



Fiber Optic Competence Center

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NorthLab Photonics AB located in Stockholm, Sweden, is a European competence center for advanced fiber preparation, splicing and glass/fiber processing. NorthLab is the master distributor for the 3SAE Technologies product line in Europe.

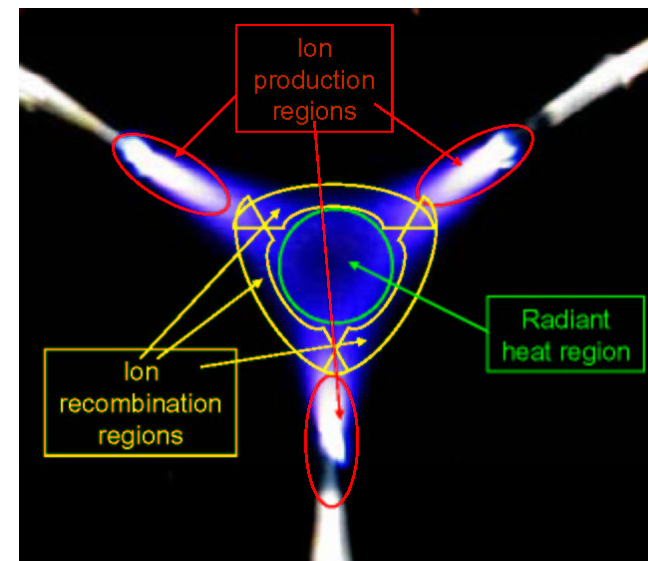
Speciality fiber Splicing and Processing with Ring of Fire[®] Technology

What is Ring of Fire® and how does it work?

The patented Ring of Fire® technology (ROF) is a wide area plasma field generated by using three electrodes and a three phase high voltage circuit.

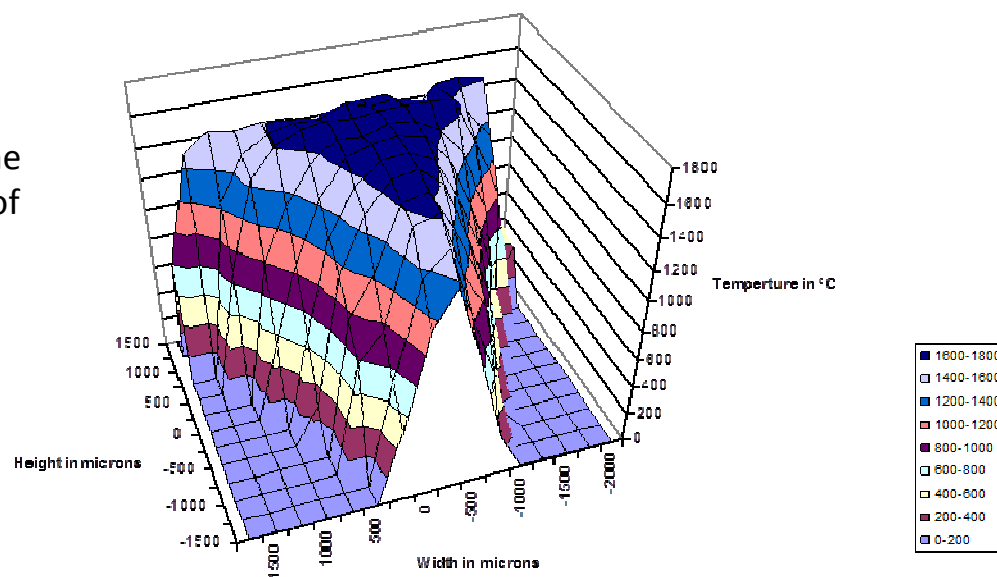
The area is largely isothermic and can be as much as 100 times larger than a standard two electrode system.

The power density can be adjusted to achieve fiber temperatures from less than 100°C to greater than 3000°C.



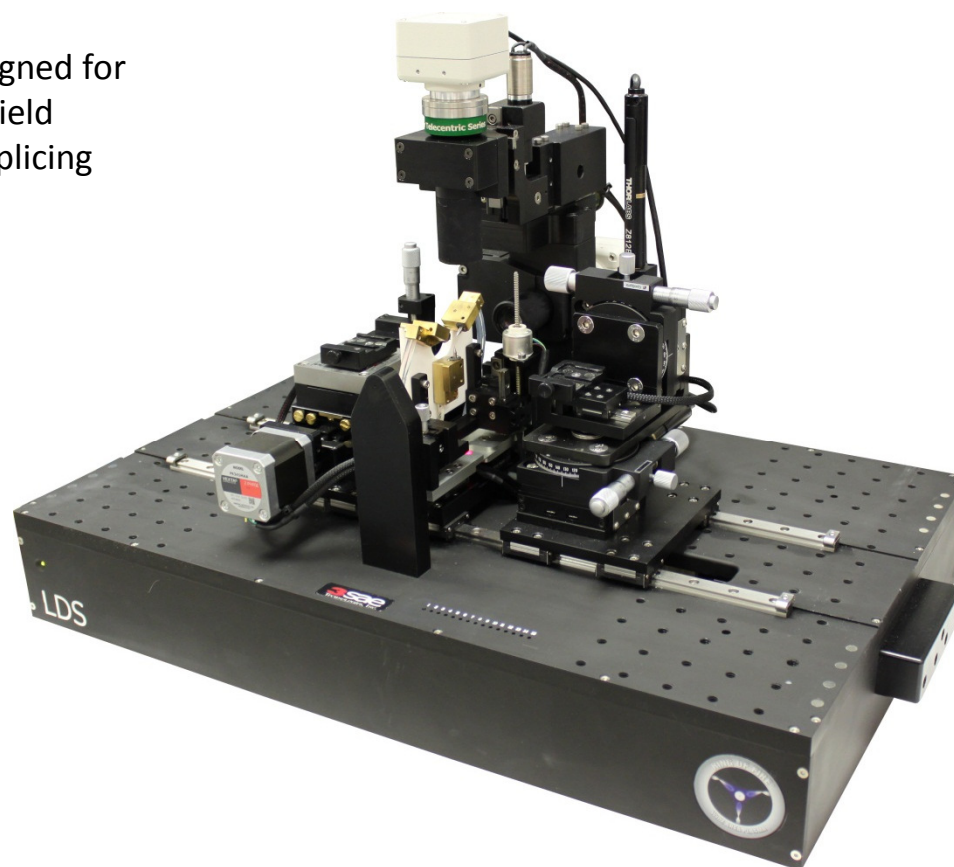
The value of Ring of Fire®

- Very large plasma area
- Isothermic properties
- Thermal dynamic range make it the ideal heat source for a wide area of applications



3SAE Large Diameter Fiber Splicing System, LDS II

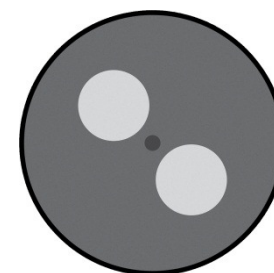
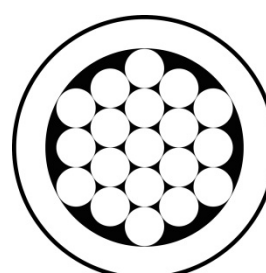
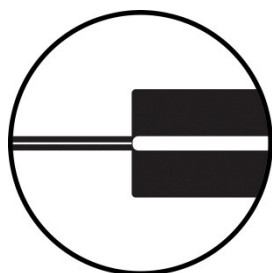
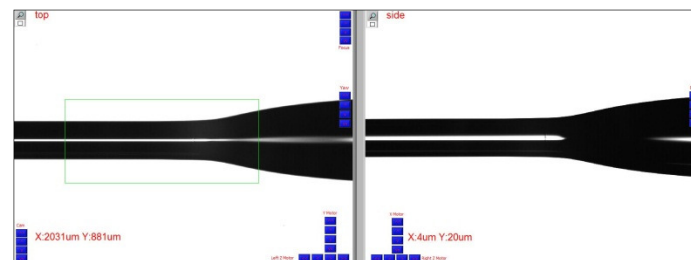
Fiber and glass processing system designed for production of fiber combiners, mode field adapters, couplers, end-caps and for splicing Large Diameter Fibers up to 2500 μ m



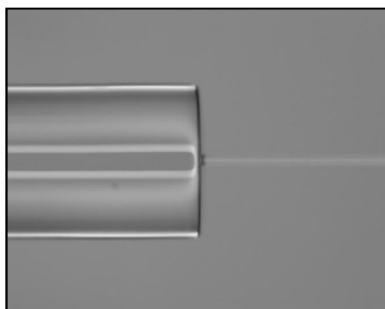
For manufacturing and R&D of optical components

Our products and services are specifically designed for manufacturing of fused optical components such as:

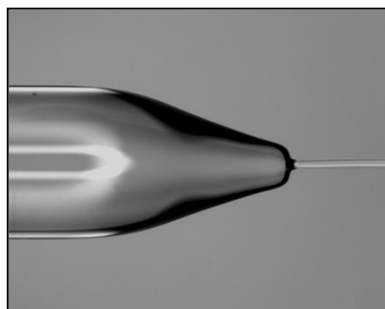
- Combiners/Bundles
- Mode field adapters (MFA)
- Couplers, Lenses
- End Caps



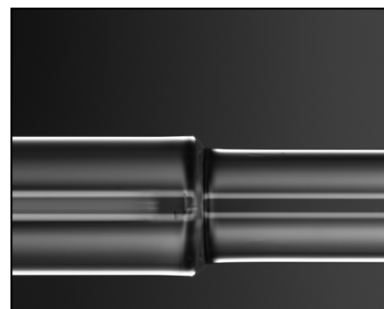
Samples



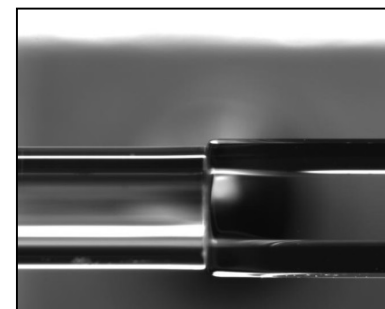
2000µm to 125µm



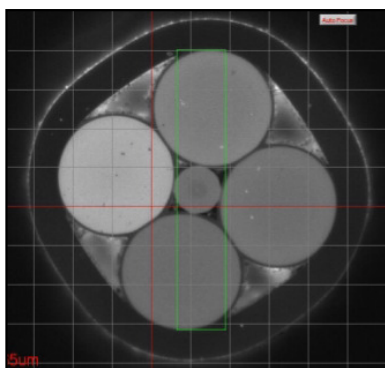
2000µm tapered to 125µm



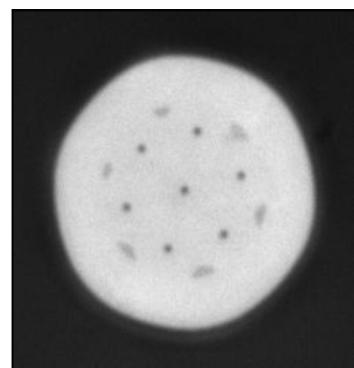
2800µm PCF to 1500 fiber



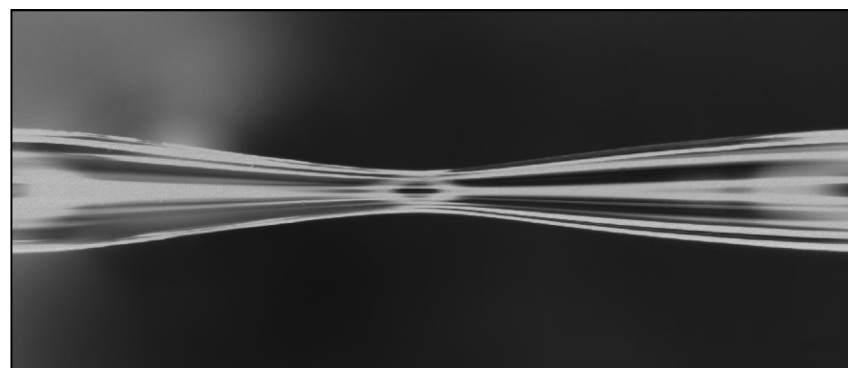
2600µm round to hex fiber



4:1 Pump COMBINER
400µm Pump to 125µm Signal

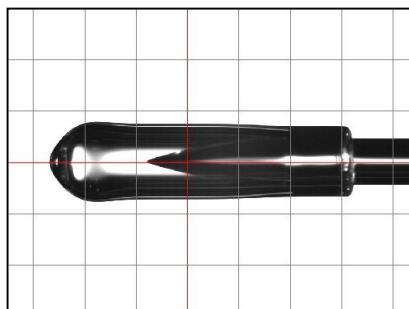


7:1 Pump COMBINER
7x 125µm fibers

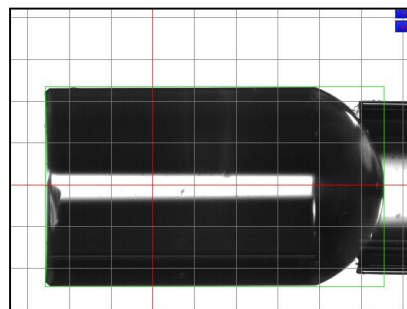


Taper

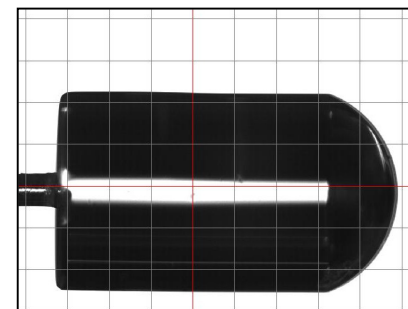
Samples



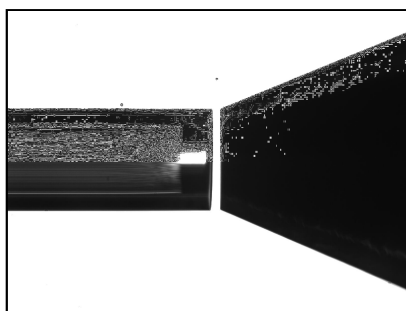
Overtubing medical



1200 μ m end cap



1200 μ m end cap to 220 μ m

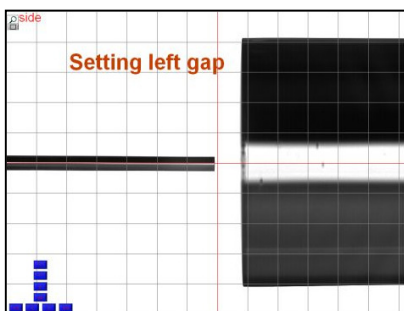


1400 PCF to End cap

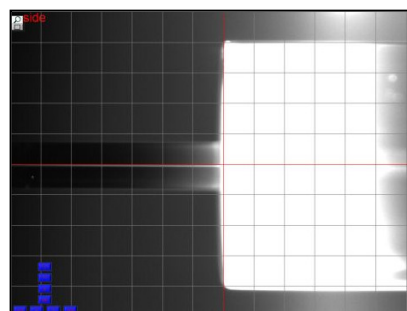


1400 PCF to End cap

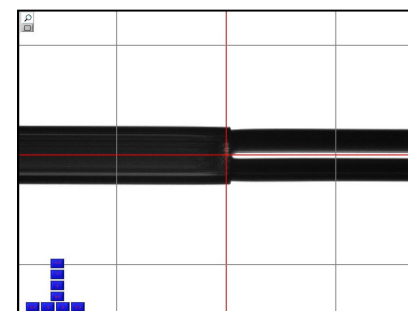
Samples



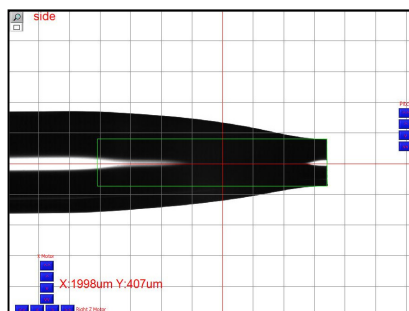
125 μ m to 2000 μ m



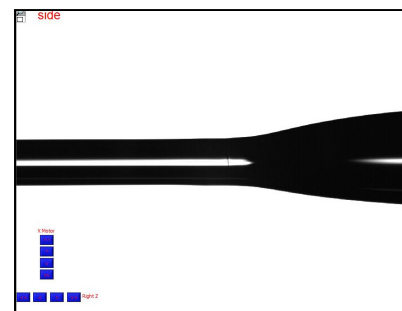
250 μ m to 2000 μ m end cap



130 μ m PCF to 125 μ m



800 μ m taper to 400 μ m

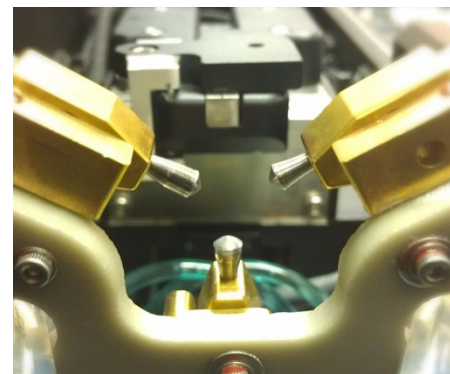
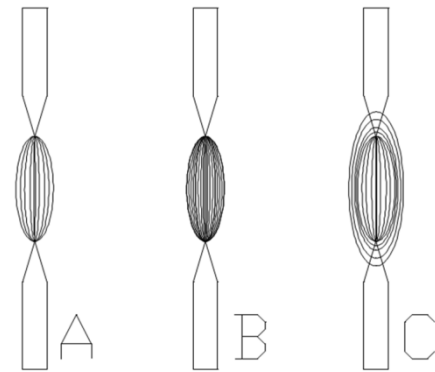


800 μ m taper to 400 μ m

What is Thermally Stabilized Plasma[®]

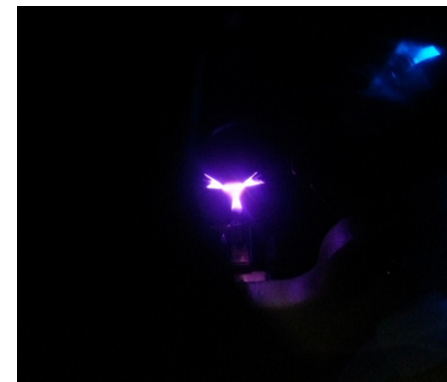
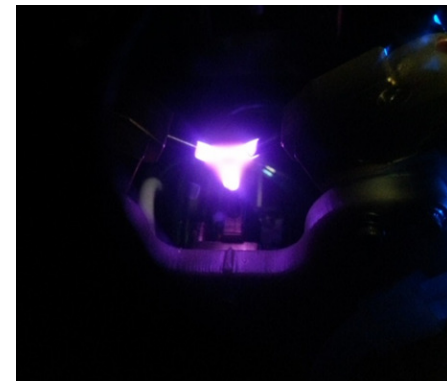
An electrical discharge, suitable for heating optical fibers for processing, is made in a controlled partial vacuum, such that saturation of available ionizable gas molecules is reached.

The work piece temperature is thereby made to be a stably controlled function of the absolute air pressure and is insensitive to other conditions.



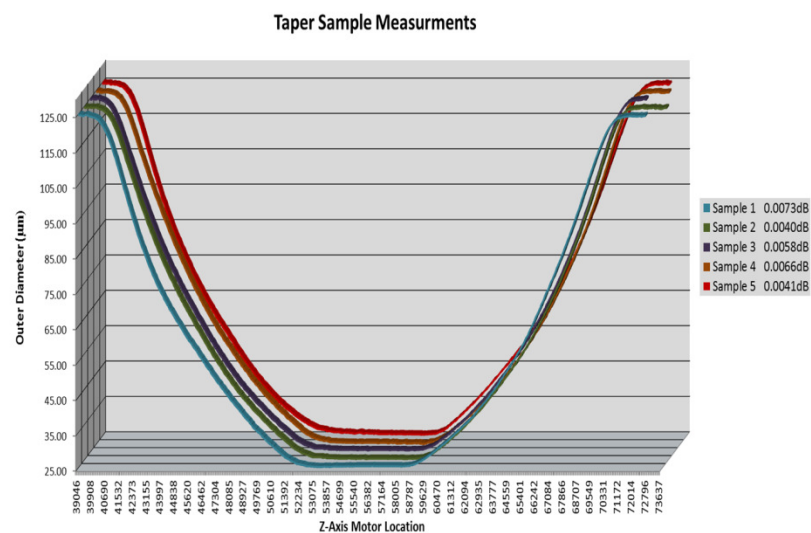
The value of Thermally Stabilized Plasma[®]

- The temperature stability of this technology is immune to environmental conditions such as electrode condition, outside temperature, humidity, pressure, and to some extent the power applied. This attribute ensures long term consistency and repeatability over any preexisting technology.
- Significant increase of the maximum heat zone width along the fiber from $\sim 0.5\text{mm}$ to $>3.5\text{mm}$ substantially improves adiabaticity of tapers.
- Software programmable heat zone width allows for taper shape flexibility that is otherwise unachievable.



3SAE Taper Manufacturing Station, TMS

Creates high quality tapers, bundles and standard or PM couplers, also incorporating an integrated cleaver.



Performance of Thermally Stabilized Plasma®

3SAE Taper Results, TMS

SMF Single Tapers						
Sample	Starting power (mW)	Ch. 1	Ch.2	total loss (mW)	Loss (%)	Loss (dB)
1	1,157	1,139	0,000	0,018	1,556	-0,07
2	1,157	1,151	0,000	0,006	0,519	-0,02
3	1,157	1,149	0,000	0,008	0,691	-0,03
4	1,159	1,152	0,000	0,007	0,604	-0,03
5	1,157	1,156	0,000	0,001	0,086	0,00
6	1,157	1,155	0,000	0,002	0,173	-0,01
7	1,155	1,136	0,000	0,019	1,645	-0,07
8	1,157	1,155	0,000	0,002	0,173	-0,01
9	1,157	1,151	0,000	0,006	0,519	-0,02
10	1,156	1,145	0,000	0,011	0,952	-0,04

3SAE Taper Results, TMS

SMF Coupler Tapers						
Sample	Starting power (mW)	Ch. 1	Ch.2	total loss (mW)	Loss (%)	Loss (dB)
1	1,145	0,552	0,524	0,069	6,018	-0,27
2	1,145	0,530	0,444	0,171	14,911	-0,70
3	1,15	0,581	0,521	0,048	4,165	-0,18
4	1,145	0,470	0,642	0,033	2,862	-0,13
5	1,157	0,092	0,031	1,034	89,327	-9,72
6	1,157	0,488	0,659	0,009	0,786	-0,03
7	1,157	0,575	0,339	0,243	21,006	-1,02
8	1,157	0,582	0,406	0,170	14,665	-0,69
9	1,157	0,559	0,538	0,060	5,209	-0,23
10	1,157	0,522	0,589	0,046	3,973	-0,18

3SAE Plasma Fusion Splicer-Small Diameter, (PFS-SD)

Plasma Fusion Splicer-Small Diameter (PFS-SD)

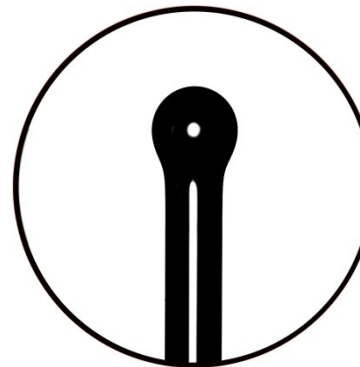
A high precision fusion splicer specifically designed for splicing small diameter fibers and fibers requiring very low temperatures such as ZBLAN, GRIN and Tellurite fibers.

The PFS is utilizing the second generation Ring of Fire Technology with Thermally Stabilized Plasma.

3SAE Lense Forming Station, LFS



Allows users to automatically process a fiber for the formation of a ball lens with a user-determined target diameter.





3SAE AutoStrip II

Automatic mid-span window stripper for acrylate based fibers, utilizing Burst™ Technology



3SAE Plasma Work Station

Automatic fiber stripper for Polyimide coatings, utilizing the Ring of Fire® Technology



3SAE Fiber Preparation Unit II

Automatic fiber stripper for Polyimide coatings, utilizing Ion Enhanced Cold Plasma™ Technology

3SAE Fiber Stripper, Adjustable

Adjustable thermo mechanical stripper for fiber diameters from 400-1000μm



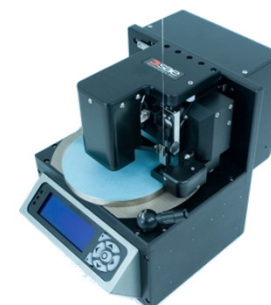


3SAE Liquid Clamp Cleaver

High performance ultrasonic cleaver for LD fibers from 125 μ m to 1000 μ m, utilizing Liquid Clamp™ Technology

3SAE End Face Preparation Station

High performance fiber polisher for Large Diameter Fibers up to 2000 μ m



3SAE Linear Tensile Tester

Automated linear tensile tester

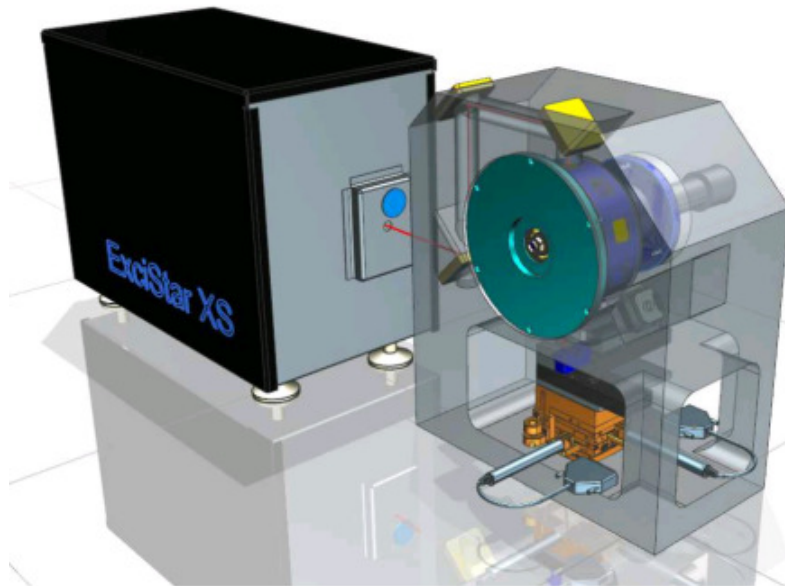


3SAE Ultrasonic Cleaner

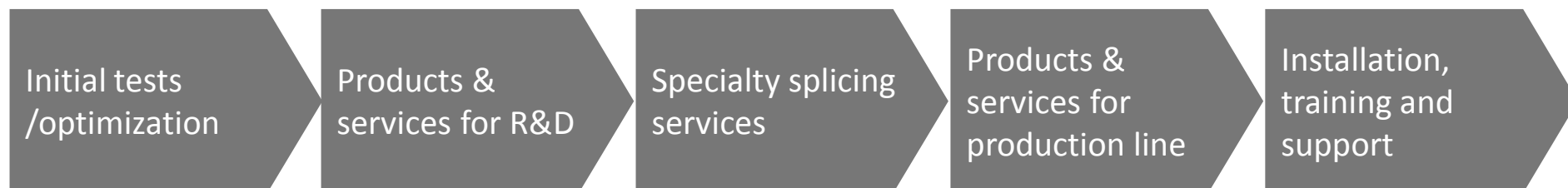
Ultrasonic fiber cleaner specifically designed for fiber splicing applications



FBG Manufacturing Tool



Helping you all the way...



Concept/prototype - - - - -> Pilot production - - - - -> Skill - - - - -> Full scale production

