

Fiber Optic Fusion Splicer Global Market Review and Forecast

Published: March 21, 2011
Text Pages: 305
Also Includes: Excel worksheets and PowerPoint Slides
Fee: From \$4,200

Report Fee Structure:

- US \$4200 PDF by E-mail (Single user license): individual purchaser can use report.
 - US \$4800 PDF by E-mail (Site license): Unlimited users within one corporate location, such as a regional office, can share report.
 - US \$5400 PDF by E-mail (Global license): Unlimited users within the purchasing corporation, for example all employees of a single company, can share report.
-

This ElectroniCast report provides the review of 2010 and a 5-year (2011-2015) forecast of the consumption value of fiber optic fusion splicers, segmented into the following geographic regions:

- North America
- Europe
- Asia Pacific Region (APAC)
- Rest of the World

A Fusion Splicer is specialized instrument used to join optical fibers to each other. This is the report of the ElectroniCast study of fusion splice machines used for selected fiber optic-based communication applications and for the purpose of the manufacturing of components to be used (consumed) in the selected communication applications.

2010 Consumption Value Jumped 35% over 2009 The global consumption value of fiber optic fusion splice equipment in 2010 increased 35% over 2009. The consumption value is forecast to increase dramatically by a factor of 2x from 2010-2015, with strongly rising quantity growth partially offset by a continuing decline of average prices.

Note: Market forecast data in this study report refers to consumption (use) for a particular calendar year; therefore, this data is not cumulative data.

APAC to Take Market Share Lead Last year in 2010, North America led in the consumption value of fiber optic fusion splicers; however, helped along substantially by consumption in China, the Asia Pacific region (APAC) is forecast increase in relative market share during the forecast period, driven by countries throughout the region that are bringing fiber closer to the drop-areas (FTTx), as well as the use of fusion splicers in the manufacturing of fiber optic components/devices.

Rest of World The Rest of World (ROW) regional segment covers the Middle East, Africa (MEA) and Central/South America. The Central/South America region, especially, is showing aggressive growth rates in terms of fiber optic fusion splicer purchases. ElectroniCast Consultants has recently opened an office in South America to assist our clients that have an interest in expanding their sales revenue in the region.

Market Forecast by End-Use Application The ElectroniCast global fiber optic fusion splicer market is segmented into the following major application categories:

- Telecommunications
- Private Enterprise Networks
- Cable TV
- Military/Aerospace (Commercial and MIL-SPEC)
- Specialty (intra-enclosure, test and measurement, rental units, harsh environment industrial, laboratory, other applications, and non-specific)
- Manufacturing/Production of fiber optic components/devices

Telecommunication Maintains Leadership According to ElectroniCast Consultants, the Telecommunications application currently represents over ½ of the worldwide consumption of fiber optic fusion splicers. The use of fusion splice equipment in the production (manufacturing) of fiber optic components/devices is forecast to increase at an average annual growth rate of 16.1 percent from 2010-2015. Consumption of fusion splice equipment in cable TV, military/aerospace and various specialty/other applications are also quantified in this report of the study. Electrical and communication wiring contractor's annual use of fusions splicers to deploy optical fiber Private Enterprise Networks is forecast to increase (2x) from 2010 to 2015.

Within each of these applications, the ElectroniCast market forecast is segmented into each fusion splice (machine) type, as shown in Table 1.

Table 1
Fiber Optic Fusion Splice Product Categories
(Source: ElectroniCast)

FIBER OPTIC FUSION SPLICER PRODUCTS	
Fusion Splicers	
Single Fiber	
Bench top	
Core-to-Core	
Fixed Alignment	
Micro / Handheld	
Core-to-Core	
Fixed Alignment	
Multi-fiber (Ribbon)	
Bench top	
Micro / Handheld	

According to ElectroniCast, core-to-core aligning actually positions the cores of the optical fibers; thus, this technology results in the highest precision fusion splicing operation. In addition to core-to-core, aligning the outer cladding diameter of the optical fibers can be obtained by fitting the fibers in a V-groove guide (each side) and/or use video imaging to view the outer diameter of the optical fibers and bring the fibers together so they appear to be properly aligned. The cladding outer diameter alignment method is increasingly effective, since the cores of optical fibers are consistently located in the center of the cladding. Therefore, if the cladding is position in a similar alignment, the cores will also have a similar alignment. Of course, if the cores are not in the same location of the optical fiber cladding, the cores may not have a sufficient matching alignment.

The difference between the optical fiber core's actual positions relative to the actual center of the fiber is referred to as the core offset. Not all optical fibers are manufactured exactly identical; therefore, differences in the actual fiber diameter, coatings and fiber curl cause the cladding method to be less efficient as the core-to-core method.

Single Fiber Type Remains Market Leader In 2011, single fiber fusion splicers represent 57% of worldwide consumption value (see Figure 1). The global consumption value of mass fiber (multiple fiber or ribbon) splicers is forecast to increase at a double-digit average growth rate from 2010-2015.

In the single fiber fusion splicer product category, the larger (and more expensive) core-to-core bench top models led in worldwide consumption value in 2010; however, according to ElectroniCast the micro-splicers (small handheld fusion splicers) are forecast to increase in consumption value at the fastest pace (2010-2015).

Figure 1
Fiber Optic Fusion Splicer Global Consumption in 2011,
Single Fiber vs. Multiple Fiber (Source: ElectroniCast)

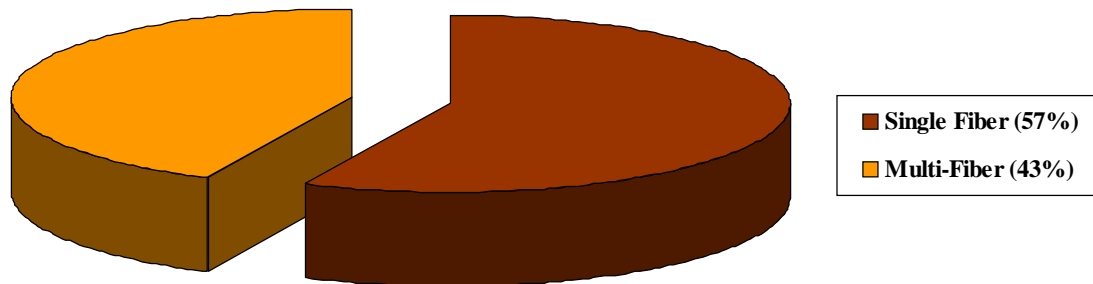


Table of Contents

1.	Executive Summary	1-1
1.1	Market Overview	1-1
1.2	Enterprise Optical Communication Network— Protocol Overview	1-21
1.3	Use of Fiber Optics in Harsh Environments	1-26
1.4	Fiber Optic Networks – Overview	1-32
1.5	Fiber Optics Industry: Decade-to-Decade	1-70
2.	Fiber Optic Fusion Splice Market Trends	2-1
2.1	Overview	2-1
2.2	Fusion Splicer Market Forecast, by Type	2-19
2.3	Fusion Splicer Competitive Market Share Estimates	2-51
3.	Application Market Forecast, by Region	3-1
3.1	Global Overview	3-1
3.2	North America	3-16
3.3	Europe	3-22
3.4	Asia Pacific region (APAC)	3-29
3.5	Rest of the World (ROW)	3-36
4.	Optical Communication Trends	4-1
4.1	Fiber Network Technology Trends	4-1
4.2	Components	4-18
4.2.1	Overview	4-18
4.2.2	Transmitters and Receivers	4-19
4.2.3	Optical Amplifiers	4-20
4.2.4	Dispersion Compensators	4-21
4.2.5	Fiber Cable	4-22
4.3	Devices and Parts	4-24
4.3.1	Overview	4-24
4.3.2	Emitters and Detectors	4-25
4.3.3	VCSEL & Transceiver Technology Review	4-26
4.3.4	Optoelectronic Application-Specific Integrated Circuits (ASICs)	4-35
4.3.5	Modulators	4-35
4.3.6	Packages	4-39
4.3.7	Optoelectronic Integrated Circuits	4-39
5.	Market Research Methodology	5-1
5.1	Research and Analysis Methodology	5-1
5.2	Assumptions of the Fiber Optic Fusion Splicer Global Market Forecast	5-7
6.	Definitions: Acronyms, Abbreviations, and General Terms	6-1
7.	Market Forecast Data Base	7-1
7.1	Overview	7-1
7.2	Tutorial	7-3

Market Forecast Data Base – Excel Spreadsheets (over 225 data tables):

Global
North America
Europe
APAC
Rest of the World

Market Forecast Data Charts – PowerPoint Summary Slides

List of Figures

1.1.1	Single-Fiber Core-To-Core Alignment	1-10
1.1.2	Multiple-Fiber Cladding-to-Cladding Alignment	1-12
1.1.3	Examples of Differences in Optical Fiber (Core and Cladding) Alignment	1-13
1.1.4	Artist's Depiction of Fiber Cladding Diameter (Source: Corning Inc)	1-14
1.1.5	24-Fiber Mass Fiber Fusion Splicer	1-15
1.1.6	Handheld Core Alignment Fiber Fusion Splicer	1-18
1.1.7	FuseConnect Fusion-Splice Field-Terminated Connector	1-20
1.2.1	TIA-942 Standard: Basic Data Center Topology	1-25
1.4.1	Access Network Elements	1-33
1.4.2	North America Multiprotocol Label Switching (MPLS)	1-48
1.4.3	North America Internet Access	1-49
1.4.4	FTTP PON Architecture	1-51
1.4.5	Next-Generation Wholesale Broadband Network	1-54
1.5.1	Evolution of Research Emphasis during Technology Life Cycle	1-77
2.1.1	Illustration of a Mechanical Splice	2-1
2.1.2	Illustration of a Fusion Splice	2-1
2.1.3	Fiber Distribution Hub (FDH)	2-3
2.1.4	Fiber Distribution Hub	2-4
2.1.5	Fiber Distribution Terminal	2-5
2.1.6	Drawing of a Splice Tray for Holding 6 Heat-Shrink Fusion Splice Sleeves	2-6
2.1.7	Fiber Optic Fusion Splicer Forecast, By Region (\$Million and Market Share, %)	2-7
2.1.8	Fiber Optic Fusion Splicer Forecast, By Region (Quantity and Market Share, %)	2-8
2.1.9	Comparative Cost, Mechanical vs. Fusion Splicing	2-9
2.1.10	Ribbon Fiber Cable with 8.3/125 micron Single mode Fiber (12-Fiber)	2-11
2.1.11	Ribbon Fiber Cable with 50/125 micron Multimode Fiber (12-Fiber)	2-11
2.1.12	Ribbon Fiber Cable	2-12
2.1.13	Reusable Mechanical Splice	2-12
2.1.14	Mechanical Fiber Optic Splice	2-15
2.1.15	Fiber Protection Sleeve	2-17
2.2.1	Microprocessor-Controlled Fusion Splicer	2-18
2.2.2	Handheld Fusion Splicer	2-19
2.2.3	Fusion Splicer Forecast, Single vs. Multiple/Ribbon Fiber (\$Million & Share, %)	2-20
2.2.4	Fusion Splicer Forecast, Single vs. Multiple/Ribbon Fiber (Quantity & Share, %)	2-21
2.2.5	Single Fiber Fusion Splicer Global Forecast, By Type (\$Million and Share, %)	2-22
2.2.6	Single Fiber Fusion Splicer Global Forecast, By Type (Quantity and Share, %)	2-23
2.2.7	Core Alignment Single Fiber Fusion Splicer	2-26
2.2.8	Principle of Lens Profile Alignment	2-27
2.2.9	Lens Profile Alignment Process for Producing a Depolarizer	2-28
2.2.10	Lens-Profile Alignment System (L-PAS) Video Evaluation	2-29
2.2.11	Advanced Fusion Splicer	2-33
2.2.12	Multiple Fusion Splicer Global Market Forecast, by Type (\$Million & Share, %)	3-38
2.2.13	Multiple Fusion Splicer Global Market Forecast, by Type (Quantity & Share, %)	3-39
2.2.14	Video Evaluation of 12-fibers in a Multiple Fiber Fusion Splicer	2-40
2.2.15	Line Drawing of an Automatic Multiple Fiber Fusion Splicer	2-45
2.2.16	Fiber Feed Assembly, Automatic Process of a Multiple Fiber Fusion Splicer	2-46
2.2.17	Ultra-Compact Fiber Optic Fusion Splicer	2-47
3.1.1	Polarization Maintenance (PM) - Fusion Splicers	3-3
3.1.2	Handheld Multi-Fiber Fusion Splicer	3-5
3.1.3	Core Alignment Fusion Splicer	3-7
3.1.4	Digital Fusion Splicer	3-8
3.1.5	Very Small Fully Automatic Fusion Splicer	3-9
3.1.6	Core Alignment Fusion Splicer	3-13
3.1.3	Handheld FTTH Splicer	3-14
3.5.1	Africa: Subocean Fiber Cable Map	3-47
4.3.3.1	Genealogy of VCSELs	4-28
4.3.3.2	Typical Intra-Office Interconnections	4-32
4.3.7.1	Trend of Transceiver Packaging Density, Gigabits/Cubic Inch	4-45
5.1.1	Market Research & Forecasting Methodology	5-4

List of Tables

1.1.1	Fusion Splice Global Consumption Forecast, By Region (Value Basis, \$Million)	1-2
1.1.2	Fusion Splice Global Consumption Forecast, By Region (Quantity Basis, Unit/Each)	1-3
1.1.3	Fusion Splice Global Consumption Forecast, By Application (Value Basis, \$Million)	1-4
1.1.4	Fusion Splice Global Consumption Forecast, By Application (Quantity Basis, Unit/Each)	1-4
1.1.5	Fusion Splice Product Categories	1-5
1.1.6	Fusion Splice Global Forecast: Single Fiber vs. Multiple/Ribbon Fiber (\$Million)	1-6
1.1.7	Fusion Splice Global Forecast: Single Fiber vs. Multiple/Ribbon Fiber (Quantity Basis)	1-6
1.1.8	Fusion Splice Global Consumption Forecast, Single Fiber Types (Value Basis, \$Million)	1-7
1.1.9	Fusion Splice Global Consumption Forecast, Single Fiber Types (Quantity Basis)	1-7
1.1.10	Fusion Splice Global Consumption Forecast, Ribbon Fiber Types (Value Basis, \$Million)	1-8
1.1.11	Fusion Splice Global Consumption Forecast, Ribbon Fiber Types (Quantity Basis)	1-8
1.1.12	Fusion Splice (Type) Preference, by Selected Application	1-14
1.4.1	Minimum & Ideal Speeds Necessary for Popular Applications	1-40
2.2.1	Fusion Splice Global Forecast, Single Fiber Types (Average Selling Price/ASP)	2-23
2.2.2	Core-to-Core Bench Top Single Fiber Fusion Splice Global Forecast, By Region (\$Million)	2-24
2.2.3	Core-to-Core Bench Top Single Fiber Fusion Splice Global Forecast, Region (Quantity)	2-25
2.2.4	Core-to-Core Bench Top Single Fiber Fusion Splice Global Forecast, Region (ASP)	2-25
2.2.5	Fixed Alignment Bench Single Fiber Fusion Splice Global Forecast, Region (\$Million)	2-31
2.2.6	Fixed Alignment Bench Single Fiber Fusion Splice Global Forecast, By Region (Quantity)	2-31
2.2.7	Fixed Alignment Bench Single Fiber Fusion Splice Global Forecast, By Region (ASP)	2-32
2.2.8	Core-to-Core Single Fiber Microsplicer Single Fiber Global Forecast, By Region (\$Million)	2-34
2.2.9	Core-to-Core Single Fiber Microsplicer Single Fiber Global Forecast, By Region (Quantity)	2-35
2.2.10	Core-to-Core Single Fiber Microsplicer Single Fiber Global Forecast, By Region (ASP)	2-35
2.2.11	Fixed Alignment Microsplicer Single Fiber Global Forecast, By Region (\$Million)	2-36
2.2.12	Fixed Alignment Microsplicer Single Fiber Global Forecast, By Region (Quantity)	2-37
2.2.13	Fixed Alignment Microsplicer Single Fiber Global Forecast, By Region (ASP)	2-37
2.2.14	Bench Top Multiple Fiber Fusion Splice Global Market Forecast, by Type (\$Million)	2-39
2.2.15	Multiple Fiber Fusion Splice Global Market Forecast, by Region (\$Million)	2-41
2.2.16	Multiple Fiber Fusion Splice Global Market Forecast, by Region (Quantity)	2-42
2.2.17	Multiple Fiber Fusion Splice Global Market Forecast, by Region (ASP)	2-42
2.2.18	Bench Top Multiple Fiber Fusion Splice Global Market Forecast, by Region (\$Million)	2-43
2.2.19	Bench Top Multiple Fiber Fusion Splice Global Market Forecast, by Region (Quantity)	2-44
2.2.20	Bench Top Multiple Fiber Fusion Splice Global Market Forecast, by Region (ASP)	2-44
2.2.21	Micro/Handheld Multi-Fiber Fusion Splice Global Market Forecast, by Type (\$Million)	2-48
2.2.22	Micro/Handheld Multi-Fiber Fusion Splice Global Market Forecast, by Type (Quantity)	2-49
2.2.23	Micro/Handheld Multi-Fiber Fusion Splice Global Market Forecast, by Type (ASP)	2-49
2.3.1	List of Selected Fiber Optic Fusion Splice Manufacturers	2-50
2.3.2	ElectroniCast's Estimates of the 2010 Fusion Splicer Global Competitive Market Shares	2-51
3.1.1	Fusion Splice Global Consumption Market Forecast, By Region (Value Basis, \$Million)	3-1
3.1.2	Fusion Splice Global Consumption Forecast, By Application (Value Basis, \$Million)	3-11
3.1.3	Fusion Splice Global Consumption Forecast, By Application (Quantity Basis, Unit/Each)	3-11
3.1.4	Fusion Splice Global Consumption Forecast, Single Fiber Types (Value Basis, \$Million)	3-12
3.1.5	Fusion Splice Global Consumption Forecast, Single Fiber Types (Quantity Basis)	3-12
3.1.6	Multiple Fiber Fusion Splice Global Market Forecast, by Type (Value Basis, \$Million)	3-15
3.1.7	Multiple Fiber Fusion Splice Global Market Forecast, by Type (Quantity Basis, Unit/Each)	3-15
3.2.1	Fusion Splice North American Consumption Forecast, By Region (Value Basis, \$Million)	3-16
3.2.2	Fusion Splice North American Consumption Forecast, By Region (Quantity Basis)	3-16
3.2.3	Fusion Splice North American Forecast: Single Fiber vs. Multiple/Ribbon Fiber (\$Million)	3-17
3.2.4	Fusion Splice North American Forecast: Single Fiber vs. Multiple/Ribbon Fiber (Quantity)	3-17
3.2.5	Fusion Splice North American Consumption Forecast, Single Fiber Types (\$Million)	3-18
3.2.6	Fusion Splice North American Consumption Forecast, Single Fiber Types (Quantity)	3-19
3.2.7	Fusion Splice North American Forecast, Single Fiber Types (Average Selling Price/ASP)	3-19
3.2.8	Multiple Fiber Fusion Splice North American Market Forecast, by Type (\$Million)	3-20
3.2.9	Multiple Fiber Fusion Splice North American Market Forecast, by Type (Quantity Basis)	3-21
3.2.10	Multiple Fiber Fusion Splice North American Market Forecast, by Type (ASP)	3-21

List of Tables -- Concluded

3.3.1	Fusion Splice European Consumption Forecast, By Region (Value Basis, \$Million)	3-22
3.3.2	Fusion Splice European Consumption Forecast, By Region (Quantity Basis)	3-23
3.3.3	Fusion Splice European Forecast: Single Fiber vs. Multiple/Ribbon Fiber (\$Million)	3-24
3.3.4	Fusion Splice European Forecast: Single Fiber vs. Multiple/Ribbon Fiber (Quantity)	3-24
3.3.5	Fusion Splice European Consumption Forecast, Single Fiber Types (\$Million)	3-25
3.3.6	Fusion Splice European Consumption Forecast, Single Fiber Types (Quantity)	3-26
3.3.7	Fusion Splice European Forecast, Single Fiber Types (Average Selling Price/ASP)	3-26
3.3.8	Multiple Fiber European Market Forecast, by Type (\$Million)	3-27
3.3.9	Multiple Fiber European Market Forecast, by Type (Quantity Basis)	3-27
3.3.10	Multiple Fiber European Market Forecast, by Type (ASP)	3-28
3.4.1	Fusion Splice APAC Consumption Forecast, By Region (Value Basis, \$Million)	3-30
3.4.2	Fusion Splice APAC Consumption Forecast, By Region (Quantity Basis)	3-30
3.4.3	Fusion Splice APAC Forecast: Single Fiber vs. Multiple/Ribbon Fiber (\$Million)	3-31
3.4.4	Fusion Splice APAC Forecast: Single Fiber vs. Multiple/Ribbon Fiber (Quantity)	3-31
3.4.5	Fusion Splice APAC Consumption Forecast, Single Fiber Types (\$Million)	3-32
3.4.6	Fusion Splice APAC Consumption Forecast, Single Fiber Types (Quantity)	3-33
3.4.7	Fusion Splice APAC Forecast, Single Fiber Types (Average Selling Price/ASP)	3-33
3.4.8	Multiple Fiber APAC Market Forecast, by Type (\$Million)	3-34
3.4.9	Multiple Fiber APAC Market Forecast, by Type (Quantity Basis)	3-35
3.4.10	Multiple Fiber APAC Market Forecast, by Type (ASP)	3-35
3.5.1	Fusion Splice ROW Consumption Forecast, By Region (Value Basis, \$Million)	3-36
3.5.2	Fusion Splice ROW Consumption Forecast, By Region (Quantity Basis)	3-37
3.5.3	Fusion Splice ROW Forecast: Single Fiber vs. Multiple/Ribbon Fiber (\$Million)	3-38
3.5.4	Fusion Splice ROW Forecast: Single Fiber vs. Multiple/Ribbon Fiber (Quantity)	3-38
3.5.5	Fusion Splice ROW Consumption Forecast, Single Fiber Types (\$Million)	3-39
3.5.6	Fusion Splice ROW Consumption Forecast, Single Fiber Types (Quantity)	3-40
3.5.7	Fusion Splice ROW Forecast, Single Fiber Types (Average Selling Price/ASP)	3-40
3.5.8	Multiple Fiber ROW Market Forecast, by Type (\$Million)	3-41
3.5.9	Multiple Fiber ROW Market Forecast, by Type (Quantity Basis)	3-42
3.5.10	Multiple Fiber ROW Market Forecast, by Type (ASP)	3-42
7.1.1	Fiber Optic Fusion Splice Product Data Base (Excel Spreadsheets) Categories	7-2
7.1.2	Fiber Optic Fusion Splice Application Data Base (Excel Spreadsheets) Categories	7-2