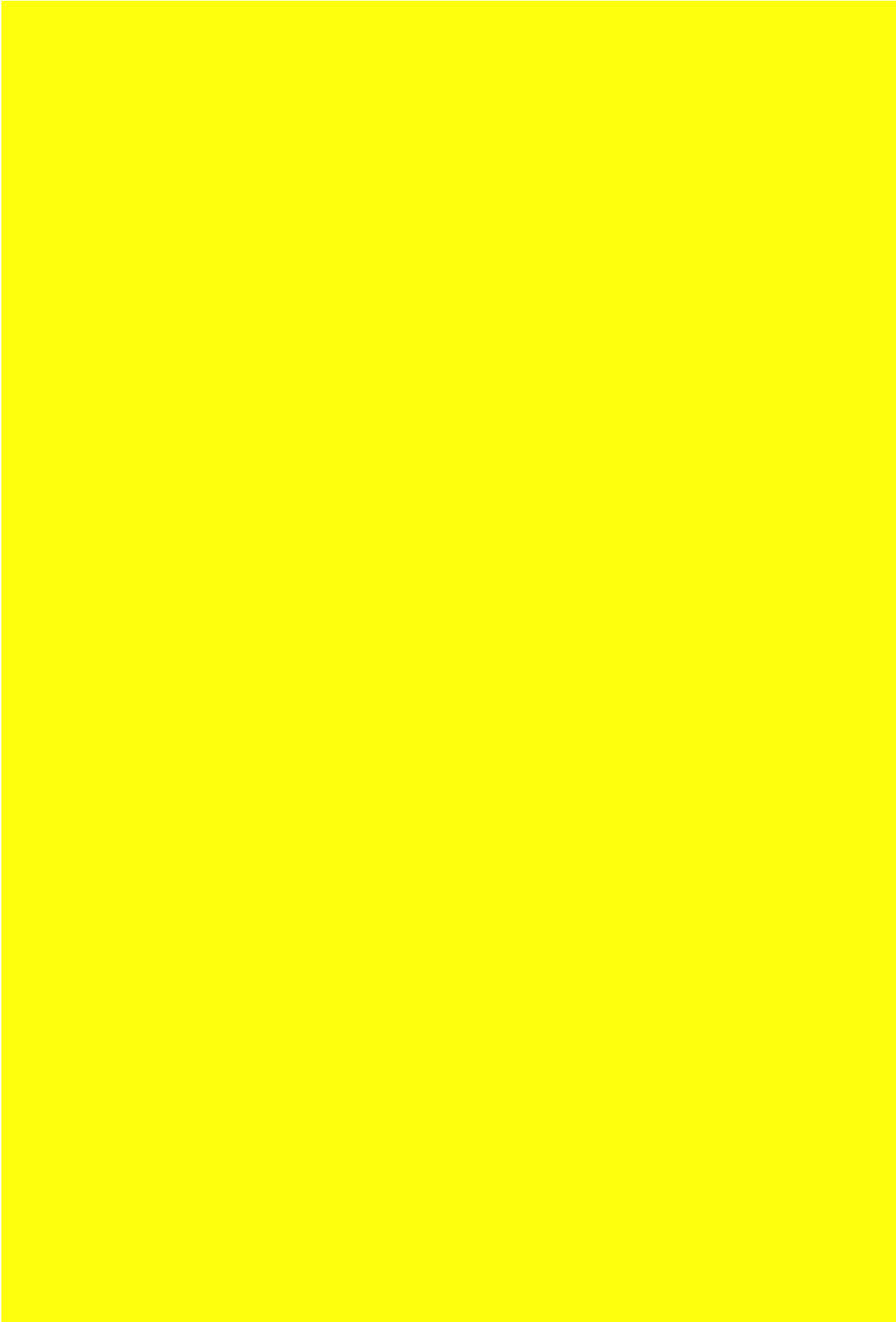
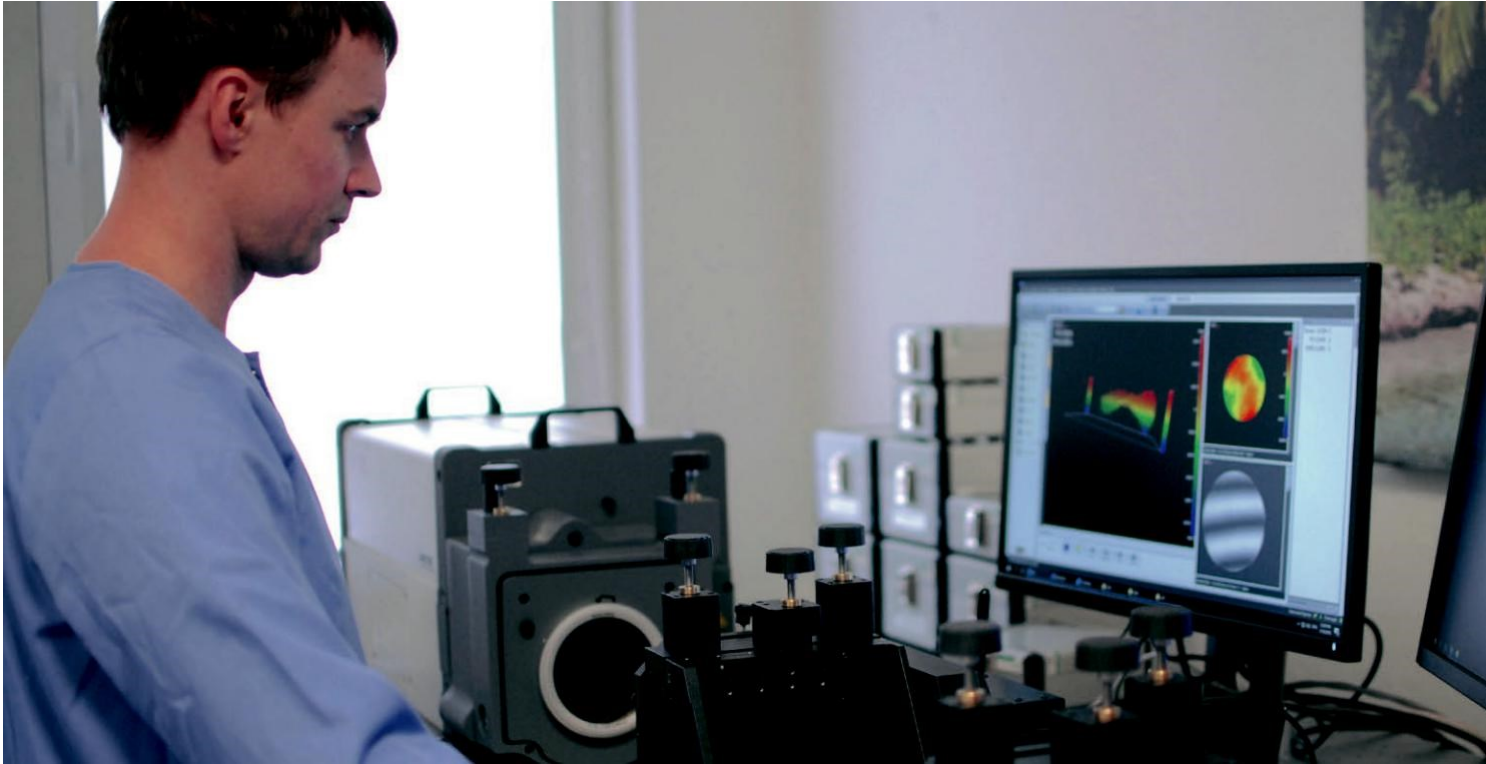




KEY for DISCOVERIES





Production and quality assurance capabilities

Main capabilities & specialities:

- Design and development of custom laser beam expanders, & beam delivery devices
- Development and production of different optical devices, including beam delivery systems and laser power attenuators
- From standard compact to custom large size devices
- Automated PC controlled and robust manual adjustment options
- Experience and knowledge in advanced high power (>75 J/cm², 8 nm @1064 nm available) and ultrafast dedicated optical systems

EXPERIENCE

Over 15 years' experience in laser optics industry

EFFICIENCY

Efficient communication & short leadtime for custom parts

TECHNICAL SUPPORT

>90 % of staff has technical background in Laser Physics

RELIABILITY & REPEATABILITY

Standardized production and quality assurance

CUSTOM SOLUTIONS

Custom laser components design and production

COSTS SAVINGS

Superior price - performance ratio

In-house optical metrology instruments to guaranty every specified parameter:

ZYGO Verifire 4inch interferometer including full set of spherical references

Spectrophotometers Photon RT and HighFinesse WS6

Optical benches with multiple laser sources

Stereo zoom microscopes Olympus SZX7

X-ray crystallograph/refractometer

M2 metter and set of cameras for laser beam quality measurements

Main product lines

Motorized laser power attenuators LPA and advanced LPA-A



High damage threshold: up to $10\text{J}/\text{cm}^2$ (10 ns @ 1064 nm)

Compact and robust industrial design

Fast adjustment - $<0,2$ sec (min to max)

Adjustable polarizer angle

With external or integrated controller

Compact motorized laser beam expanders MEX



Highest beam pointing stability (< 0.1 mrad)

All-in-one design with integrated controller

Two lens simultaneous movement assuring no misfocus

Absolute encoder (both lenses)

Adjustment time <1 s (all magnifications)

Variable beam expanders VEX and reducers VRE



Highest beam pointing stability (< 0.5 mrad)

Fused silica optical elements

Grease free mechanical design

Sliding lens design

Diffraction limited performance for all magnifications

Manual 4 axis translation stage



Sapphire contact pads

Platform's locking mechanism

Industrial design

4 axis fine adjustment

Maximum load up to 1.5 kg



Compact motorized laser beam expanders MEX

Motorized laser beam expanders MEX series used to increase laser beam diameter and adjust divergence. Standard or custom-made beam expanders have a unique mechanical closed loop sliding-lens design ensuring high pointing stability and minimal dimensions.

These variable magnification (zoom) beam expanders and reducers are designed for required wavelength and each type of our beam expanders have motorized divergence adjustability.

MODEL	MEX13	MEX18	MEX18-ACH
Magnification factor	1 - 3 continuous	1 - 8 continuous	1 - 8 continuous
Clear output aperture	23 mm	38 mm	23 mm
Dif. limited max. input beam diameter	∅7 (1x) - ∅6 (3x) mm	∅7 (1x) - ∅5 (5x) - ∅3 (8x) mm	∅7 (1x) - ∅5 (5x) - ∅3 (8x) mm
Number of optical elements	3	3	4
Mechanical dimensions	140 x 45 x 45 mm	237 x 45 x 45 mm	226 x 45 x 45 mm
Design wavelength	1064 nm, 1030 nm, 532 nm, 515nm, 355 nm, 343 nm, custom		
Adjustment	Motorised		
Divergence	Adjustable		
Pointing stability	<0.5 mrad and <0.2 mrad (PS version)		
Clear input aperture	11,5 mm		
Housing material	Anodized aluminum		
Lens material	Fused silica		
Lidt (coating)	>10 [J/cm ²] (10 ns @ 1064 nm)		



Variable beam expanders VEX and reducers VRE

Manual beam expanders VEX series used to increase or decrease laser beam diameter. Standard or custom-made laser beam expanders for use in the UV, visible, and NIR spectral ranges have a unique mechanical sliding-lens design, ensuring

high pointing stability and minimal dimensions. These variable magnification (zoom) beam expanders are designed for required wavelength and each type of our beam expanders has a divergence adjustability.

MODEL	VEX13	VEX18	VEX15-HP	VRE13
Design wavelength	1064 nm, 1030 nm, 532 nm, 515nm, 355 nm, 343 nm, custom			
Adjustment	Manual			
Divergence	Adjustable			
Total transmission	>97%	>97%	>95%	>97%
Lens material	UVFS			
Lidt (coating)	10 J/cm ² (10 ns @1064 nm)			
Magnification factor	1 - 3 continuous	1 - 8 continuous	1 - 5 continuous	1 - 3 continuous
Pointing stability	< 0,5 mrad	< 0,5 mrad	< 1 mrad	< 0,5 mrad
Clear input aperture	11 mm	11, 11,5 mm	11 mm	22 mm
Clear output aperture	23,5 mm	40 mm	24 mm	11 mm
Recommended max input beam diameter (1/E2)	∅15 mm (0,33x) - ∅7 mm (1x)	∅7 mm (1x) - ∅5,3 mm (5x) - ∅3,3 mm (8x)	∅7 mm (1x) - ∅3,3 mm (5x)	∅15 mm (0,33x) - ∅7 mm (1x)
Dimensions	∅42 x 110 mm	∅53 x 203 mm	∅58 x 250 mm	∅42 x 110 mm



Motorized laser power attenuators LPA and advanced LPA-A

Laser power attenuators LPA and LPA-A are compact motorized devices for laser power control with optional integrated controller and absolute encoder. The LPA's are produced in the UV, visible and NIR spectral ranges, from 250 nm to 2000 nm. All optical components of the attenuators are made for high LIDT and provide stable and

reliable performance even using them with high power lasers in industrial applications. A secondary laser beam from laser power attenuator unit can be rejected to an external beam dump. The beam dump is used for avoiding any thermal effects or stress in the device housing.

MODEL	LPA	LPA-A
Absolute encoder	NO	YES
Controller	Separated	Integrated
Design wavelength	1064 nm, 1030 nm, 532 nm, 515nm, 355 nm, 343 nm, custom	
Adjustment	Motorised	
Optical configuration	$\lambda/2$ ZO Waveplate + High contrast brewster type thin film polarizer	
Resolution	175,543 μ steps in full rotation (0.002 deg, 7.4 arcsec, 0.035 mrad)	
Lidt (coating)	>10 [J/cm ²] (10 ns @ 1064 nm)	
Laser power attenuation	0,1-98%	
Clear input aperture	\varnothing 18 mm	\varnothing 15 mm
Clear output aperture	\varnothing 18 mm	\varnothing 15 mm
Mechanical dimensions	76 x 36 x 58 mm	86 x 47 x 58 mm
Mechanical dimensions (with beam dump)	76 x 52 x 58 mm	86 x 64 x 58 mm
Controller mechanical dimensions	125 x 53 x 31 mm	Integrated