





Multi Flexi Tube MFT

FIBER - PICO - FEMTO - Laser Technology
IR - Green - UV

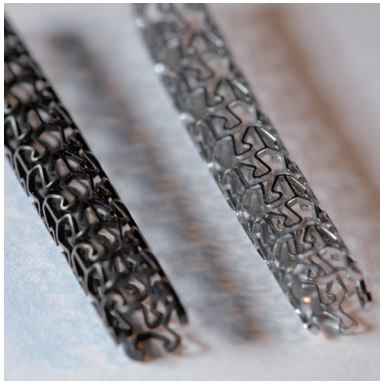


Laser processing systems to meet
manufacturing needs of the future

-  High performance TUBE Cutting system for DRY & WET operation
-  8 mm coronar STENT cut in less than 20 seconds by "cut on the fly"
-  Purpose built according to customers needs
-  Leading Company in modular Laser Micromachining

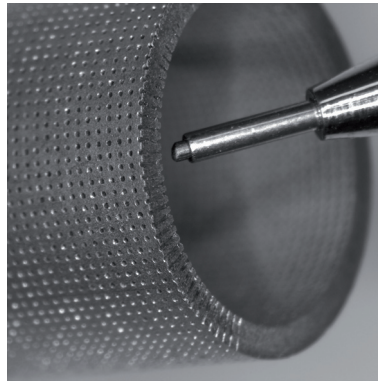
Field of Application

Cutting



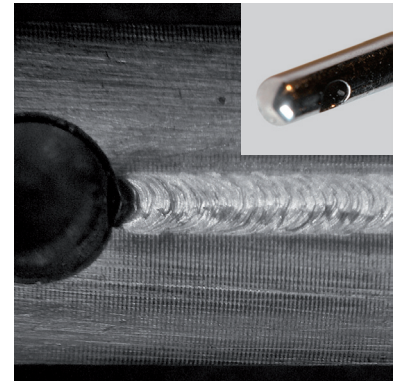
Cutting of medical implants, stents, hypotubes and heart valves with highest cutting quality less than 8 μm kerf width

Drilling



Drilling of holes with highest quality, accuracy and performance. Used in automotive and aircraft industry

Welding



Precise welding of different materials. Especially used for medical products like needles, canulas and endoscopes

+ Performance

- tube micromachining for dry or wet operation
- cutting length 50 - 700 mm
- tube diameter range 0,2 - 30 mm
- cutting speed on contour of up to 3000 mm/min (50 mm/sec)
- 8 mm coronar stent cut in less than 20 seconds
- adjustable nozzle and focus distance
- control cabinet fully integrated into machine frame

+ Reliability

- machine frame made out of GRANITE
- resistant to temperature and shocks, very high stiffness
- process parameter monitoring and reporting (FDA)
- NC controlled process gas pressure / flow and water flow
- high-precision tube guiding system (design Swiss Tec)
- warranty 2.000 up to 10.000 (optional) working hours

+ Profitability

- automatic tube feed system
- optional tube feeder (up to 48 tubes with max. 6 m length)
- made for 24/7 production
- low maintenance (important components exchangeable)
- 100% standard modules for configuration according to customers' needs
- application dependent laser configuration (IR / GREEN / UV)
- compact footprint (more than 50 % smaller compared to other brands)

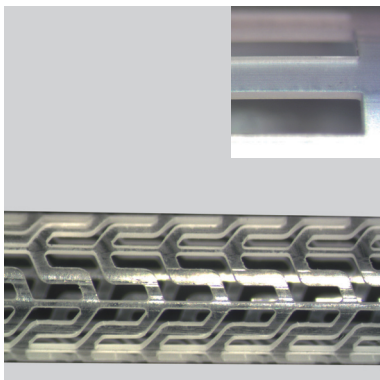
+ Easy operation

- process observation with color camera (high speed camera option for contour measurement of $\pm 1 \mu\text{m}$)
- easy access to operating area
- control panel with 17 up to 21 inch LCD touch screen
- security cover for operation under laser class 1
- CAM software for 2 and 2+2 axes with training etc.

Materials

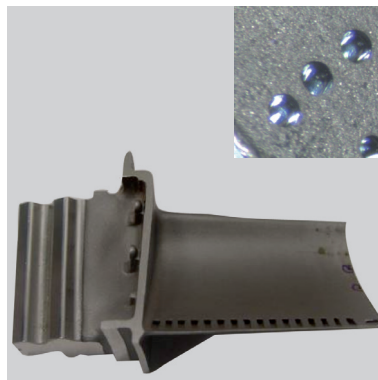
Stainless Steel, NiTiInol, CrCo, Tantalum, Titanium, Polymers, Magnesium, Ceramics, Glass, Carbon Fiber, Composites, Diamond, Platinum, Gold, Silver, et al.

Medical Applications



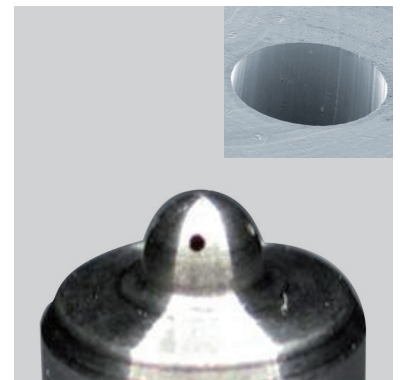
Polymer-Stent cut with PICO Laser

Aircraft & Aerospace Industry



Turbine blade hole drilling with PICO Laser

Automotive Industry



Injector nozzles hole drilling with PICO Laser

Specifications

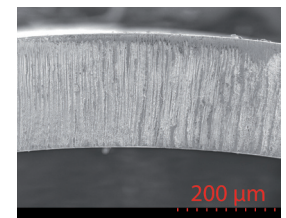
		MFT 80	MFT 120	MFT 160
general information				
machine dimensions*	[mm]	800 x 800 x 1300	1200 x 800 x 1300	1600 x 800 x 1300
weight	[kg]	650	850	1050
electrical supply (or country specific)		3 x 400V/50Hz	3 x 400V/50Hz	3 x 400V/50Hz
pneumatic supply	[bar]	min. 6	min. 6	min. 6
integrated transport system		✓	✓	✓
integrated control cabinet		✓	✓	✓
operator panel (LCD touch screen)		17 - 21 inch, movable	17 - 21 inch, movable	17 - 21 inch, movable
laser system (FIBER / PICO / FEMTO)		internal	internal	internal
mechanics				
max. cutting length	[mm]	50 - 150	150 - 350	400 - 650
X-axis: guiding rails		✓	✓	✓
X-axis: drive system (high dynamic)		linear motor	linear motor	linear motor
X-axis: max. cutting speed on contour	[mm/min]	3000 (50 mm/sec)	3000 (50 mm/sec)	3000 (50 mm/sec)
X-axis: measuring system	[µm]	+ / - 0,1 (0,01 option)	+ / - 0,1 (0,01 option)	+ / - 0,1 (0,01 option)
A-axis: direct drive (high dynamic)		✓	✓	✓
A-axis: measuring system	[incr/rpm]	180.000 (1,5 Mio option)	180.000 (1,5 Mio option)	180.000 (1,5 Mio option)
V-axis: tube center adjustment		AC-Servo motor	AC-Servo motor	AC-Servo motor
V-axis: measuring system	[µm]	+ / - 1	+ / - 1	+ / - 1
W-axis: nozzle distance, tube diameter		AC-Servo motor	AC-Servo motor	AC-Servo motor
W-axis: measuring system	[µm]	+ / - 1	+ / - 1	+ / - 1
positional accuracy	[µm]	+ / - 0,1	+ / - 0,1	+ / - 0,1
repeatability	[µm]	+ / - 0,5	+ / - 0,5	+ / - 0,5
accuracy of guide elements	[µm]	+ / - 1	+ / - 1	+ / - 1
security cover				
laser class		1	1	1
eye protecting inspection window		option	option	option
number of doors		2	2	2
interlock switch (2 channel wiring)		✓	✓	✓

* NET area incl. control cabinet integrated in machine frame

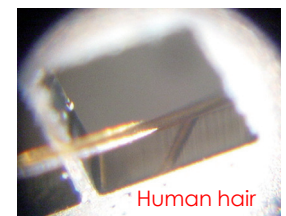
Laser sources / cutting system

		Fiber	Pico	Femto
wavelength	[nm]	1070 / 535 / 355	1070 / 535 / 355	1552
frequency	[Hz]	CW or < 50 kHz	max. 8 MHz	1 Hz - 100 KHz
pulse length		10 µs to CW	6 - 8 ps	< 800 fs
optical system	[mm]	f=50 / 80	f=50 / 80	f=50 / 80
exchangeable protection glass		✓	✓	✓
cutting nozzle diameter	[mm]	0,2 - 0,5	0,2 - 0,5	0,2 - 0,5
beam expander		1 - 8x	1 - 8x	1 - 8x
motorized beam expander		✓	✓	✓
nozzle distance adjustment		motorized	motorized	motorized
focus distance adjustment		motorized	motorized	motorized
"cut on the fly" technology		✓	✓	✓
cooling system		chiller	chiller	chiller
number of process gas connections		1 (2 option)	1 (2 option)	1 (2 option)
gas pressure monitoring and control		✓	✓	✓
tube flushing monitoring and control		✓	✓	✓
process observation with camera		Color CCD Camera (High Speed Camera as Option)		

Nitinol cut with FIBER Laser



Titanium cut with PICO Laser



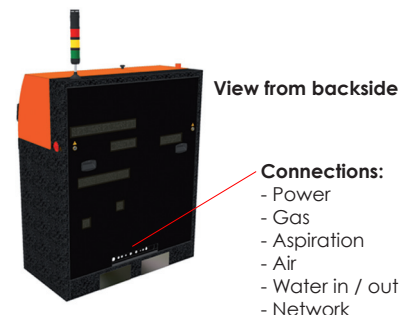
Equipment & Options

	MFT 80	MFT 120	MFT 160
Motorized axis			
X-axis with 50 - 150 mm cutting length	●	-	-
X-axis with 50 - 400 mm cutting length	○	●	-
X-axis with 50 - 700 mm cutting length	○	○	●
V-axis for TUBE center positioning	○	○	○
W-axis for TUBE-diameter / motorized nozzle distance positioning	○	○	○
Tube guiding system			
Exchangeable tube guiding bushing, system "Swiss Tec"	●	●	●
Sensors, valves			
Dynamic GAS pressure control system for max. 25 bar	○	○	○
Dynamic water flow system for "tube cleaning"	○	○	○
CNC-system with LAN connection, process control			
LAN (local area network)	○	○	○
Dynamic / graphic axis optimization	○	○	○
Graphic, real time visualisation of cutting process / geometry	○	○	○
Key switch for manipulating processing parameters / operator mode	●	●	●
Finger print scanner for manipulating processing parameters / mode	○	○	○
Bar code scanner for identification of work process data	○	○	○
Network transfer of processing data (FDA requirements)	○	○	○
Tube feeder for tube length 1-6 meters / 0,6 - 30 mm Ø			
12 tube automatic loading magazine, wet cutting	○	○	○
24 tube automatic loading magazine, wet cutting	○	○	○
48 tube automatic loading magazine, wet cutting	○	○	○
Water flow system for "tube cleaning" with adjustable pump	○	○	○
CAM-Software			
2 and 2+2 axes, + additional modules	○	○	○

- standard
- optional
- not available

factory training:

- free at SwissTec's facility
- training at customer's facility available



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