

# CUSTOMIZED kW AND mJ ULTRAFAST THULIUM LASERS

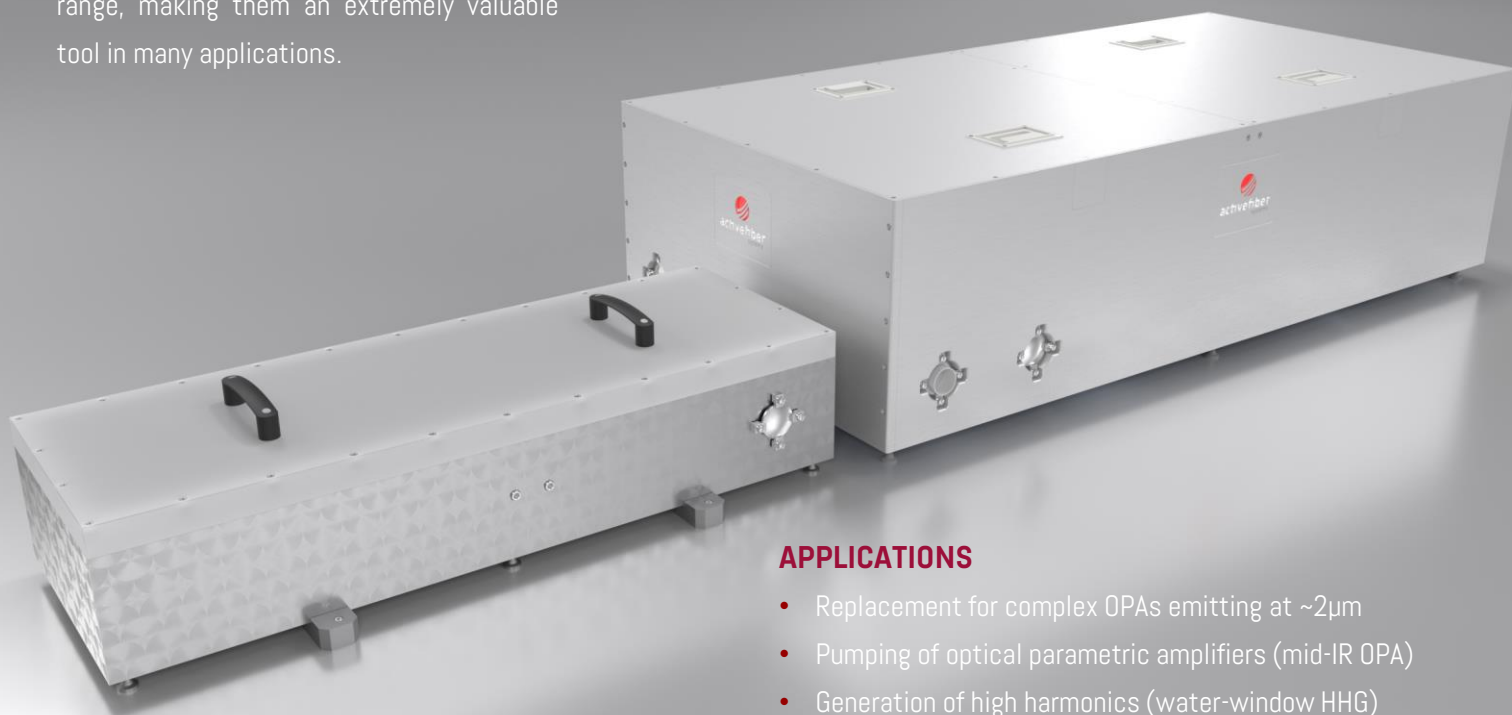
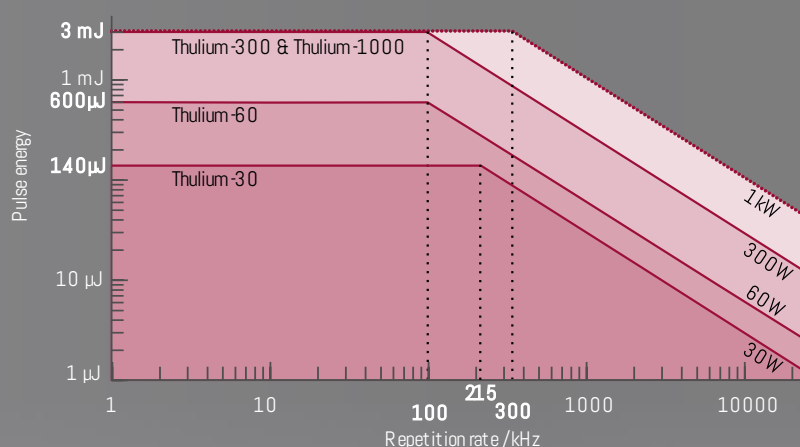


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The quality of any laser application crucially depends on the performance of the driving light source, i.e. the laser itself. In addition, most applications require more and more average power from the laser source to be cost-effective or sensitive enough.

AFS's ultrafast fiber lasers are characterized by an outstanding performance combined with flexibility and maximum stability. All essential parameters are software-controlled and can be tuned over a wide range, making them an extremely valuable tool in many applications.




## APPLICATIONS

- Replacement for complex OPAs emitting at ~2μm
- Pumping of optical parametric amplifiers (mid-IR OPA)
- Generation of high harmonics (water-window HHG)
- Materials processing

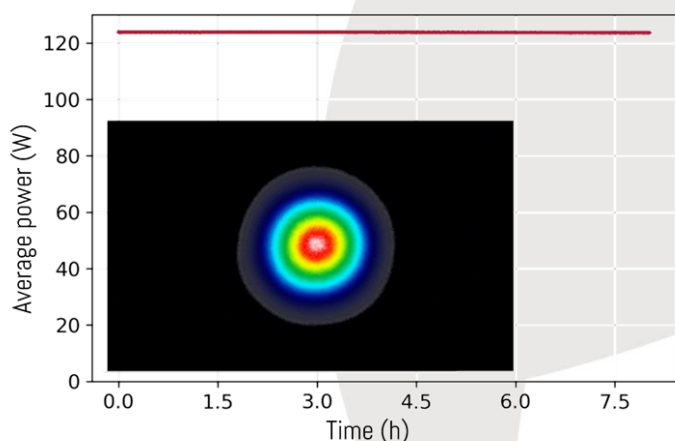
# CUSTOMIZED kW AND mJ ULTRAFAST THULIUM LASERS



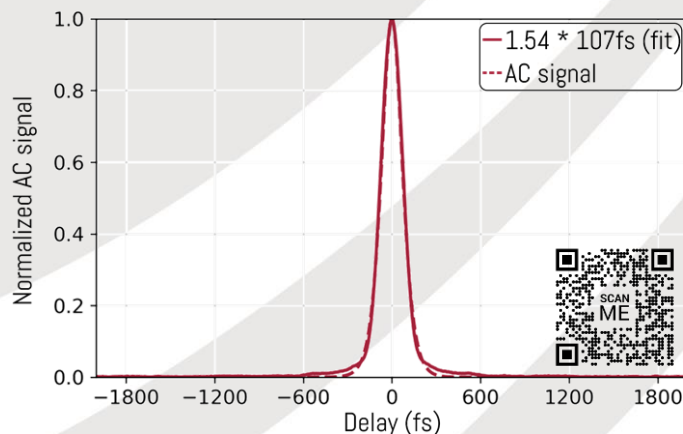
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	Thulium-30	Thulium-60	Thulium-300
Central wavelength	approx. 1950nm		
Repetition rate	50kHz (or single pulse via externally controllable AOM upgrade) up to 25MHz, others on request		
Pulse energy	up to 140μJ	up to 600μJ	up to 3mJ
Peak power	up to 0.9GW	up to 4GW	up to 20GW
Average power	up to 30W	up to 60W	up to 300W
Pulse duration	< 150fs ... 5ps adjustable, others on request		
Polarization	Linear		
Beam quality	close to diffraction-limited, $M^2 < 1.3$		
RIN slow (average power)	< 0.5% RMS [1/ (24hours) ... 1Hz]		< 0.6% RMS [1/(24hours) ... 1Hz]
RIN fast (pulse energy)	< 0.5% RMS [1Hz... $f_{rep}/2$ ]		< 0.6% RMS [1Hz... $f_{rep}/2$ ]
Beam pointing	< 20μrad RMS (< 10% nat. divergence)		
Dimensions laser (W × D × H)	112cm × 41cm × 25cm	132cm × 41cm × 30 cm	260cm × 150cm × 40cm
Mass	approx. 90kg	approx. 200kg	approx. 700kg
Add-ons	Mid-IR OPA, HHG, Few-cycle generation, CEP-stability, GHz-Burst, Fast Switch		
Logging	Logging of all operation parameters via control software, remote monitoring and service access		
Additional features	Turnkey reliability, all parameters software-controlled, temperature-stabilized and dust-sealed housing		

The specs above show only our main platforms. We gladly customize a system that fits your specific needs.



Typical characterization of power stability and beam quality



Typical autocorrelation trace of a Tm-CPA

