





we are major contributors to some of the world's most advanced FTTx projects.

2 Corporate Info

Name XFS Communications, Inc.

China site: Bldg. B, No. 9 Jiejiabao Rd., Shiyan, Baoan Dist., Shenzhen 518108
Brazil site: Rua Claudino Pinto, 152,

Brás, CEP:03040-040 São Paulo

Established May 2008

Registered capital USD\$4.25 million

Number of employee 300

Manufacturing sites

Factory floor area 10,000 square meters

Main products

Fiber patchcords, pigtails, pre-terminated cables, MPO/MTP® multi-fiber cabling systems

NTT-AT

Factory's capacity

100,000 ends of Grade A optical termination per day

Business model

Custom manufacturing solution provider (OEM)

ISO 9001, ISO 14001, RoHS, REACH, UL, CPR, CE, Telcordia, Anatel, TLC, National High Tech Enterprise

Number of patents

40









XFS is the exclusive manufacturer of the cabling system used in the point-to-point FTTH network in Netherlands, which most of the connections are made with low loss SM MPOs and special enclosures

3 Management Team



CHARLES C. S. SUN Founder & CEO

Mr. Charles Sun is the founder of XFS. He is a 30-year fiber optic industry veteran. He has more than 20 years of experience in fiber cable, patchcord and pigtail manufacturing. In the early 80s, Mr. Sun led Taiwan's first engineering team to transfer fiber optic technology from Nokia and built Taiwan's first fiber cable production line. In the early 90s, he was among the first wave of ventures transferring fiber optic manufacturing know-how from Taiwan to China. He later established ETD Enterprise Ltd. in 1994 and grew the company to become China's largest patchcord/pigtail vendor in the early 00s. The company was acquired by Amphenol Corporation (NYSE: APH) in 2006.

Mr. Sun holds more than 20 patents in the fiber optic field and has a bachelor degree in mechanical engineering from National Ocean University in Taiwan.



DR. HEN TAI SHANG

Dr. Hen Tai Shang is a pioneering figure in Taiwan's fiber optic industry. After spending 11 years as a scientist on the development of what was then the world's most advanced fiber optic technology at AT&T Bell Laboratories in Crawford HillNJ and Norcross GA, USA, Dr. Shang returned to Taiwan and founded POFC (TSE: 2496) in 1991. It was the first optical fiber company in the country. He led the company to an IPO in 2002. Dr. Shang also served as the founding chairman of Taiwan's OptoComm Forum and the technical advisor to Chunghwa Telecom.

Dr. Shang holds a PhD degree in physics from the University of Illinois at Champaign-Urbana in the USA. He has over 40 publications and more than 10 international patents in the fiber optic field.

4 Strategic Partner: NTT Advanced Technology Corp.



Appreciation Letter

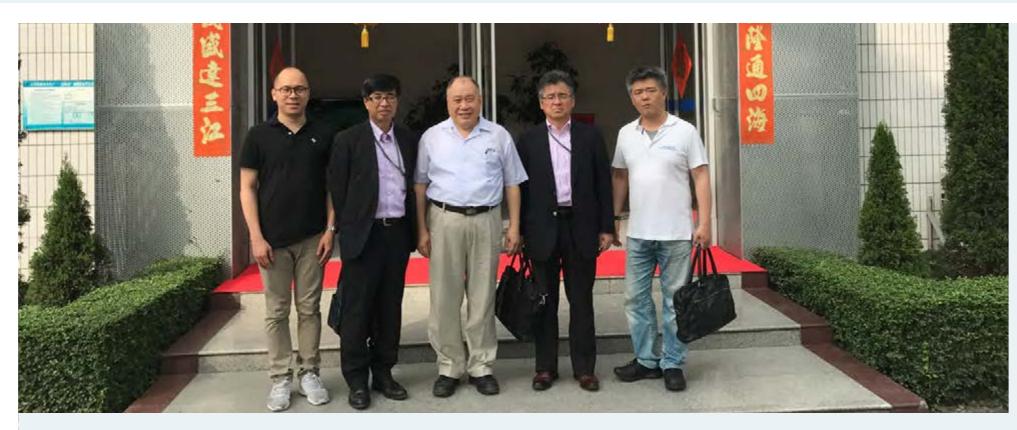
Dear Mr. Charles Sun/XFS Communications, Inc.,

We would like to express our sincere appreciation for your service to us as one of our most reliable regular suppliers and as a strategic partner. For years, you have always provided the highest quality products with even better customer service. We appreciate the level of detail and accountability you have demonstrated on each project (list below), and the way you conduct business as a whole. We have, and will continue to, recommend your service to other companies and contacts. Our team could not be more satisfied with your work, and we look forward to continuing this relationship.

- 1. MPO/MTP assemblies and a variety of fiber patchcords/pigtails
- 2. Optical switch
- 3. A variety of optical devices and equipments

Warm regards,

Kunihiko Sasakura
Business Unit General Manager
Optical Products Business Unit
Global Business Headquarters
NTT Advanced Technology Corporation













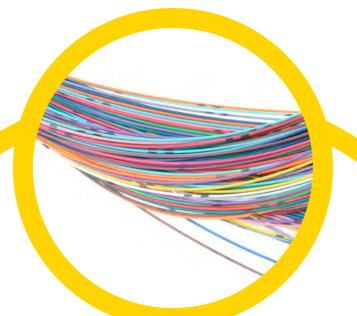
FIBER OPTIC COMPONENT FACTORY

FO passive component design and manufacturing:
Patchcord, Pigtail,
Pre-terminated cable,
MPO, Splitter,
Optical switch, WDM



PRECISION MACHINERY FACTORY

High precision machine and tooling design and manufacturing:
Polishing machine & fixture,
Automatic assembly machine,
End-face/Loss Inspector



CABLE PRODUCTION FACTORY

Indoor cable,
Single/multi-core cable,
Ultra bendable cable,
LSZH, OFNP, OFNR,
UL-certified cable



INJECTION MOLDING FACTORY

High precision molding design and injection manufacturing: Connector kits, Adapter kits, Splice closure, Termination box

XFS has employed a vertical integrated model for manufacturing patchcords, pigtails, pre-terminated cables, etc. The materials including cable and connector kits are self made, and we have secured high quality, tailor-made ferrules from strategic partner. Besides, all of the tools, fixtures and equipment used for production are made by our own machinery factory.

5 Vertical Integration

Superior Specs & Large Quantity

E.g. SC/APC, LC/APC, SM MPO, Insertion loss < 0.1dB, Return loss > 70dB, Daily production: 100,000 ends



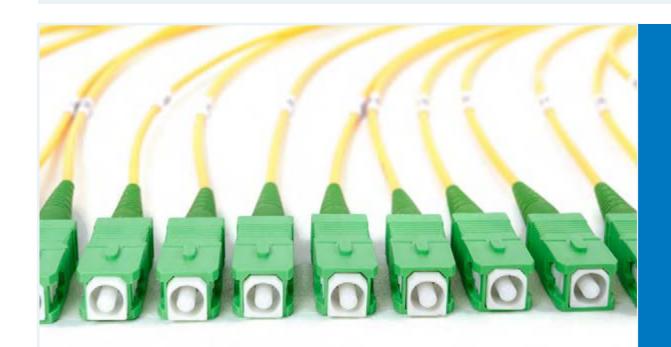
High Complexity

E.g. 96c-, 144c-, 288c-fanout, Fanout length > 10 m, End tolerance: ± 0.5cm

XFS focuses on fiber interconnect products with extremely low attenuation and excellent reliability. Most of our products are single mode APC connection type for telecom and datacom application, and our MPO assemblies, with support from NTT-AT, also have exceptional optical performance and are the perfect choice for data center application. We also provide a series of innovative solutions for effectively addressing most of the challenges faced in FTTH last mile deployment.

6 Our Strongholds

7 Fiber Interconnect Products



FIBER PATCHCORDS AND PIGTAILS

100% of shipments are IEC B-grade or above level; 90% of shipments are LC/APC and SC/APC type



MPO ASSEMBLIES

No.1 optical performance SM IL typ. \leq 0.1dB MM IL typ. \leq 0.05dB

PRE-TERMINATED CABLES

High complexity: fanout number up to 288 cores; fanout length > 10m



288f Trunk Cable: 144x Uniboot Duplex LC to 24x Ultra Low Loss 12f MPO

CONNECTOR KITS & ADAPTERS

Innovative connector/adapter designs provide convenience, space savings and easier cable management

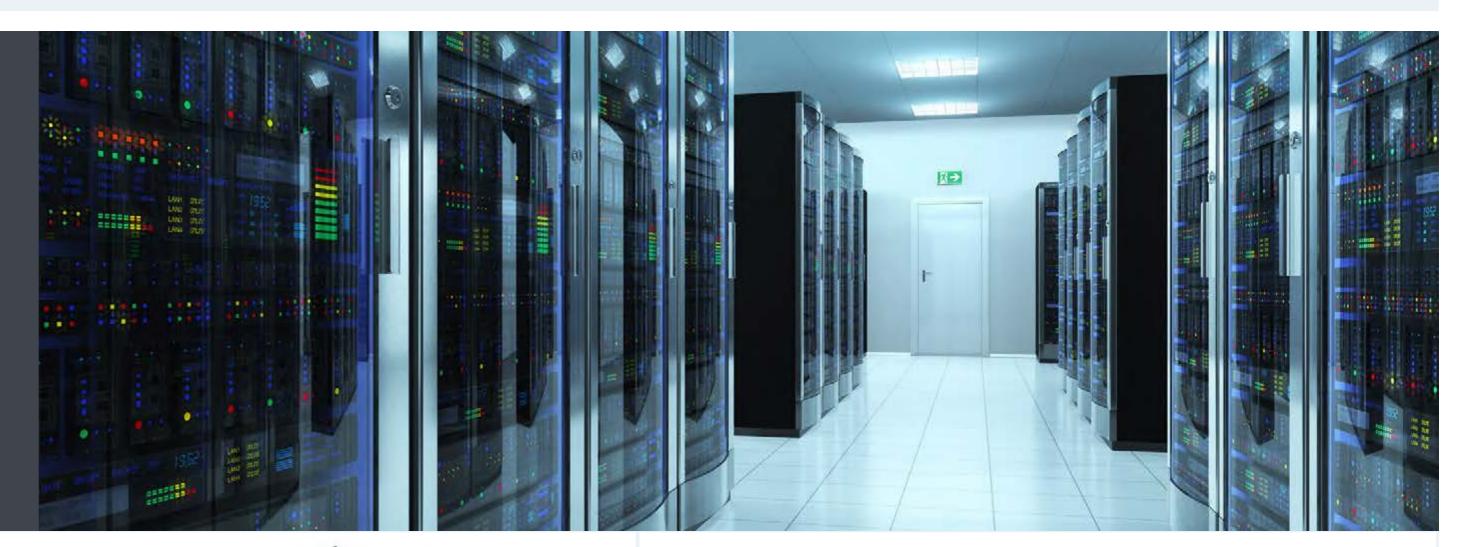


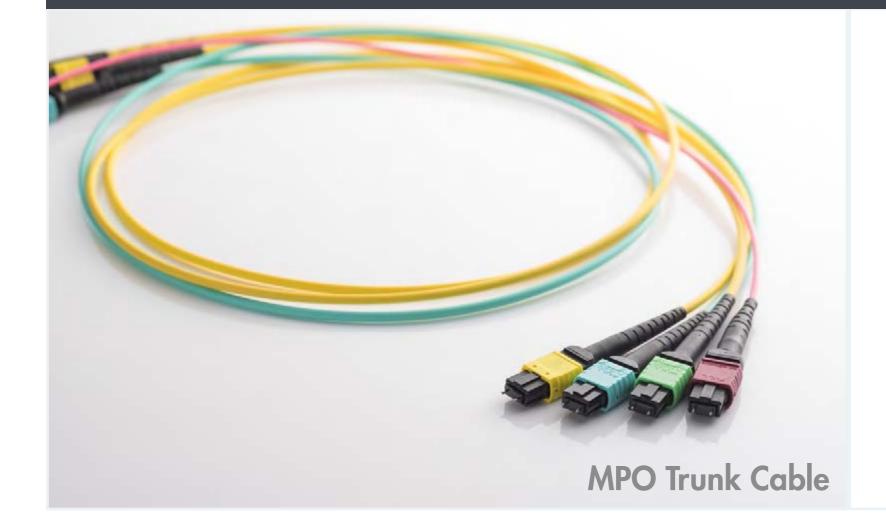
8 Data Center Solutions

The Ultimate Low-Loss Multi-Fiber Connectivity Choice for 400G System and Beyond

IL max \leq 0.25dB (SM), \leq 0.15dB (MM)

Achieved without Using Low-Loss MT Ferrule



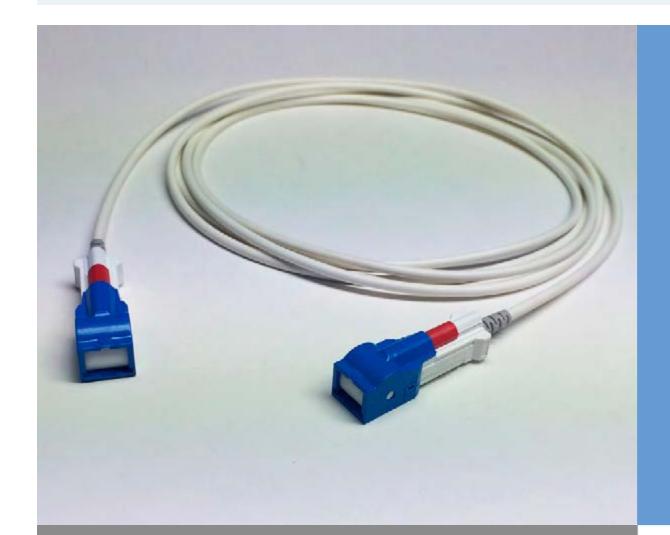






MPO Fanout

9 FTTX Solutions



AUTO SHUTTER CONNECTOR

Patented auto shutter connector/ adapter is the perfect fit for in-house fiber network application with a sophisticated dust and laser protection mechanism. The product is the mainstream choice for FTTH deployment in Japan

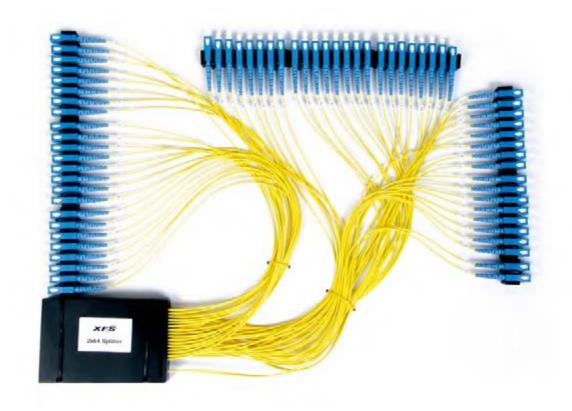


FIELD ASSEMBLY CONNECTOR KIT

Designed for use in FTTH construction site mainly for closure and the home terminal end, provides high optical properties, and in particular achieves a return loss of more than 60dB

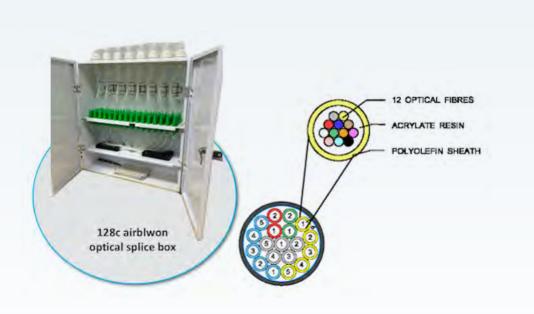
SPLITTER MODULES

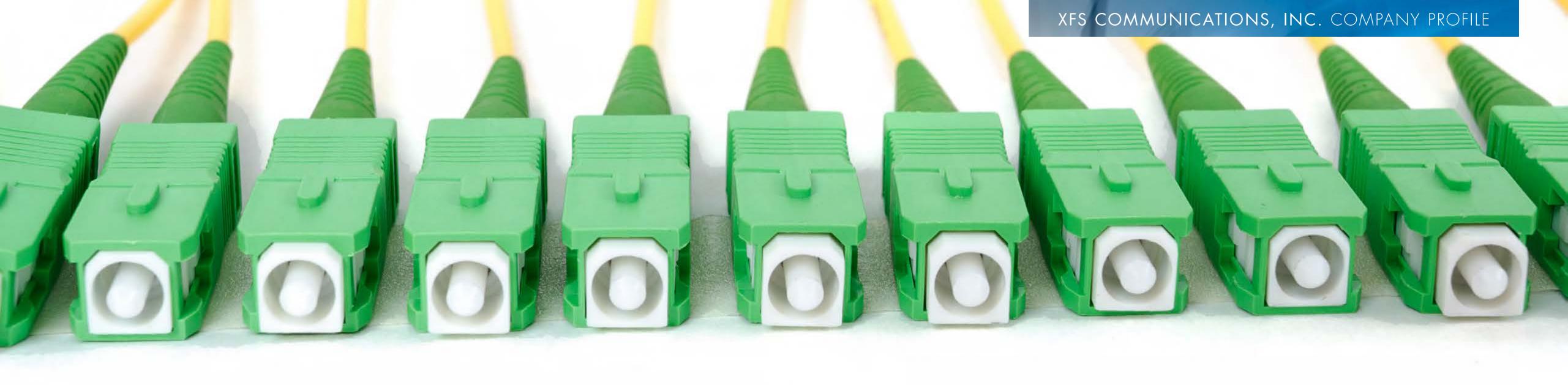
High stability and high reliability
IEC and Telcordia
standards compliance



AIRBLOWN FIBER SYSTEM

Recommended for medium to long-distance drop networks where substantial cost savings can be achieved by reducing the number of splice points and by installing fiber incrementally when needed. The technology also enables future expansion of the network without costly additional civil work





10 Influence of Connectors' Attenuation on Fiber Network Performance

The larger the attenuation, the greater the decrease in power received, thus increasing the bit-error-rate (BER). A receiver discards damaged packets due to bit errorsand asks for them to be retransmitted, thus adding to latency. Connectors with extremely low attenuation help to lower BER at the receiver and to reduce latency, thereby boosting network performance.

As the data rate continues to increase, the influence of the connectors' attenuation on network performance will become more pronounced. Extremely low loss connectors are a future proof solution.

A-grade Optical Performance

Random mated insertion loss (SM) \leq 0.07dB (average) \leq 0.12dB (for 97% of samples) Return loss (APC) \geq 70dB Return loss (UPC) \geq 55dB

Extremely low insertion loss + high return loss

= No.1 optical

performance

3D specs are stricter than IEC's while polishing first-pass rate > 99%

A-grade 3D Geometry

Radius of curvature (mm): $6.5 \le x \le 9$ (SC/APC) Apex offset (µm): $0 \le x \le 30$

Fiber height (nm): $-30 \le x \le 30$ APC angle (°): $7.8 \le x \le 8.2$ Key error (°): $-0.2 \le x \le 0.2$

Zero scratches and defects on ENTIRE ferrule's end-face

Entire ferrule's endface including its edges of 100% of our fiber optic connectors is free of any dirt, scratches and defects

Telcordia reliability test passed

G

GR-326 Tests Passed

Passed Telcordia GR-326-CORE testing conducted by Telcordia Network & Product Integrity (NPI) in Piscataway, NJ, USA

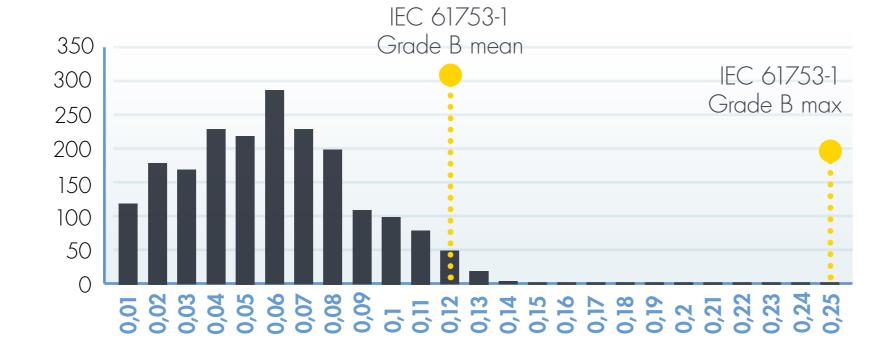
Fiberopticconnectors are widely known as the **weakest and most problematic** points in a fiber network. XFS proposes "3A+G" as the performance and reliability level for our single-fiber connectors with the types of SC, LC, FC, ST and LSH(E2000).



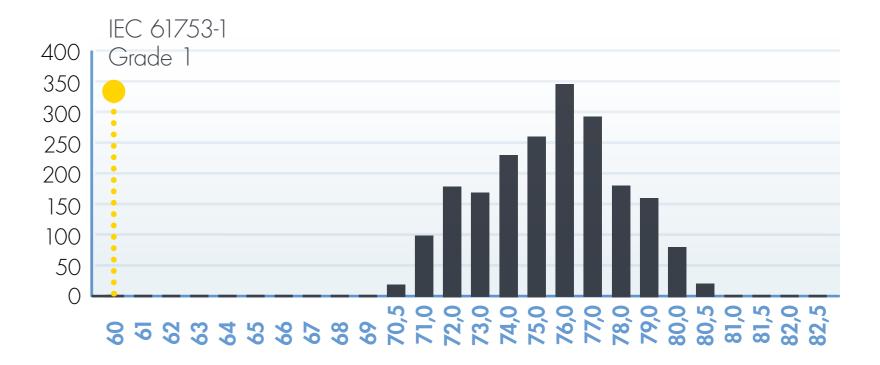


A-GRADE OPTICAL PERFORMANCE

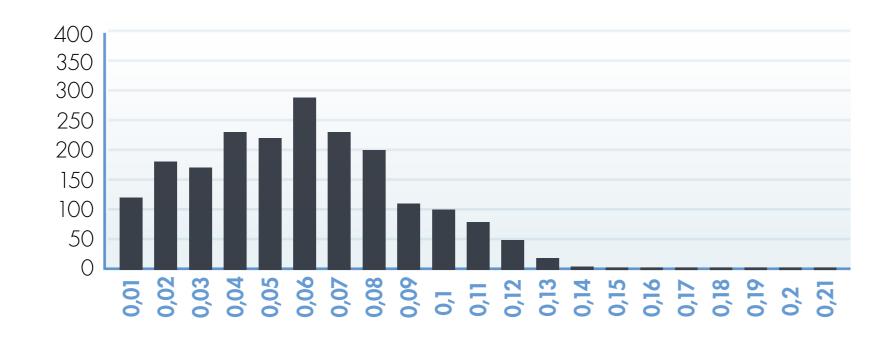
SM APC Random Mated Insertion Loss Distribution



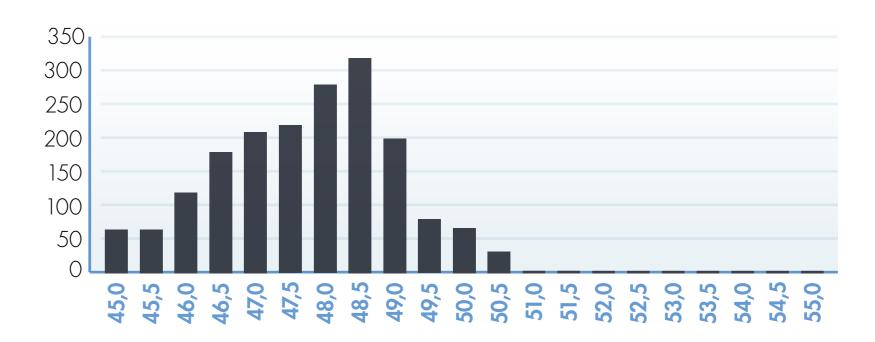
SM APC Return Loss Distribution



MM Random Mated Insertion Loss Distribution

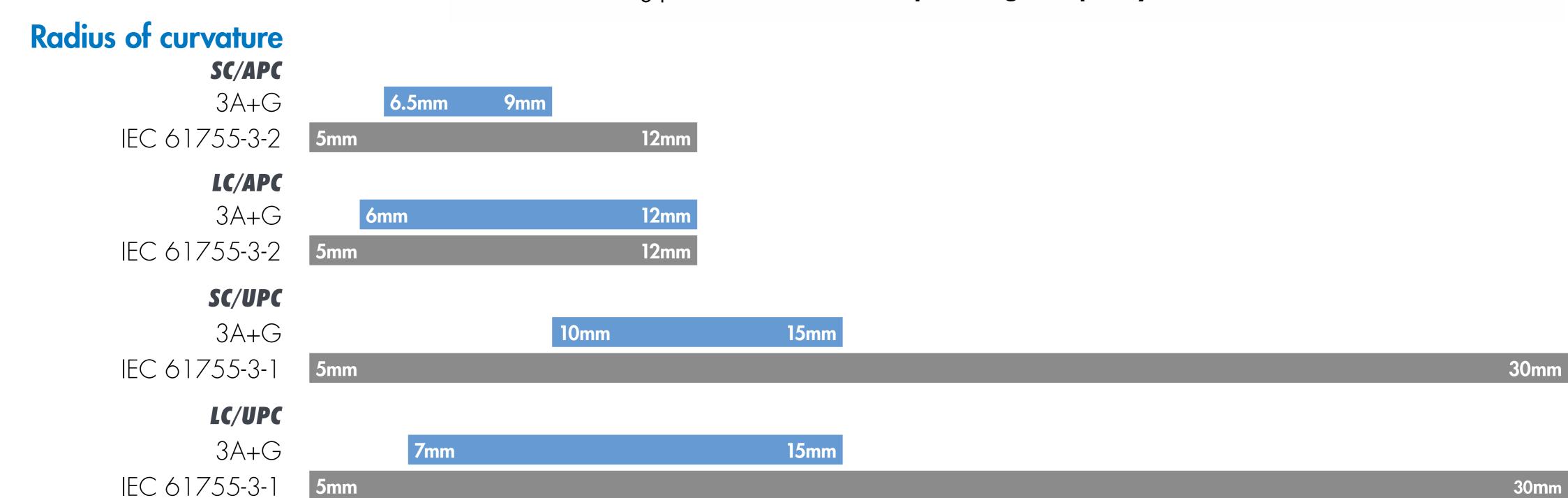


MM Return Loss
Distribution





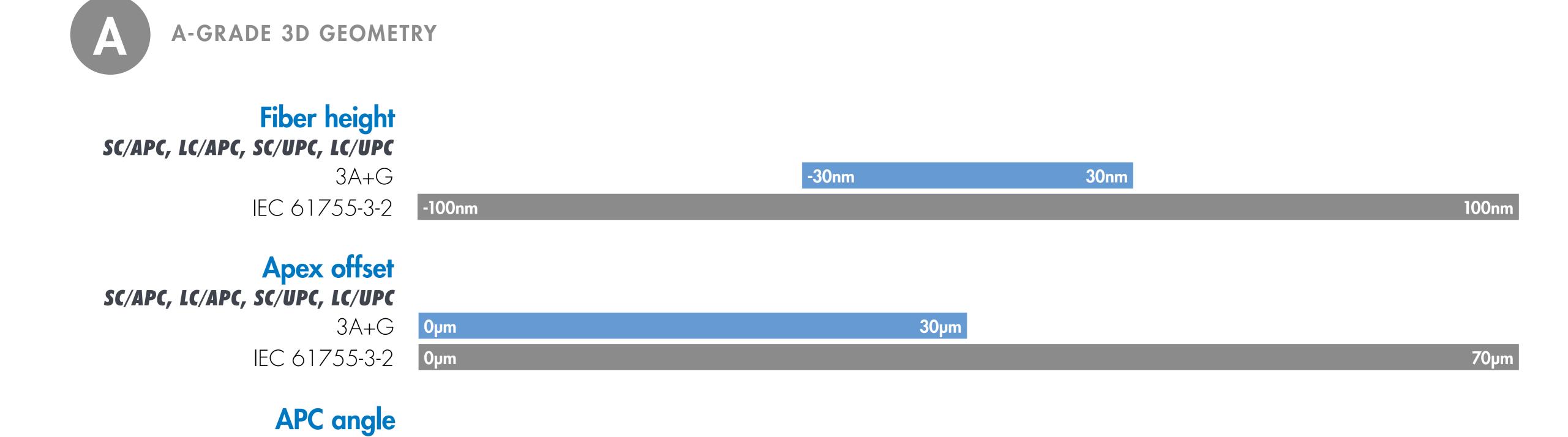
"3A+G" fiber optic connector has more rigorous end-face geometry than IEC: the radius of curvature, apex offset, fiber height and APC angle have all been effectively controlled for exceptional product consistency and optical performance. More importantly, despite such rigorous specifications, "3A+G" manufacturing process can still achieve a **polishing first-pass yield of over 99%.**



SC/APC, LC/APC

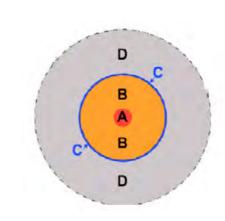
3A+G

IEC 61755-3-2 7.5°





A-GRADE END-FACE QUALITY



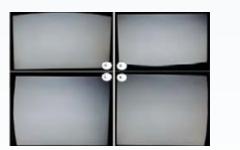
End-face Examination Standard (SM)

Zone	Range (µm)	XFS		IEC 61300-3-35 ed2.0 (APC)	
		Scratches	Defects	Scratches	Defects
A: Core	0 to 25	None	None	4 ≤ 3µm	None
B: Cladding	25 to 115	None	None	No limit	No limit < 2µm 5 from 2µm to 5µm None > 5µm
C: Adhesive	115 to 135	None	None	No limit	No limit
D: Contact	135 to 250	None	None	No limit	None > 10µm
E: Rest of ferrule		None	None	No limit	No limit

For end-face quality, IEC guidelines allow a small number of defects that are small in size. "3A+G" fiber optic connector is the first in the industry to deliver connectors with zero defects on the entire ferrule end face. Thus the connector's light-extraction efficiency is optimized, and its top-notch optical performance can hardly be matched by other manufacturers.



Zero defects in the Core, Cladding and Adhesive zones



The Contact zone and its edges are also free of defects



GR-326-CORE CERTIFICATION BY TELCORDIA/ERICSSON

- Flammability Test
- Intermateability Test
- Optical Performance Test
- · Thermal Age Test
- Thermal Cycle Test
- Humidity Aging Test
- Humidity/Condensation Cycling Test
- Post-Condensation Thermal Cycle Test
- Vibration Test
- · Flex Test
- Twist Test
- · Proof Test
- Transmission With Applied Tensile Load Test

- Impact Test
- Durability Test
- End of Test Criteria Test
- Dust Test
- Adhesive Testing
- Airborne Contaminants Test
- Salt Spray Test
- Immersion/Corrosion Test
- Groundwater Immersion Test
- Ferrule Endface Geometry Test
- Connector Installation Test
- Extended Thermal Age Test
- Extended Humidity Test
- Extended Thermal Cycle Test

Telcordia GR-326-CORE is one of the most rigorous reliability testing criteria in the industry. "3A+G" APC optical jumpers have passed the GR-326-CORE testings conducted by Telcordia's NPI division in New Jersey, USA.





XFS SC/APC
3.0mm Jumper
Testing Certificate

XFS SC/APC
0.9mm Jumper
Testing Certificate



Optical Performance (12c MPO Connector)

Item	Parameter			Reference
		Single mode	Multimode	
Incontinu Inco	Тур.	0.1dB	0.05dB	IEC 6120024
Insertion loss	Max.	0.25dB	0.15dB	— IEC 61300-3-4
Return loss		APC: ≥65dB; UPC: ≥50dB	≥40dB	IEC 61300-3-6

MPO connectors are well-suited for high-density, high-traffic applications. XFS' manufacturing process employs one of the most advanced polishing technologies for producing MPOs with the best optical performance in the industry.

"With XFS' proprietary polishing technology, we can produce low-loss MPOs without using low-loss MT ferrules."

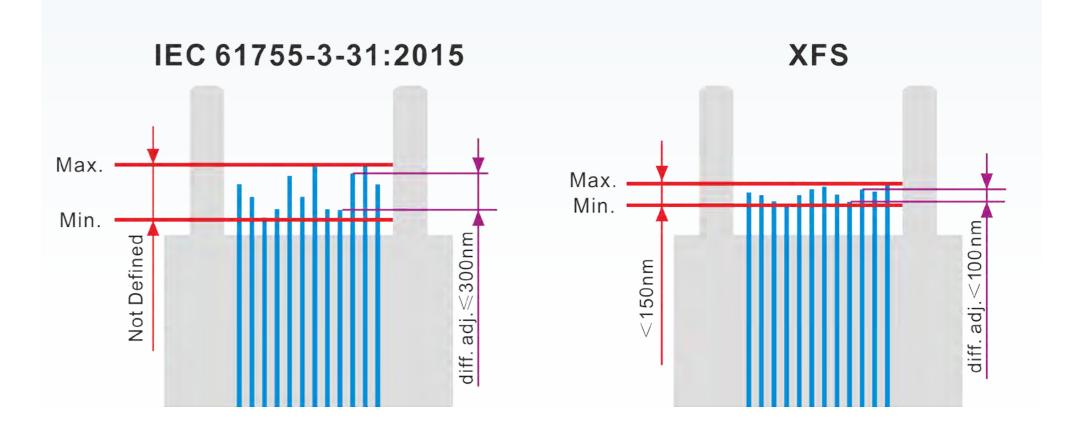


Endface Geometry (12c MPO Connector)

	XFS	IEC 61755-3-31:2015
Minus Coplanarity (nm)	≤200	≤400
Ferrule Surface X-Angle (°)	-0.075 to +0.075	-0.15 to +0.15
Ferrule Surface Y-Angle (°) (SM)	7.85 to 8.15	7.8 to 8.2
Ferrule Surface Y-Angle (°) (MM)	-0.075 to +0.075	-0.15 to +0.15
Fiber Height (nm)	1100 to 1500	1000 to 3500
Fiber Differential Height-All (nm)	≤150	Not defined
Fiber Differential Height-Adj. (nm)	≤100	≤300
Fiber Tip Spherical Radius (mm)	≥1	≥1
Ferrule Surface X-Radius (mm)	≥2000	≥2000
Ferrule Surface Y-Radius (mm)	≥50	≥5
Core Dip (nm; for MM)	0 to 100	Not defined
Geometry Limit	≤10	≤17.4

FIBER HEIGHT

Fiber Height is a critical factor for connection performance; it needs to be controlled within a certain range, and the distance between the shortest and the longest fiber as well as the variation in adjacent Fiber Heights have to be minimized to ensure good coplanarity of all fibers. XFS has set much tighter tolerances on Fiber Height than IEC to have the most consistent Fiber Heights for a perfect connection.



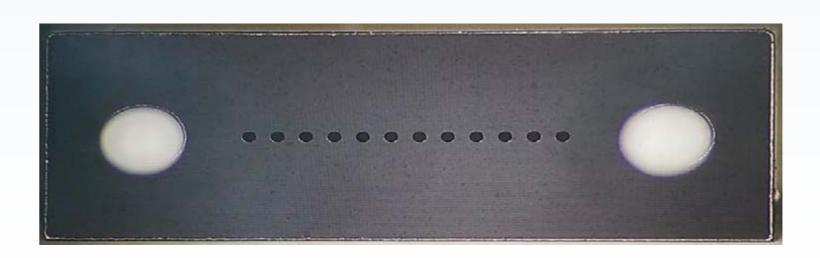
Endface Visual Quality (12c MPO Connector)

Zone	Range (µm)	XFS (MPO/APC)		IEC 61300-3-35 ed2.0 (APC)	
		Scratches	Defects	Scratches	Defects
A: Core	0 to 25	None	None	4 ≤ 3µm	None
B: Cladding	25 to 115	None	None	No limit	No limit < 2µm 5 from 2µm to 5µm None > 5µm
Rest o	f ferrule	None	None	Not defined	Not defined

ENDFACE VISUAL QUALITY

MPO/MTP® connector's optical performance is in large part associated with its ferrule's endface, which is susceptive to dirt or contamination. XFS' proprietary manufacturing process delivers an endface with exceptional geometry and cleanness.

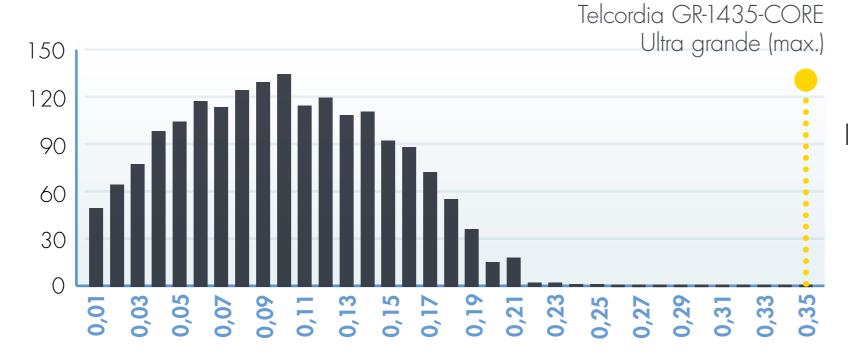




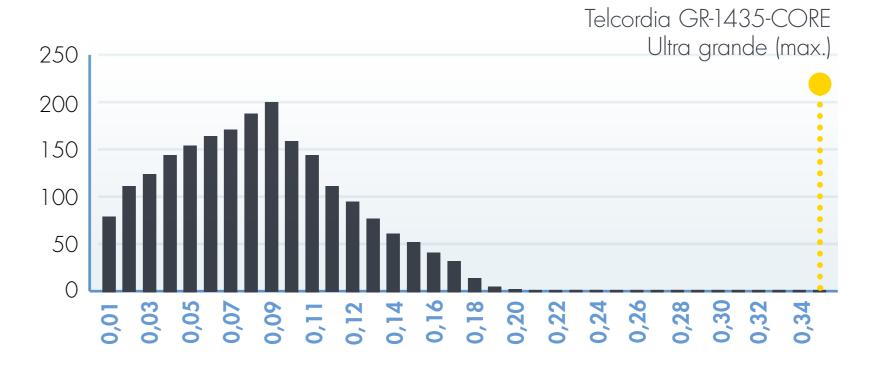


EXTREMELY LOW LOSS MPOS: THE BEST SOLUTION FOR DATACENTER INTERCONNECT

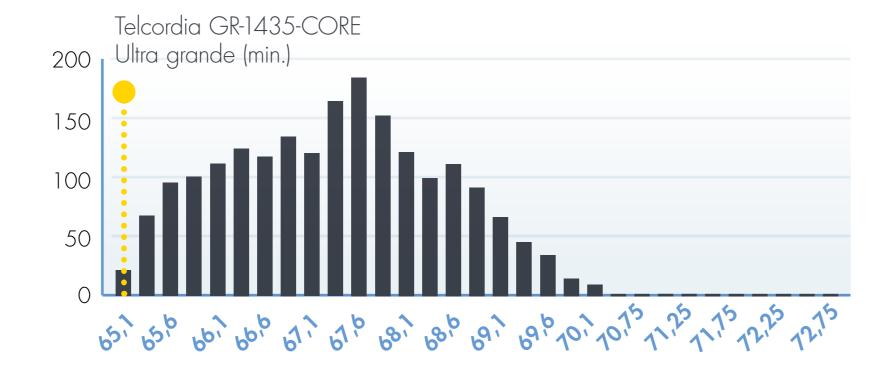
XFS Standard SM MPO Insertion Loss Distribution



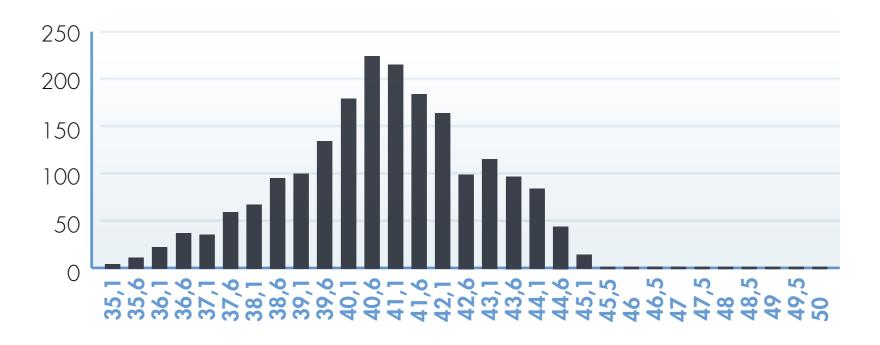
XFS Standard MM MPO Insertion Loss Distribution



XFS Standard SM MPO Return Loss Distribution



XFS Standard MM MPO Return Loss Distribution



21 Complete Self-testing Capability



IL/RL inspector



24c-MPO IL/RL inspector



Multi-wavelength IL/RL inspector



3D interferometer -single core



3D interferometer -multi core



End-face inspector



End-face inspector -MPO



Ferrule oncentricity & OD inspector



Connector tuner



Multi channel optical measurement



PDL inspector



Spectrum analyzer



Temperature- & humidity-cycle test



PCT accelerated aging test



Tensile strength tester



Vibration tester

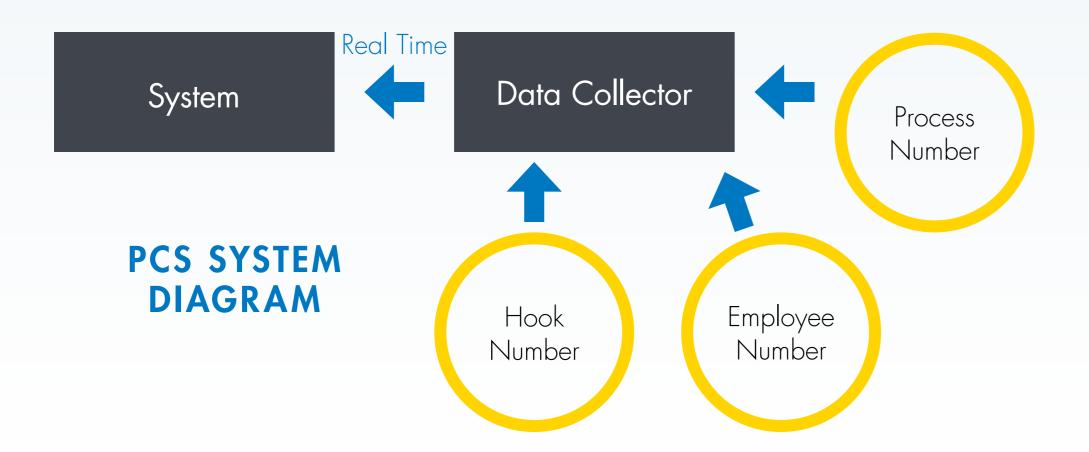
We have a variety of testing equipment for verifying the optical performance and environmental and mechanical reliability of our fiber interconnect products. We also regularly send our products for testing at 3rd-party companies including UL, SGS and Telcordia/Ericsson.

- Intermateability Test
- Optical Performance Test
- Thermal Age Test
- · Thermal Cycle Test
- Humidity Aging Test
- Humidity/Condensation Cycling Test
- Vibration Test
- Flex Test
- · Twist Test
- Proof Test
- Ferrule Endface Geometry Test
- Connector Installation Test
- Extended Thermal Age Test
- Extended Humidity Test
- Extended Thermal Cycle Test

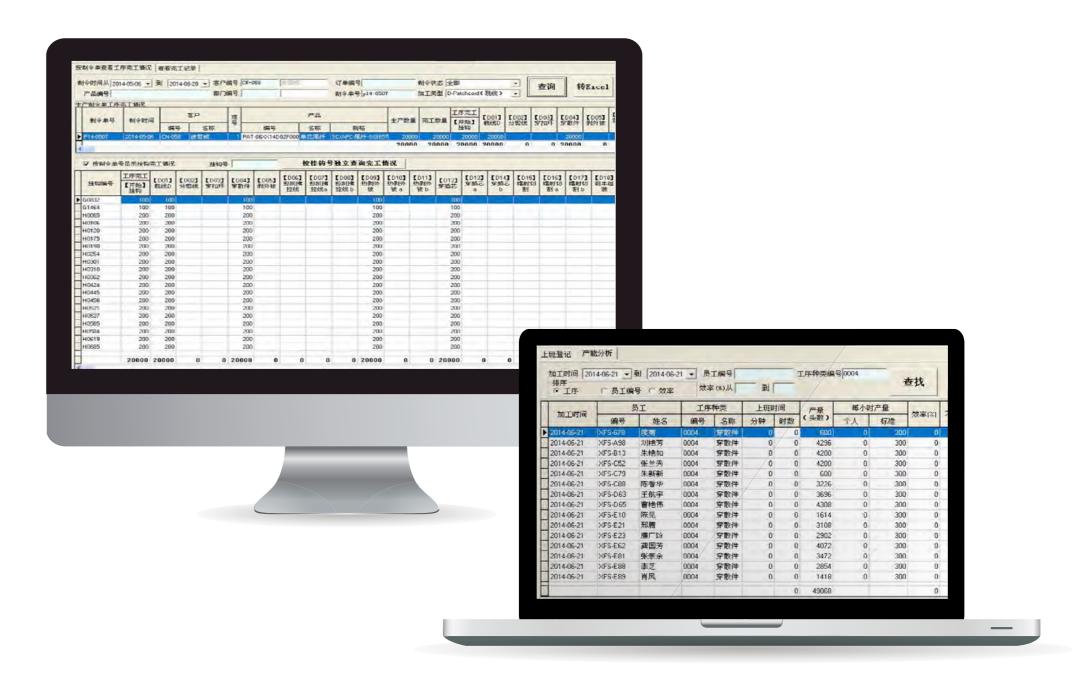
22 Process Control System; PCS

Fiber optic products have numerous specs that are necessitated by customers' distinct requirements. XFS' self-developed Process Control System (PCS) divides each order into batches (hooks) and matches them with their respective bar codes. Through bar-code management, the products' status and progress can be traced and analyzed in real-time, significantly increasing efficiency and yield.

By going down to each production step and in-charged operator, customers can login to our website in order to check the most detailed status of their products anytime and from anywhere in the world.



Order tracking: Trace which production step the product is at



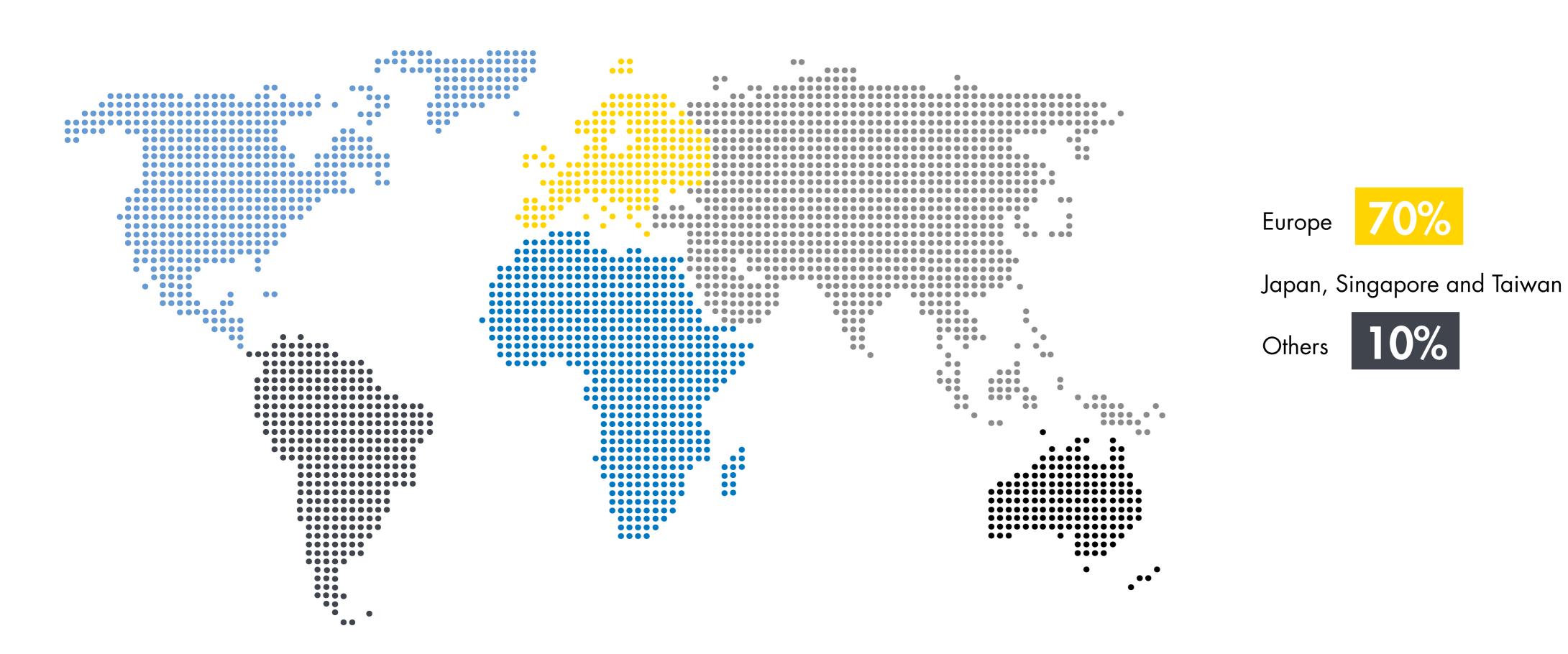
Production records: Trace who has finished how many products at what time

23 Our products have been widely adopted by prestigious end-customers worldwide



Note: XFS is a contract manufacturer making products for brand-name fiber optic companies worldwide. Usually we don't directly sell to the abovementioned companies, though we have learned these prestigious companies are the end-users of XFS' high quality products.

24 Customers' Regional Distribution



Accumulated shipment of fiber connectivity products with IEC B-grade or above level > 70,000,000 ends



XFS is one of the major suppliers to Singapore's Next Generation National Broadband (NGNBN) project for building up a nationwide FTTH network with 100% floor-reaching rate. Until March 2013, XFS has accumulated shipments as:

- · 40,233 km of indoor cables
- 6,983,319 pcs SC/APC premium-grade patchcords & pigtails
- · 156,443 pcs of splitters

In Feb 2016, SingTel announced it will launch 10Gbps FTTH services in Singapore.

25 Case Study

26 Our Scoreboard



the highest level in industry



30 years

Fiber interconnect product manufacturing experiences



Telecom and datacom customers



27 Competitive Advantages

OPTICAL TERMINATION

With accomplished polishing technologies, XFS has been able to produce world-class quality fiber interconnect products in large quantities



TOP NOTCH QUALITY & HIGH YIELD

100% "3A+G" level
Polishing first-pass rate > 99%
90% are SC/APC, LC/APC and SM MPO

VERTICAL INTEGRATION

In-house fiber cable and connector kits line
All of the equipment and tools are self-developed
Strategic partnership with ceramic ferrule
and optical fiber vendors

ABUNDANT CAPACITY

Number of polishing machines: 200 sets
Daily capacity: 100,000 ends of Grade A optical

termination

Turnkey production modules exported to worldwide manufacturers constitute a capacity alliance



Revolutionary Production Technology for Manufacturing Fiber Optic Connectors

28 World's First Patchcord Factory Turnkey Production Solution



29 Modularized Turnkey Production Solution

With over 30 years of experience of manufacturing fiber patchcords for the most prestigious customers in the industry, XFS now proudly introduces the world's first patchcord factory turkey production solution for helping worldwide manufacturers establish the capability of producing the world-class quality patchcords with low capital expenditure and competitive product cost structure.

The turnkey solution includes: the end-to-end production line planning and establishment; design and manufacturing of equipment, fixtures and tools; installation/testing/operation/maintenance of equipment, fixtures and tools; personnel training; material and consumable selection; pilot production and quality assurance; and continued technical support.

The turnkey solution is based on one module producing 3,500 ends of SC/APC (or 4,500 ends of LC/APC) connections with 100% "3A+G" level over one 10-hour shift.

FACTORY ESTABLISHMENT



Optimize factory layout, equipment placement and personnel allocation based on profit target



Turnkey plant export of equipment and tools; training on equipment operation; long-term maintenance service

EQUIPMENT SUPPORT

OPERATOR TRAINING



Unique operator training system for minimizing human error while production



Experienced technical team is stationed on-site for solving production problems and ramping up yield and efficiency

PRODUCTION SUPPORT

MATERIAL SUPPLY



Comprehensive material supply support system collaborating seamlessly with 3A+G manufacturing process



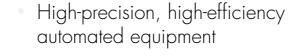
XFS has continued to refine its manufacturing process over years. Improvements are exported to customers on a regular basis

30 Modularized Turnkey Production Solution

XFS "MODULE"

- The standardized 3A+G production process for manufacturing fiber interconnect products including pigtails, patchcords, pre-terminated cables and MPO assemblies are combined into a module built around the 3A+G polishing process
- Each module has 6 polishing machines and needs a total of 10 operators
- During each 10-hour shift, each module can produce 3,500 ends of SC/APC (or 4,500 ends of LC/APC) connection with 100% "3A+G" quality level
- Self-developed equipment and tools with simplified SOPs are employed for minimizing investment cost, maximizing production efficiency and achieving the best quality

CABLE CUTTING



- Fuzzy color identification of length for efficiency and convenience
- Standard operating process

CONNECTOR KITS ASSEMBLY

- Fixed longitudinal stripping for consistent length
- Stripping jig for high efficiency
- Easy-to-use visual alignment method

FIBER CURING

- Fiber stripping machine can be set for fixed time and temperature for high efficiency without fiber damage
- Small oven insulated from ambient temperature for stable curing

BACK-END ASSEMBLY

- Inner and external assembly frames for efficiency, convenience and error proofing
- Long moment arm with high pressure riveting press for steady pressure and good results

GLUE REMOVAL

- Quick and effective removal of cured glue on front end of the core
- Easy to use, more effective and much cheaper than conventional laser cleaver for glue removal

FERRULE'S EXTRUSION LENGTH MEASUREMEN

- CCD visual inspection
- Set up different polishing groups based on ferrule's length to ensure consistent polishing pressure and height



POLISHING

- Multiple short polishing procedures improve polishing and increase first-pass rate
- Next-generation high-precision polishing machine for even more stable polishing
- Simple 3D geometry and end face inspectors to significantly improve QA efficiency



PACKAGIN

 Sort into cartons and package in order for high efficiency

GLUE ROOM

- Store glue at constant temperature and humidity to ensure consistent quality
- Thorough mixing of AB glue by precisely controlled ratio

FIXTURE CENTER

- Constant cleaning and maintenance of polishing fixtures to ensure high level of consistency in polishing quality
- Polishing fixtures' dimensions and spring pressure are under constant monitoring





- Product performance (IL, RL, 3D, end face quality) is the best in the world
- Product reliability has GR-326-CORE certification by Telcordia/Ericsson
- High yield; 3D geometry polishing first-pass rate > 99%
- Production process is simple, stable and efficient, thus less operators are needed and skilled workers are not needed, greatly reducing labor costs
- Ordinary ferrules, connector kits and consumables are sufficient for producing A-grade products, greatly reducing material costs
- All equipment and tools are self-developed, greatly reducing the investment in fixed assets

"3A+G" production process is a revolutionary technology that can consistently produce high-quality products at low cost. Our turnkey solution can give patchcord manufacturers a quantum leap in technological advancement in a short amount of time!



TAIPEI OFFICE

5F-1, No.2, Ln.57, Chongyang Rd., Taipei, 11573, Taiwan

SHENZHEN OFFICE & MANUFACTURING SITE

Bldg.B, No.9 Jiejiabao Rd., Shiyan, Baoan District, Shenzhen 518108, China

SÃO PAULO OFFICE AND MANUFACTURING SITE

Rua Claudino Pinto, 152, Brás, CEP:03040-040 São Paulo, Brazil

sales@xfsconnect.com +86-755-2675-5668 xfsconnect.com

