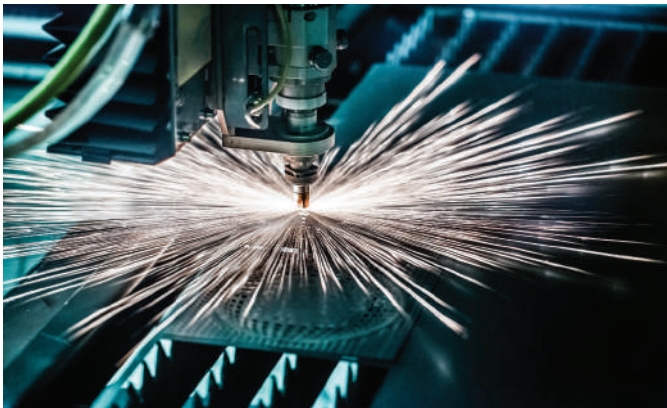


Thulium Fiber Lasers at $1,940\ \text{nm}$ for urology

Directed Energy Lasers and Material processing

In the ranges of 1,060 nm and 2,000 nm, for directed energy lasers and material processing, Exail developed dedicated low frequency phase modulators with matching RF amplifiers for high-power coherent beam combining applications.

The industrial ModBox-CBC is also offered as a proven and robust multi-channels phase modulation solution for multibeam coherent combination. The modulated signals delivered could then be amplified using Exail's large mode area doped fibers.

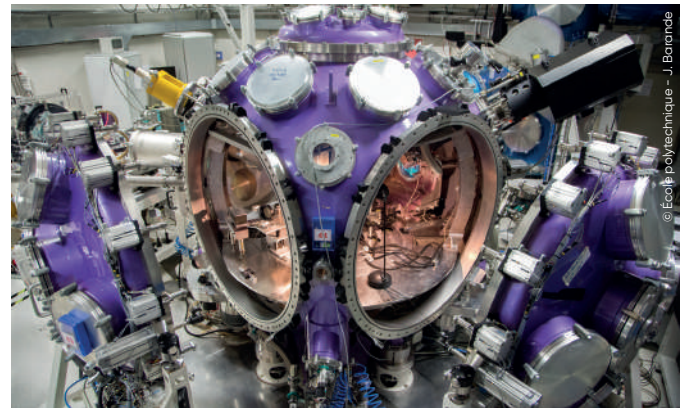


Phasing multiple fiber sources by optical combination can result in laser architectures delivering tens of kilowatts.

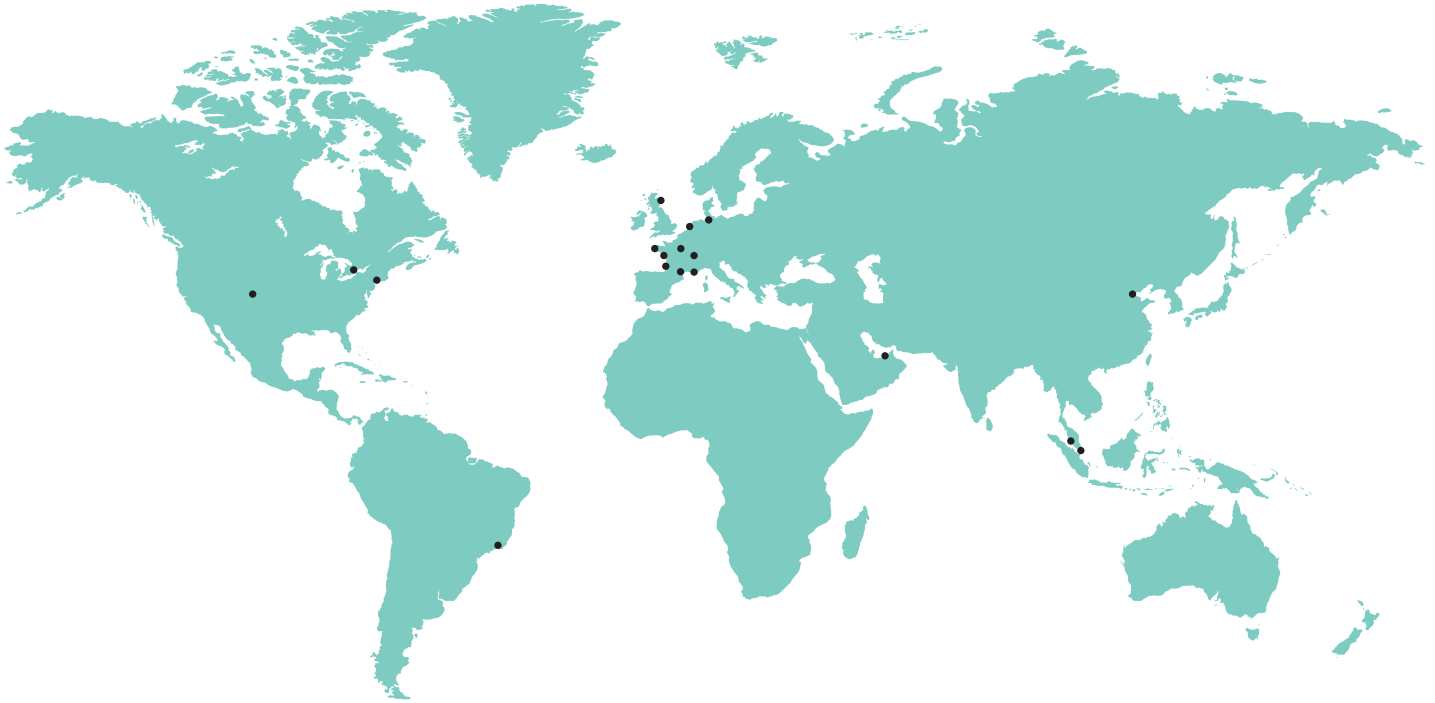
Sub-ns pulse shaper for high-energy laser facilities

Based on its unique in-house technologies, Exail has developed the ModBox-FrontEnd, a turnkey system ideal for optical pulse shaping. It offers the most comprehensive portfolio of versatile sub-nanosecond resolution laser pulse shaping based on LiNbO₃ modulator design, company flagship expertise. With high pulse contrast and high contrast stability over time, this innovation equips the most prestigious high scientific experiment.

Dedicated ModBox for spectral broadening are also available as well as a full suite of large core radiation resistant graded index multimode fibers for experimental results diagnostic.



LULI2000 facility in south of Paris is powered by Exail ModBox Front-End
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Your challenge, our dedicated and custom solutions.

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photonics.ixblue.com

Our sales and technical team is ready to assist you. For any request, feel free to contact us:
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