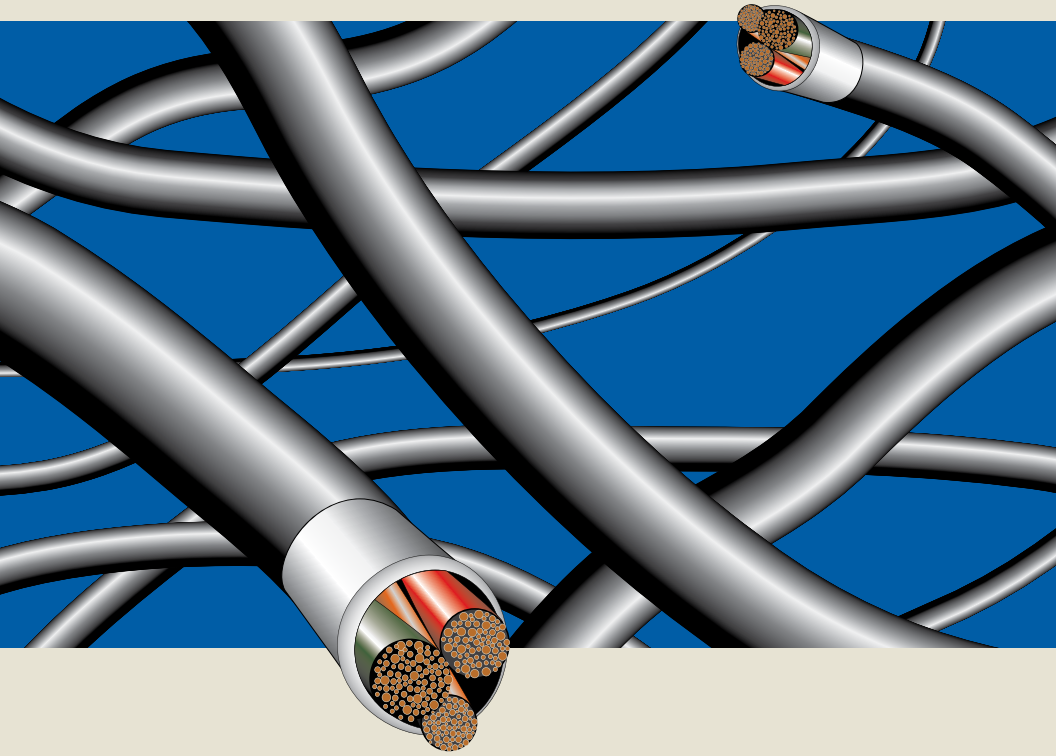
IWCS

THE
International
Cable • Connectivity
Symposium
Industry Leadership, Innovation
and Professional Development

62ND INTERNATIONAL CABLE • CONNECTIVITY SYMPOSIUM

LEADERSHIP AND VISION FOR OVER 60 YEARS

2013 FINAL PROGRAM AND SCHEDULE



NOVEMBER 10-13, 2013

CHARLOTTE CONVENTION CENTER

501 S. COLLEGE ST. CHARLOTTLE, NC 28202

The world's leading conference for peer reviewed technical papers and presentations on technologies and trends in wire, cable, connectivity and assemblies for the communications, data, electronics, power, industrial, automotive, and aerospace industries.

WELCOME BACK TO CHARLOTTE

The IWCS is pleased to welcome delegates back to vibrant Charlotte, North Carolina. The area surrounding Charlotte is home to some of the largest wire and cable manufacturers in the US, with their attendant suppliers and services. Charlotte is also home to some of the country's largest banking institutions, and, you will recall from 2011, that quintessential American pastime, NASCAR.

The IWCS is celebrating its 62nd anniversary of service to the wire and cable and connectivity industries.

The Executive Track presents, once again, information you need in managing your business. Views of the marketplace and the economy are keys to the planning process. Once again in 2013, a panel of industry executives will offer an informal discussion of the industry and its prospects for the future. The panel session has been scheduled to enable delegates to attend without program conflicts.

Next year we will be back in Providence, at the Rhode Island Convention Center. We have a loyal following in Providence and are looking forward to, once again, enjoying the fine hospitality that the city offers. I wish you a valuable and enjoyable experience in the 62nd IWCS International Cable · Connectivity Symposium, and look forward to seeing you next year for the 63rd IWCS International Cable · Connectivity Symposium.

John T. Barteld, CEO/Director

Professional Development Program

We are continuing to enhance our Professional Development Program. This year we are offering ten courses in the issues and technologies of high concern and interest to the industry. The three core courses will provide those new to wire and cable with basic technology information. The elective courses will deliver current, leading edge topics geared at providing information on new areas of interest to engineers, scientists, and other wire and cable professionals. This format offers participants the opportunity to complete the whole program of courses.

Technical Symposium

The cornerstone of our Conference, the IWCS Technical Symposium is recognized around the world as the premier technical symposium for wire & cable. This year, we will again present over 100 new and previously unpublished papers on research and development for wire & cable materials and connector/interconnect technologies, designs, components, fabrication, performance, testing and applications. Sessions will begin on Monday morning and end Wednesday in the mid-afternoon.

WIN AN IPAD! ALL SYMPOSIUM REGISTRANTS ATTENDING THE WEDNESDAY SESSIONS ARE ELIGIBLE TO WIN AN APPLE IPAD. DRAWING WILL BE DURING THE SYMPOSIUM COFFEE BREAK ON WEDNESDAY AFTERNOON. MUST BE PRESENT TO WIN!

Plenary Session

The Plenary Session, open to all Technical Symposium registered attendees, will feature a presentation by Morgan Kurk, Senior Vice President of Wireless for Commscope. Mr. Kurk brings an interesting insight into this critical technology and its expanding place in our lives. What is the "Future of Wireless"?

The plenary session will also feature recognition for the best papers and presenter of 2012.

The plenary session begins on Monday as the morning sessions conclude, at about noon. The session will conclude at 2:00 PM when the exhibition will open.

Suppliers' Exhibition™ and New Product Presentations

The IWCS Suppliers' Exhibition™ will include over 120 exhibits providing interaction among users and suppliers, to learn about product evelopments and user applications. Also, the New Product Presentations provide an opportunity for suppliers to report on new commercial products. The schedule for these presentations will be included in the registration package at the Conference.

Conference Registration

Registration for all aspects of the IWCS International Cable · Connectivity Symposium can be accomplished through our web site, or in person at the Conference. Specific information on both registration and hotel reservations is included on the IWCS web site, www.iwcs.org.

Early registrants for the 2013 conference will receive information prior to the event, giving them access to a restricted website where papers from the conference will be published and available. Additionally, all registrants will have the opportunity to download the conference schedule on their mobile devices, and create their own "itinerary" through an app provided by the IWCS.

IWCS International Cable · Connectivity Symposium 2014

Please make note of the dates for the 2014 IWCS International Cable ·Connectivity Symposium, November 9 to 12 at the Rhode Island Convention Center, Providence, RI, USA.

PLENARY SESSION

CHAIRMEN

ROBERT A. WESSELS, JR.
Chairman of the Board IWCS, Inc.
CommScope Inc.
Claremont, NC, USA

MIKE PATEL
Chairman, IWCS Symposium Committee
Teknor Apex Company
Pawtucket, RI, USA

DAVID B. KIDDOO
Chairman IWCS Program Committee
AlphaGary Corp
Leominster, MA, USA

KEYNOTE SPEAKER

MORGAN KURK
Senior Vice President and Wireless Segment Leader
CommScope
Hickory, NC, USA

Morgan Kurk serves as the senior vice president and Wireless segment leader at CommScope, a global leader in infrastructure solutions for wireless networks. His group is responsible for the strategy and development of wireless infrastructure from tower solutions to distributed antennas including product lines such as coaxial and fiber cable, antennas and filters, amplifiers and repeaters, and microwave dishes and consulting. Mr. Kurk has more than 20 years of experience in the wireless industry. He focused on wireless coverage problems in 1997 when he joined Allen Telecom, which later became part of Andrew Corporation, and held a variety of positions including director of business development in the United States and China; vice president of R&D, PLM, and Strategy; and vice president and general manager of the Wireless Innovations Group worldwide. In 2009, he joined CommScope as senior vice president of the Enterprise business unit. Before joining Allen Telecom, Mr. Kurk worked for Motorola where he was a hardware development engineer for base stations and a product manager for a CDMA base station product line. He is a regular speaker at industry conferences and an expert in system integration. Mr. Kurk holds a bachelor's of science in electrical engineering from Brown University, a master's degree in electrical engineering from the University of Michigan, and an MBA from the Kellogg School of Management at Northwestern University.

PROFESSIONAL DEVELOPMENT COURSES

Within the program of the IWCS Conference an opportunity is presented to advance the knowledge and education of industry participants through Professional Development Courses, led by industry experts. The offerings include basic concepts in core courses related to copper, fiber and materials. Additionally, courses are offered in the latest technology issues facing the industry, allowing participants to be fully briefed on current issues. For the ninth year, IWCS will present the core courses of Copper 101, Fiber 101 and Materials 101. Over time, students completing those courses, along with two electives, will be presented with an IWCS Professional Development plaque. The first students to successfully complete the program were awarded such plaques at IWCS in November, 2008. Please check the IWCS website for further or changed offerings in the curriculum, www.iwcs.org.

The Courses will commence on Sunday, November 10, 2013 at 2:00 PM with five concurrent sessions. Five more concurrent sessions will continue at 2:00PM on Monday, November 11, 2013. The Professional Development Courses are scheduled so as to provide no conflict with the Technical Symposium Program, and also allow attendees to visit the Suppliers' Exhibition. Organization of the courses will allow for the maximum potential for taking two courses.

SUNDAY, NOVEMBER 10, 2013 – 2:00 PM TO 6:00 PM

1. CU101: FUNDAMENTALS OF COPPER CONDUCTORS & METALLIC CABLE DESIGN & APPLICATIONS | MR212B

Instructors: Trent Hayes, Senior Engineering Manager, CommScope Incorporated, Claremont, NC, USA

Larry Bleich, Senior Engineering Manager, CommScope Incorporated, Claremont, NC, USA

Description

This course is an introduction to the design and application of copper conductor communications cables. Students will understand how coaxial, twisted pair and twinaxial cables are designed and how they operate upon completing the class. The instructors will provide background material on the history of copper cabling followed by sections on applications, design and construction of cables. Current standards and design examples are also reviewed by the instructors. Materials that are typically used in copper conductor communication cables will be incorporated at a fairly high level into the design exercises.

Industry professionals desiring a basic knowledge of copper cabling systems will find the course of value.

2. FO101: FUNDAMENTALS OF OPTICAL FIBERS & FO CABLE DESIGN & APPLICATION | MR212A

Instructor: David A. Seddon, Senior Engineering Associate, Corning Cable Systems LLC, Hickory, NC, USA

Description

This course will explore several aspects of optical fiber and cable design technology with particular focus on products for communications. It will discuss application considerations to select a product appropriate for a given installation environment and the basic considerations necessary for successful design of optical fiber cables.

The first part of this course will outline the characteristics and fundamental operating principles of optical fibers and the designs of the three basic fiber families (Single-Mode, Multimode and Non-Zero Dispersion Shifted optical fibers). Included will be critical fiber parameters and their impact on system performance. Specific topics will include the Advantages of Optical Fiber, Optical Fiber Manufacturing, Total Internal Reflection, Attenuation, Dispersion, Polarization Mode Dispersion (PMD), Cutoff Wavelength and other optical parameters critical to optical communications.

3. MA101: SELECTION & USE OF MATERIALS IN WIRE & CABLE | MR218B

Instructors: Chester J. Kmiec, Principle Development Scientist, The Dow Chemical Company, Spring House, PA, USA

Dr. Scott H. Wasserman, Associate R&D Director, The Dow Chemical Company, Spring House, PA, USA

Description

In this course, the selection and implementation of materials used in the construction of telecommunication wires and cables will be reviewed. The course will focus on materials utilized in Premises and Outside Plant cable applications for twisted pair, coaxial, and fiber optic cables. An overview of the materials science essential to the properties of the selected polymers and additives will

be covered to level-set all attendees. Further, the fundamental characteristics (advantages and disadvantages) of materials will be presented which can be then considered in selecting a material for use in a finished cable construction. In addition, the effect of additives on material performance will also be presented, particularly those that impart ultraviolet resistant and flame retardant properties on the materials. The course will touch upon all material components of the cable's construction such as, polymers for insulating and sheathing, water blocking materials, and materials for shielding and armoring.

The course is intended for all wire and cable practitioners including raw material suppliers, cable manufacturers, and end users interested in gaining a broad understanding of applied material selection as it relates to cable performance.

4. MA201: THE ART AND SCIENCE OF EXTRUSION FOR WIRE AND CABLE – Part I MR218A

Instructor: Dr. Stephan Puissant, Senior Engineer, BCIAG, Switzerland

Description

The extrusion process is a complex process involving a lot of machines having each a different function. The heart of the process being extrusion, we'll begin to describe the extrusion group (extruder and Cross head).

The single screw extruder is a remarkably simple machine; the extrusion process however is extraordinarily complex as governed by interacting laws from mechanical engineering, thermodynamics, flow mechanics, the properties of solid and molten polymers etc. Physical characteristics (viscosity, conductivity, melting) of polymers used during extrusion are presented and are the keys to understand the functioning of the screw based extrusion process.

We will then present different head geometries, compare different tool designs, show how to calculate pressure- and tube-tools, and discuss the effects of mechanical adjustments and temperature settings on concentricity, adhesion and surface quality.

An extrusion group alone cannot produce a finished cable. The different components inside an extrusion line have also a great influence on the quality of the final product. This begins with the unwinding devices, to continue with the eventual pre-heater, the cooling baths, the pulling devices and finish with the take-up devices.

For each of the different items evoked in the course, practical hints are given in relation with the more theoretical approach.

This course is intended for people involved in extrusion and who want base analysis tools for identifying bottlenecks in the extrusion line.

5. CU204: TECHNOLOGY REVIEW – DESIGN & TESTING OF 25 GBPS-CAPABLE TWINAX FOR LOW LATENCY DATA SYSTEMS | MR216B

Instructor: Michael G. Ressl, Director, Technical Marketing and Business Development, Hitachi Cable America, Manchester, NH, USA

Description

Starting with a review of copper twinax cables, this short course will provide an overview of the design elements involved in the twinax cables and how they can be optimized for 25 Gbps transmission. In advanced twinax designs, modifications to the core and shield tape wrap design lead to significant improvements in signal integrity. Measured parameters are compared, showing twinax performance for various key attributes. Next-generation performance improved twinax cables will then be discussed, along with state-of-the-art performance, applications and a brief discussion of market opportunities. Embedded copper for backplane replacement, active copper, active optical, and transceiver implementations, as well as their relative benefits will be discussed to provide the attendee with a deeper understanding of copper cabling's continuing role in next generation data centers.

This short course should give the attendee the background to assess the design capability of 25 Gbps twinax in Data Centers and other applications requiring low latency.

MONDAY, NOVEMBER 11, 2013 – 2:00 PM to 6:00 PM

6. FO206: BEND RESISTANT SINGLE-MODE AND MULTIMODE FIBERS | MR212B

Instructor: Scott R. Bickham, Ph.D., Development Associate, Corning Optical Fiber, Corning, NY, USA

Description

This course starts with a brief refresher of optical waveguides that will lead into a discussion of the macrobending in optical fibers and how it can be mitigated through fiber design. The topics covered include a comparison of bend loss measurements with predictions from a modified Marcuse model that includes photoelastic contributions

to the effective bend radius. Recent analytical results using a Beam Propagation Model will be discussed. Designs of bend-improved single mode fibers will be compared, along with their performance and applications. The remainder will be devoted to the design and applications of bend-improved multimode fiber.

This course should give the attendee the background to assess the capability of bend-improved fibers in FTTX, Data Centers and other applications.

7. MA202: THE ART AND SCIENCE OF EXTRUSION FOR WIRE AND CABLE – Part II MR218A

Instructor: Dr. Yimsan Gau, Cable Consulting Services, Princeton, NJ, USA

Description

One of the most critical steps in the fabrication of plastic parts and products and specifically wire & cable is the extrusion process. The process involves the extruder and screw as well as the properties of the materials being extruded. The course presents an overview of the extruder components, the three main functions of the extruder screws, the importance of mixing elements and their design, and the impact of material properties on the extrusion processes. This is followed by a detailed description of the different types of screws, their design concept, their advantages/disadvantages, and the fabrication lines of different type of cables and problems associated with them.

The course also covers two sections on extrusion stability and extrusion optimization. Stable extrusion is critical in controlling the electrical properties, physical properties and the dimensions of the cables. The factors which can lead to unstable extrusion and the two parameters used to monitor extrusion stability, head pressure and melt temperature are reviewed. Optimizing the extrusion process requires a good understanding of the energy input to the extrudate from the motor through the screw, and the energy input from the heated barrel through heat conduction. The energy input from the two sources and the setting of temperature profile on the barrel and die to achieve an optimal flow out of the extruder and die are presented. In addition, the important polymer properties affecting the extrusion process and performance are discussed along with the new trend in extrusion technology.

The course provides useful reference material to process engineers working in wire & cable extrusion, and practical hints and tools to help optimize the extrusion processes.

8. FO208: HARSH ENVIRONMENT FOR FIBER OPTICS | MR212A

Instructor: Eric Klaiber, Senior Enterprise Marketing Specialist, Corning Cable Systems, Hickory, NC, USA

Description

This course explores the complexities associated with deploying Fiber Optics in harsh environments which include mines, manufacturing facilities, energy production, oil and gas facilities and transportation networks. We will also look into why fiber is becoming the go-to medium for data transmission in these environments. Different termination techniques will be discussed with a hands-on segment to show proper techniques that can be used in harsh environment installations where time is of the essence, space is limited and sparks can be deadly.

9. CU202: COPPER CABLING TECHNOLOGY – ADVANCED TRANSMISSION LINE THEORY AND MEASUREMENTS | MR218B

Instructors: Alistair Duffy, Ph.D., Reader in Electromagnetics, De Montfort University, Leicester, United Kingdom

Kenneth Cornelison, Cable Technology Resources, Cincinnati, OH, USA

Description

This course reviews the fundamental transmission line theory inherent in all cables, relating the electrical property fundamentals to the transmission in high performance cables. Basic building blocks of electrically long transmission lines are described, and how they relate to modern cable design.

The course also covers the testing technology for high frequency cables. Measurement procedures, principles and techniques are covered, highlighting areas important for the latest cable types. Operation of test equipment such as vector network analyzers is reviewed, and the different methods of operation for laboratory and field test equipment. The course will briefly touch on some of the trends in cable applications and design that are influencing measurement technology and techniques

A hands-on segment is also included where cable will be connected and tested demonstrating the operation of the hardware as well as the importance of proper termination and measurement techniques.

10. CU206: FUNDAMENTALS OF IN-BUILDING DISTRIBUTED ANTENNA SYSTEMS | MR216B

Instructor: Kevin Ressler, Ph.D., Director Global Product Management, TE Connectivity, Greensboro, NC, USA

Description

This course provides an understanding of the increasing need for wireless coverage and capacity, the role of active distributed antenna systems (DAS) to deliver wireless service, as well as representative DAS platforms and their applications. After completing this course, the attendee should be able to a) identify changes in usage patterns that create increasing demands for greater wireless capacity, b) describe a DAS, its functions, and benefits, and c) identify types of in-building and campus wireless DAS solutions and applications. This short course will provide a thorough introduction to this fast-moving industry.

TECHNICAL SYMPOSIUM

MONDAY, NOVEMBER 11, 1013, 8:00 AM to 11:30 AM

SESSION 1: EXECUTIVE TRACK | MR217D
Chairperson: Robert M. Canny
RSCC Wire & Cable LLC, Wallingford, CT, USA

1-1 (8:00)
Global Metallic Cable Review with a Focus on China – R. Daniels, CRU, London, United Kingdom

1-2 (8:30)
Market Update on Global Optical Cable Demand – P. Fay, CRU, Rhode Island, USA

1-3 (9:00)
Perspectives on the Worldwide Optical Fiber Marketplace – B. Boersen, Corning Inc., New York, USA

BREAK (9:30 – 10:00)

1-4 (10:00)
Network Infrastructure: The Cost of Disruption – J. Carlini, Carlini & Associates, Illinois, USA

(10:30)
Executive Panel: C. Kinlin, Corning Telecommunications Business Group; E. Edwards, CommScope; R. Kenny, General Cable North America; P. DuBois, OFS Fitel, LLC and B. DiLascia, Prysmian Group

1-5 (11:25)
Economic Outlook – R. Fry, DuPont, Delaware, USA

SESSION 2: INSTALLATION & FIBER OPTIC MAINTENANCE | MR217A
Chairperson: Guy Castonguay
Corning Cable Systems, Arizona, USA

2-1 (8:00)
Floating Cable into Duct: Recent Developments - W. Griffioen, L. Gapany, S. Grobety, C. Gutberlet and G. Plumettaz, Plumettaz SA, Bex, Switzerland; R. Van der Sluis, H.M.S. Machines BV, Zuid Gouda, Netherlands; A. Pijpers, ATC Inblaastechniek, Den Dolder, Netherlands and T. Weigel, Vetter GmbH Kabelverlegetechnik, Lottstetten, Germany

2-2 (8:25)
Optical Cable Network Reconfiguration by Employing ONU Upstream Signal Monitoring Technique for Effective Maintenance in Optical Access Network - W. Kuratani, M. Shimpo, K. Toge and S. Sako, NTT Corp., Ibaraki, Japan

2-3 (8:50)
Modelling the Pressure Profile for Optical Cables in Ducts - A. Snippe, Twente University and BV Twentsche Kabelfabriek, Enschede, Netherlands; O.R. Bresser, TKH Group NV, Haaksbergen, Netherlands; S. Hoekstra, Twente University, Enschede, Netherlands; and W. Griffioen, Plumettaz SA, Rotterdam, Netherlands

BREAK (9:15 – 9:45)

2-4 (9:45)
System for Changing Optical Access Line Routes without Service Interruption using Photoelectric Converters and Electric Variable Delay Lines - T. Manabe, K. Noto, M. Inoue, K. Katayama, N. Honda and Y. Azuma, NTT Corp., Ibaraki, Japan

PLENARY SESSION LUNCHEON

MONDAY, 11 NOVEMBER 2013
12:00 PM–1:45 PM
BALLROOM A/B
Registered Technical Symposium attendees only (Seats are Limited)

ANNOUNCEMENTS/GREETINGS

Robert A. Wessels, Jr., Chairman, IWCS, Inc. Board of Directors,
CommScope, Inc., Claremont, NC, USA

David Kiddoo, Vice-Chairman, IWCS, Inc. Board of Directors & Chairman,
IWCS Program Committee, AlphaGary Corporation, Leominster, MA, USA

KEYNOTE SPEAKER

Morgan Kurk
Senior Vice President and Wireless Segment Leader
CommScope, Hickory, NC, USA
"The Future of Wireless"

AWARDS AND RECOGNITION

Presented By
Mike Patel, Chairman, IWCS Symposium Committee,
Teknor Apex Company, Pawtucket, RI, USA

JACK SPERGEL MEMORIAL AWARD FOR OUTSTANDING TECHNICAL PAPER

Stefanie E. Harvey, Ph.D.
TE Connectivity, Menlo Park, California, USA
"Carbon as Conductor: A Pragmatic View"

OUTSTANDING POSTER PAPER

Wayne Kachmar
TE Connectivity, North Bennington, VT, USA
"From Optical Cable to Optical Wire – An Evolutionary Approach"

KITTS-KINGSLEY AWARD FOR BEST PRESENTATION

B. Todd Huffman, Ph.D.
Oxford University, Oxford, United Kingdom
"Fiber and Fiber Cable Reliability after Radiation to High Luminosity
Large Hadron Collider (HL-LHC) Doses"

HONORING RETIRING IWCS COMMITTEE MEMBER

Presented By:
Robert A. Wessels, Jr., Chairman, IWCS, Inc. Board of Directors,
CommScope, Inc., Claremont, NC, USA
Presented to:
Agusti Valls Prats, Prysmian Group, Milano, Italy

2-5 (10:10)
Localization System for Industrial Endoscope for Cable Wiring in Indoor Conduit Path - T. Kawano, N. Honda, T. Manabe and Y. Azuma, NTT Corp., Ibaraki, Japan

MONDAY, NOVEMBER 11, 2013
2:00-7:00 PM

See following events for times

EXHIBITS
Exhibit Hall C2
2:00 PM – 6:00 PM

NEW PRODUCT INTRODUCTIONS
Back of Exhibit Hall C2
3:00 PM – 6:00 PM
Chairperson: Mike Patel
Teknor Apex Co., Rhode Island, USA
(Titles Will Be Posted Onsite)

HOSPITALITY
Exhibit Hall C2
5:00 PM – 7:00 PM

TUESDAY NOVEMBER 12, 2013
8:00 AM – 11:55 AM

SESSION 3: CONNECTIVITY | MR217D
Chairperson: Thomas P. Huegerich
TE Connectivity, Vermont, USA

3-1 (8:00)
Development Progress Toward an RJ45 Based Backward Compatible Connectivity Solution for 40GBASE-T - T. Hayes, CommScope Inc., North Carolina, USA; and A. Hashim, Texas, USA

3-2 (8:25)
Design, Assembly, and Installation for New Modular Pre-Terminated Copper Cabling - T. Anderson, CommScope Inc., Nebraska, USA; B. Moffitt, CommScope Inc., Texas, USA; and D. Brake, CommScope Inc., North Carolina, USA

3-3 (8:50)
Optimization of Field Assembly Splice Technique with Solid Refractive Index Matching Material - K. Nakajima, K. Saito, M. Kihara and T. Kurashima, NTT Corporation, Ibaraki, Japan

BREAK (9:15 – 9:45)

3-4 (9:45)
Singlemode Pre-Polished Field Installed Fiber Connectors: Modal Noise and the Potential Impact on Dense Wavelength Division Multiplexing - T.P. Huegerich, TE Connectivity, Vermont, USA; M. Gurreri, TE Connectivity, Pennsylvania, USA; and Y. Lu, TE Connectivity, Minnesota, USA

3-5 (10:10)
Fiber Buckling in Optical Connectors - E.B. Marin, A. Kobyakov and K.B. Sparks, Corning Cable Systems, North Carolina, USA

3-6 (10:35)
Novel Field Installable Splicing Technique for 250-Qm Diameter Coated Optical Fiber Connections - M. Kihara, T. Shimizu, K. Saito, H. Izumita and T. Kurashima, NTT Corporation, Ibaraki, Japan

SESSION 4: COPPER CABLE DESIGN MEASUREMENT & PERFORMANCE | MR217A
Chairperson: Kenneth Cornelison
Technology Resources, Ohio, USA

4-1 (8:00)
EMC of Cables, Connectors and Components with Triaxial Test Set-Up - B. Mund, bedea Berkenhoff & Drebes GmbH, Asslar, Germany; and L. Halme, Aalto University, Aalto, Finland

4-2 (8:30)
Analysis of Balance Parameters of Cables for High Data Rate Digital Communications - C. Pfeiler and J. Weißbrod, Prysmian Group, Nuremberg, Germany; and D. Molin, Prysmian Group, Douvrin, France

4-3 (8:50)
Coupling Attenuation (CA) Testing for Category 8 Compliance - R. Herrera, BetaLaserMike Inc., Ohio, USA; and N. Kafati, Beta LaserMike Inc., California, USA

BREAK (9:15 – 9:45)

4-4 (9:45)
Investigation of Shielding Effectiveness and Differential Alien Crosstalk Correlation in Twisted Pair Cables - T. Hayes and W. Hopkinson, CommScope, Inc., North Carolina, USA

4-5 (10:10)
Alternative Performance Prediction Over Semi-Finished LAN Cables - B. Escher, J.C. Vieira and E.L. Souza, Prysmian Draka Brasil S.A., São Paulo, Brazil; P.A. Serni and D. Colón, UNESP-Universidade Julio de Mesquita Filho, São Paulo, Brazil

4-6 (10:35)
Process Control and Design Concepts to Improve Electrical Performance in a High Frequency U/UTP Channel - M.R. Beninca, A.C. Gonçalves, P. Brunetto, R.F. Cruz, S. Joly and H. Durigan, Furukawa Industrial S.A. Produtos Elétricos, Paraná, Brazil

4-7 (11:00)
Impact of Manufacturing Tolerances on Cable Design Optimization - J. Poltz, OptEM Engineering Inc., Alberta, Canada; and M. Josefsson, Ericsson AB, Hudiksvall, Sweden

SESSION 5: FTTH | MR213D
Chairperson: Helio J. Durigan
Furukawa Industrial S.A. Produtos Elétricos, Curitiba, Brazil

5-1 (8:00)
Development of New Aerial Distribution Optical Cables for Rural Aria Economical FTTH Network - M. Ohno, T. Fukute, M. Isaji, Y. Kudo, S. Shiobara, M. Yamanaka, N. Okada, H. Morioka and H. Kikuchi, Fujikura Ltd., Chiba-ken, Japan

5-2 (8:25)
Optical Access Network Architecture for Rural Area - H. Tsuma, H. Horimoto, T. Sano, H. Kato and K. Takamizawa, NTT Corp., Ibaraki, Japan

5-3 (8:50)
Development of High-Density and Lightweight Aerial Optical Fiber Cable with Simple Cable Joint - S. Hamaguchi, H. Nakane, Y. Shibata, S. Kiyosue and K. Shiraki, NTT Corp., Ibaraki, Japan

BREAK (9:15 – 9:45)

5-4 (9:45)
Development of Easy Installable Optical Cable for Rural Area - E. Konda, M. Tsukamoto, Y. Hoshino, O. Noboru, M. Iwaya and T. Nakano, Furukawa Electric Co., Ltd., Chiba, Japan

5-5 (10:10)
Development of Optical Drop Cable with Excellent Aero-Dynamic Characteristics - K. Tanabe, K. Arita, T. Yoshihara, A. Seto and T. Kaneko, SWCC Showa Cable Systems Co., Ltd., Tokyo, Japan

5-6 (10:35)
Installation Technology for Optical Access Network in Rural - K. Nitta, K. Nakano, R. Kaneko and K. Takamizawa, NTT Corporation, Ibaraki, Japan

5-7 (11:00)
A New Generation of Nano Loose Tube Cables for FTTH Applications - J. Jonker, P. Bindels and J. Hennink, Prysmian Group, Delfzijl, Netherlands

5-8 (11:25)
Combination of Innovative Micromodules Cable Designs with Different Types of Single Mode Fibers: Performance and Applications - O. Tatat and J.M. Testu, Prysmian Group, Calais, France; F. Chirita, Prysmian Group, Slatina, Romania; and W. Greven, Prysmian Group, Delfzijl, Netherlands

TUESDAY, NOVEMBER 12, 2013

EXHIBITS
Exhibit Hall C2
10:00 AM – 6:00 PM
Refreshments from 4:30 – 6:00 PM

TUESDAY, NOVEMBER 12, 2013
1:00 PM – 4:25 PM

SESSION 6: COMMERCIAL APPLICATION FOR MATERIALS & PROCESSES | MR217D
Chairperson: David B. Kiddoo
AlphaGary Corporation, Massachusetts, USA

6-1 (1:00)
Halar® ECTFE: A Versatile Fluoropolymer for Wire & Cable Applications - T. Spence, Solvay Specialty Polymers, New Jersey, USA

6-2 (1:25)
A Low Density Polyethylene Gas Injection Compound for Low Signal Loss Radio Frequency Cable - A. Flory and C. Kmiec, The Dow Chemical Co., Pennsylvania, USA; and D. Zinkweg, Dow Chemical, Texas, USA

6-3 (1:50)
Role of PVC Resins in Sustainable Design - R. Krock, The Vinyl Institute, Virginia, USA

BREAK (2:15 – 2:45)

6-4 (2:45)
UL Standard Revisions and Proposals, Harmonization Activities and Significant Proposed Revisions for the 2014 Edition of the National Electrical Code - A. Tassone, Underwriters Laboratories, LLC., New York, USA

6-5 (3:10)
Benefits of Dry Fiber Optic Cable Design - R. Savage and L. Vitola, Fiber-Line LLC, Pennsylvania, USA

6-6 (3:35)
New High Efficiency Fusion Splicer and System - R. Hasegawa, Y. Iwashita, S. Saito and N. Kawanishi, Fujikura Ltd., Chiba, Japan

6-7 (4:00)
Inspection Standards for High Voltage Polymers in the Cable Industry - O. Hissmann, OCS Optical Control Systems GmbH, Witten, Germany

SESSION 7: FIBER RELIABILITY | MR217A

Chairperson: Tomoyuki Hattori
Sumitomo Electric Ind., Ltd., Yokohama, Japan

7-1 (1:00)
Investigation of Optical Fiber Performance after Accelerated Aging and Adhesion Strength at Glass/Primary Interface - M. Kasahara, Y. Arashitani, H. Tanaka, K. Mochizuki, Y. Nakajima and M. Nishiguchi, Furukawa Electric Co., Ltd., Chiba, Japan

7-2 (1:25)
Reduction of the Delamination at the Glass-Coating Interface During the Optical Fiber Drawing Process - D. Xiang, K. Zhu, Y. Peng and Y. Wu, Jiangsu Tongding Optical Fiber Preform Technology Co., Ltd., Jiangsu, China

7-3 (1:50)
Research on the Optical Fiber Steady Technology for the High-Speed Drawing - W. Luo, S. Li, W. Chen and Z. Yu, FiberHome Telecommunication Technologies Co., Wuhan, P.R. China

BREAK (2:15 – 2:45)

7-4 (2:45)
An Improved, Legacy-Compliant Single Mode Fiber with Low Attenuation and Low Bend Loss with Improved Cabling Performance - R.S. Freeland, S.K. Mishra and K.W. Smith, Corning, Inc., North Carolina, USA

7-5 (3:10)
Investigating the Quality of Old Optical Fibre Cables - S. Hopland and J. Nordli, Telenor Norway Technology, Fornebu, Norway; P. Shah and K. Roberts, DSM Functional Materials, Illinois, USA; R. Alexandersson, Ericsson AB, Hudiksvall, Sweden; and B. Arvidsson, Independent Consultant, Hörby, Sweden

SESSION 8: OPTICAL FIBER CABLE – SPECIAL APPLICATIONS | MR213D

Chairperson: Robert A. Wessels, Jr.
CommScope, Inc., North Carolina, USA

8-1 (1:00)
Long Term Cable Reliability Design Criteria - D. Mazzarese, M. Kinard and K. Konstadinidis, OFS, Georgia, USA

8-2 (1:25)
Enhanced Mechanical, Environmental, and Flammability Testing of Heavy Duty Industrial Fiber Optic Cables - B.G. Risch, D.L. Collado and E.J. Bowman, Prysmian Group, North Carolina, USA

8-3 (1:50)
Unrepeatered Submarine Fiber-Optic Cables Using EX2000 Fiber with Large Effective Area - J. Huang, Tongguang Group Co., Ltd., Jiangsu, China; J. Xu and J. Lin, Tongguang Submarine Photoelectronic Technology (Jiangsu) Co., Ltd., Jiangsu, China; and Y. Zhang, Corning Telecommunication, Greater China, Shanghai, China

BREAK (2:15 – 2:45)

8-4 (2:45)
Impact of High Radiation Environments on Loose Tube Fiber Optic Cable Materials - B.G. Risch, Prysmian Group, North Carolina, USA

8-5 (3:10)
UV-Cured Thermoset Tight Buffers for Low Temperature Applications - P. Weimann, H. Ly and D. West, OFS Fitel, LLC, Georgia, USA

8-6 (3:35)
Investigation and Development of a Flame-Retardant & Fire-Resistant Composite Optical and Electrical Cable Applied in Subway Base Station - P. Liu, H. Liu, J. He, F. Chen and Z. Xiong, Yangtze Optical Fiber and Cable Co., Ltd., Hubei, P.R. China

8-7 (4:00)
Robust Grade-Index Hard-Clad-Silica Optical Fiber Cable for Industrial Automation and Control Systems - B. Zhu, OFS, New Jersey, USA; X. Sun, J. Li, M. Hines and A. Hokansson, OFS SPD, Connecticut, USA

TUESDAY, NOVEMBER 12, 2013
4:00 PM – 6:00 PM

POSTER SESSION

Back of Exhibit Hall C2
Chairpersons: Eric Whitham
OFS, Georgia, USA
Dr. Alistair Duffy
De Montfort University, Leicester, United Kingdom

CONFERENCE AT A GLANCE

	Sunday 11/10	Monday 11/11	Tuesday 11/12	Wednesday 11/13	
7:00 AM		7:00a - 8:00a Speakers' Orientation Breakfast MR217B/C	7:00a - 8:00a Speakers' Orientation Breakfast MR217B/C	7:00a - 8:00a Speakers' Orientation Breakfast MR217B/C	7:00 AM
7:30 AM					7:30 AM
8:00 AM		SESSION 1 MR217D; SESSION 2 MR217A	SESSION 3 MR217D; SESSION 4 MR217A; SESSION 5 MR213D	SESSION 9 MR217D; SESSION 10 MR217A; SESSION 11 MR213D; SESSION 12 MR213A	8:00 AM
8:30 AM					8:30 AM
9:00 AM		Coffee Break - 9:30 - 10:00 E Prefunction 2; Coffee Break - 9:15 - 9:45 East Prefunction 2	Coffee Break - 9:15 - 9:45 East Prefunction 2	Coffee Break - 9:15 - 9:45 East Prefunction 2	9:00 AM
9:30 AM		7:00a - 1:30p Exhibit Setup			9:30 AM
10:00 AM		Executive Track; Installation & Fiber Optic Maintenance	Connec-tivity; Copper Cable Design Measure-ment & Perfor-mace; FTTH	Specialized Material & Application for Copper Cable; Cable Materials & Processes; Measure-ment & Testing; Cable Design	10:00 AM
10:30 AM		Exhibit Hall C2	Exhibits 10:00a - 6:00p		10:30 AM
11:00 AM				11:00a - 12:00p Lunch on Own	11:00 AM
11:30 AM					11:30 AM
12 Noon		Plenary Session with Awards Lunch Included Keynote Speaker Morgan Kurk Ballrooms A/B 12:00p - 1:45p	12:00p - 1:00p Lunch on Own	SESSION 13 MR217D; SESSION 14 MR217A; SESSION 15 MR213D	12 Noon
12:30 PM			Refreshments 4:30p		12:30 PM
1:00 PM	1:00p - 2:00p Lunch Instructors Only 217B/C		SESSION 6 MR217D; SESSION 7 MR217A; SESSION 8 MR213D	Coffee Break - 1:15 - 1:45 East Prefunction 2	1:00 PM
1:30 PM					1:30 PM
2:00 PM	2:00p - 6:00p Courses Rm #'s - see in program 1. CU101: Fundamentals of Copper Conductors & Metallic Cable Design & Applications 2. FO101: Fundamentals of Optical Fibers & FO Cable Design & Application 3. MA101: Selection & Use of Materials in Wire & Cable 4. MA201: The Art & Science of Extrusion for Wire & Cable - Part I 5. CU204: Technology Review - Design & Testing of 25 Gbps Capable Twinax for Low Latency Data Systems Coffee Break 3:45p	2:00p - 6:00p Courses Rm #'s - see in program 6. FO206: Bend-Resistant Single-Mode and Multimode Fibers 7. MA202: The Art & Science of Extrusion for Wire & Cable - Part II 8. FO208: Harsh Environ-ment for Fiber Optics 9. CU202: Copper Cabling Technology - Advanced Transmission Line Theory & Measurements 10. CU206: Fundamentals of In-Building Distributed Antenna Systems Coffee Break 3:45p	CoffeeBreak - 2:15 - 2:45 East Prefunction 2; Commercial Application for Materials & Processes; Fiber Reliability; Optical Fiber Cable - Special Applica-tions	Data Center; Hybrid Optical Fiber/Power Cable Solutions for 4G Applications; Fire & High Temperature Resistance	2:00 PM
2:30 PM		Exhibit Hall C2 Exhibits 2:00p-6:00p			2:30 PM
3:00 PM		New Product Introductions 3:00p - 6:00p Exhibit Hall C2			3:00 PM
3:30 PM					3:30 PM
4:00 PM					4:00 PM
4:30 PM			POSTER PAPER SESSION Exhibit Hall C2 4:00p - 6:00p		4:30 PM
5:00 PM					5:00 PM
5:30 PM					5:30 PM
6:00 PM		Hospitality 5:00p - 7:00p			6:00 PM
6:30 PM					6:30 PM
7:00 PM					7:00 PM
7:30 PM					7:30 PM
8:00 PM					8:00 PM

P-1
Investigation of the Influence of Fusion Splice on Crosstalk Properties of Multicore Fiber - K. Imamura, R. Sugizaki and T. Yagi, Furukawa Electric Co., Ltd., Chiba, Japan; M. Yoshida and M. Nakazawa, Tohoku University, Miyagi, Japan

P-2
Factors Affect the Blowing Distance of Microduct Cable Interaction between Cable Surface and Air, Cable Stiffness - J. He, X. Su, H. Liu, F. Chen and Z. Xiong, YOFC, Hubei, China

P-3
Design of Ultra-High-Density Optical 24-Fiber Cable with Rollable 4-Fiber Ribbons for Aerial Deployment - M. Takami,S. Shitama, K. Takeda, D. Sasaki, H. Miyano, K. Ohtsuka and S. Ishigami, Sumitomo Electric Ind., Ltd., Yokohama, Japan

P-4
MFD and Macrobend Measurement Study of Bend Insensitive Fiber - S. Yang, Corning Greater China Telecom, Shanghai, China

P-5
Temperature and Stress Monitoring for 220kV Line OPPC Conductor Using Fiber Bragg Grating Technique - M. Li, C. He, Y. Xu, H. Lu, F. Cai and C. Miao, Zhongtian Hitachi fiber Optic Cable Co., Ltd., Jiangsu, P.R. China

P-6
Design and Characterization of Large Mode Field Area Single-Mode Optical Fiber With Low Bending Loss - S. Li, Q. Mo, W. Chen, Q. Yang, Z. He, C. Du, T. Zhang, Y. Ke and W. Luo, FiberHome Telecommunication Technologies Co., Wuhan, P.R. China

P-7
Development of Rat Resistant Cable Bent Easily by Using Stainless Braid - T. Oshige, Furukawa Electric Co., Ltd., Chiba, Japan

P-8
Study on Influence of Optical Fiber Preform Manufacturing on Geometric Properties of Optical Fiber - J.J. Chen, K. Xie, Y.G. Qian and Y.C. Shen, Zhongtian Technology Advanced Materials Co., Ltd., Jiangsu, P.R. China

P-9
Fabrication of the Small-Size Single Mode Fibers and their Property Study - S. Cao, C. Xue and Z. Liu, Zhongtian Technology Fiber Optic Co., Ltd., Jiangsu, P.R. China; and R. Yang, Zhongtian Technology Group Co., Ltd., Jiangsu, P.R. China

P-10
Characteristic Analysis of Category 6/6A UTP Cable According to Variation of Lay Length - J. Kim, J. Choe, J. Park, J. Kim, S. Lee, Y. Kang, S. Oh and H. Lee, ILJJIN Electric Co., Ltd., Kyunggi-do, Republic of Korea

P-11
Influence of the Drawing and Measurement on Zero Dispersion Wavelength - C. Xue, S. Cao and Z, Liu, Zhongtian Technology Fiber Optic Co., Ltd., Jiangsu, P.R. China; and R. Yang, Zhongtian Technology Group Co., Ltd., Jiangsu, P.R. China

P-12
Analysis and Improvement of Halogen-Free Flame-Retardant Cable Cracking Resistance - L. Chen, H. Chen, Q. Yu, Q. Qi, C. Liu, S. Wang and H. Shi, FiberHome Telecommunication Technologies Co., Ltd., Hubei, P.R. China

P-13
A New Type of 4G Communication Indoor Coverage Solution - R. Zhao, Y. Lan and P. Wang, Zhongtian Hitachi Radio Frequency Cable Co., Ltd., Jiangsu, P.R. China

P-14
Development and Application of A Novel Optical and Electrical Hybrid Cable in China's Next 4G Network Base Station - Q. Qi, X. Zheng, L. Chen, K. Fu, S. Wang, H. Shi, C. Liu and H. Lan, FiberHome Telecommunication Technologies Co., Ltd., Hubei, P.R. China

P-15
Analysis of Optical Ring Resonator Add/Drop Filters - R.D. Mansoor, H. Sasse and A.P. Duffy, De Montfort University, Leicester, United Kingdom

P-16
Study on the Control of Refractive Index Profile in Preform Making Process - Y.G. Qian, K. Xie, F.F. Mao, M.M. Tang and Y.C. Shen, Zhongtian Technology Fiber Optic Co., Ltd., Jiangsu, P.R. China

P-17
The Fracture Mirror Analysis of the High-Speed Drawing Optical Fiber - M. Chen, W. He, J. Yuan, G. Zhang and R. Qi, Jiangsu AlphaOptic-Electrical Technology Co., Ltd., Jiangsu Province, China

P-18
Flammability Testing for Low Smoke Zero Halogen Compounds and Cables to Meet Today's Fire Safety Standards - Y. Gau, Cable Consulting Services, New Jersey, USA; and R. Ginger, Cable Consultant, Ontario, Canada

P-19
Reverberation Chamber Testing of Noise Coupling to Category Cabling - H.G. Sasse, V. Kang and A.P. Duffy, De Montfort University, Liecester, United Kingdom

WEDNESDAY, NOVEMBER 13, 2013
8:00 AM – 11:00 AM

SESSION 9: SPECIALIZED MATERIAL & APPLICATION FOR COPPER CABLE | MR217D

Chairperson: John Gavilanes
LAPP USA, Inc., New Jersey, USA

9-1 (8:00)
Evaluation of Corrosion Characteristic of CCS and CCA Conductors for Power and Telecom Cables under Typical Service Conditions - P. Anelli, GB Studio, Milano, Italy; D. Fox and Y. Syarif, Fushi Copperweld, Inc., Tennessee, USA; F. Peruzzotti and A. Pezzoni, Dynext S.r.l., Milano, Italy

9-2 (8:25)
Heating Effects on Channel Performance for PoE Applications - F. Akinnuoye, H. Sasse, V. Kang and A. Duffy, De Montfort University, Leicester, United Kingdom

9-3 (8:50)
High Flexing Industrial Cable Requirements and Applications - J. Bör, CABX Cable Expert, Aachen, Germany

BREAK (9:15 – 9:45)

9-4 (9:45)
Fundamentals of Electrical Stress Control of Semiconductive Shield for Power Cables - S.J. Han, The Dow Chemical Co., Pennsylvania, USA; and J. Kjellqvist, Dow Europe GmbH, Horgen, Switzerland

9-5 (10:10)
Product Environmental Compliance for Wire, Cable, and Connectivity - J. Crawford, Anixter International Inc., Illinois, USA

SESSION 10: CABLE MATERIALS & PROCESSES MR217A

Chairperson: Dirk Zinkweg
The Dow Chemical Co., Texas, USA

10-1 (8:00)
Tailored Insulations for High Transmission Rate Data Cables - B. Fajardo, Borealis Compounds Inc., New Jersey, USA; and A. Watson, Borealis Polymers N.V., Mechelen, Belgium

10-2 (8:25)
Evaluation of Green Jacket Materials in Communication Cables - J. Quinn, AFL, South Carolina, USA

10-3 (8:50)
Low Coefficient of Friction Polyolefin FTTx Jacket for Improving Cable Installation in Ducts - S. Pujari, A. Flory, C. Kmiec, M. Esseghir and J. Cogen, The Dow Chemical Co., Pennsylvania, USA

BREAK (9:15 – 9:45)

10-4 (9:45)
Nonlinear Modelling of Excess Fibre Length of Dry Polypropylene Tubes - M. Lahti, Maillefer Extrusion Oy, Vantaa, Finland; and A. Bulsari, Nonlinear Solutions Oy, Turku, Finland

10-5 (10:10)
The Art of Substraction - A Lean Approach to Product Development & Process Optimization (I-Optimal Design of Experiments Paired with EMP III) - S.W. Czupryna, Ob-DOE, Washington, USA

10-6 (10:35)
Print Isolation for Surface Inspection System - J. Rigsby and Z. Li, Taymer International, Inc., Ontario, Canada

SESSION 11: MEASUREMENT & TESTING | MR213D

Chairperson: Eric J. Bulington
Anixter Inc., Illinois, USA

11-1 (8:00)
Evaluation of Tube Crush Test Method of Relevant Chinese Cable Material Standards - L. Ji and X. Li, Corning Greater China Telecom, Beijing, P.R. China; and Y.Z. Wang, Beijing CCS Optical Fiber Cable Co., Ltd., Beijing, P.R. China

11-2 (8:25)
Longitudinal Distribution of Fictive Temperature of Silica-Based Optical Fibers Estimated by Using Brillouin-OTDR Technique - K. Tsujikawa, L. Ma, N. Hanzawa and F. Yamamoto, NTT Corp., Ibaraki, Japan

11-3 (8:50)
System Impact of Worst Case MPI Created by Short, Bend-Insensitive, G.657.B3 Fibers - A. McCurdy, T. King and C. Sutlief, OFS, Georgia, USA; M. Filer and S. Searcy, ADVA Optical Networking, Inc., Georgia, USA; and N. Cheng, Huawei Technologies Co., Ltd., California, USA

BREAK (9:15 – 9:45)

11-4 (9:45)
Rheology and Material Shrinkback in Fiber Optic Cable Extrusion - Z. Liu and W. Liu, Corning Cable Systems, Texas, USA

SESSION 12: CABLE DESIGN | MR213A

Chairperson: Eric Whitham
OFS, Georgia, USA

12-1 (8:00)
5.2 fibers/mm2 High-Density 1000-Fiber Cable Assembled from Rollable Optical Fiber Ribbon - Y. Yamada, M. Kikuchi, H. Izumita and T. Kurashima, NTT Corp., Ibaraki, Japan

12-2 (8:25)
Rectangular Profile Ribbon Cable Line Hardware and Span Limits - A. Miller, Corning Cable Systems, North Carolina, USA

12-3 (8:50)
Ultra-High Density Wrapping Tube Optical Fiber Cable with 12-Fiber Spider Web Ribbon - M. Isaji, S. Yagi, Y. Takahashi, K. Osato, M. Yamanaka and N. Okada, Fujikura Ltd., Chiba, Japan

BREAK (9:15 – 9:45)

12-4 (9:45)
New Flexible Fiber Cable for Thunderbolt™ and USB Assemblies - J. Register and J. Silva, Corning, North Carolina, USA

12-5 (10:10)
Retractable Cable Technology: Total Cost of Ownership – A. Berkers, M. Doorn and P. Lock, Prysmian Group Delft, Netherlands; O. Tatat and A. Lavenne, Prysmian Group, Calais, France; and S. Pike, Prysmian Group, Bishopstoke, United Kingdom.

WEDNESDAY, NOVEMBER 13, 2013
12:00 PM – 3:25 PM

SESSION 13: DATA CENTER | MR217D

Chairperson: Peter Pilon
OFS, Massachusetts, USA

13-1 (12:00)
Navigating the Pros and Cons of Structured Cabling vs. Top of Rack in the Data Center – Presented by Robert A. Wessels, Jr., CommScope Inc., North Carolina, USA for Communications Cable and Connectivity Association (CCCA), Florida, USA

13-2 (12:25)
BIMMF - Hands On - A. Landers, j-fiber GmbH, Jena, Germany

13-3 (12:50)
Trends in Datacom Optical Links - R. Shubochkin, K. Balemarthy, Y. Sun, J. Kim, R. Lingle, Jr., D.S. Vaidya and J. Kamino, OFS, Georgia, USA

BREAK (1:15 – 1:45)
IPAD DRAWING – MUST BE PRESENT TO WIN

13-4 (1:45)
The Effect of Detector Coupling Losses on the Measurement of Modal Bandwidth of Laser-Optimized Multimode Fiber - J.M. Castro, R. Pimpinella, B. Kose and B. Lane, Panduit Corp., Illinois, USA

13-5 (2:10)
Improved Mode Partition Noise Model - K. Balemarthy, OFS, Hyderabad, India; and R. Lingle, Jr., OFS, Georgia, USA

13-6 (2:35)
Reach Extensions with Chromatic Dispersion Compensated Multimode Fibers up to 25Gbps - D. Molin, M. Bigot-Astruc and P. Sillard, Prysmian Group, Haisnes, France

13-7 (3:00)
25Gbps System Transmission Experiments Over 150 m Conventional and Bend-Optimized OM4 MMF Link – K. Balemarthy, Y. Sun and R. Lingle, Jr., OFS, Georgia, USA; S.K. Pavan, P.J. Decker and S.E. Ralph, Georgia Institute of Technology, Georgia, USA; and R. Shubochkin, OFS, Massachusetts, USA

SESSION 14: HYBRID OPTICAL FIBER/POWER CABLE SOLUTIONS FOR 4G APPLICATIONS
MR217A

Chairperson: Jeff S. Barker
Prysmian Group, North Carolina, USA

14-1 (12:00)
Technical Considerations for Composite Cables in Fiber-To-The-Antenna (FTTA) Applications - D.L. Collado, B.G. Risch and D.J. Yamasaki, Prysmian Group, North Carolina, USA;J.D. Gustitus, Prysmian Group, Pennsylvania, USA; and J.R. Sach, Prysmian Group, South Carolina, USA

14-2 (12:25)
Development and Application of Hybrid Optical and Electrical Cable for Mobile Communication Access Network - P. Liu, H. Liu, Y. Ruan, X. Lu, F. Chen and Z. Xiong, Yangtze Optical Fiber and Cable Co., Ltd., Hubei, P.R. China

14-3 (12:50)
Optical/Electrical Hybrid Cable used in Wireless Remote Radio System and Its Application in 3G & 4G Mobile Communication - M. Xue, Z. Gao, F. Gao, L. Gu, J. Wu and Z. Wang, Hengtong Optic-Electric Co., Ltd., Jiangsu, P.R. China

SESSION 15: FIRE & HIGH TEMPERATURE RESISTANCE

MR213D
Chairperson: David Braun
Cable Components Group LLC, Connecticut, USA

15-1 (12:00)
A Comparison of HFFR Jacket Compound Solutions: Polyolefin vs. TPE - T. Schelling, R. Ruprecht and M. Cox, Teknor Apex Co., Rhode Island, USA

15-2 (12:25)
Status Summary of Cable Reaction to Fire Regulations in Europe - M. Försth, J. Post, B. Sundström, P. Johansson and M. Strömgren, SP Technical Research Institute of Sweden, Borås, Sweden; A. Steen-Hansen and K. Storesund, SINTEF NBL Norwegian Fire Research Laboratory, Trondheim, Norway

15-3 (12:50)
Development of a New Intermediate Scale Method for Assessing Cables Reaction to Fire According CPR - E. Gallo and W. Stöcklein, Corning Cable Systems, Berlin, Germany; B. Schartel and P. Klack, BAM Federal Institute for Materials Research and Testing, Berlin, Germany

BREAK (1:15 – 1:45)
IPAD DRAWING – MUST BE PRESENT TO WIN

15-4 (1:45)
Micro-Scale Evaluation of Flammability for Cable Materials - H.E. Yang, J.T. Chapin, P. Gandhi and T. Lackhouse, Underwriters Laboratories LLC, Illinois, USA

15-5 (2:10)
High Temperature Thermoplastics Polyurethanes for Cable Jacketing Applications - C. Makadia, V. Wilson and J. Vontorcik, Lubrizol Advanced Materials, Inc., Ohio, USA

CONFERENCE INFORMATION

ON-SITE REGISTRATION SCHEDULE
Registration will be held at the Charlotte Convention Center, Concourse C, during the following hours:

Sunday, Nov 10, 2013.....1:00 PM to 6:00 PM
Monday, Nov 11, 2013.....6:00 AM to 6:30 PM
Tuesday, Nov 12, 2013.....7:00 AM to 5:30 PM
Wednesday, Nov 13, 2013.....7:00 AM to 2:00 PM

All conference attendees must register and obtain a badge. Badges must be worn for access to all IWCS events.

DRESS CODE: BUSINESS CASUAL

Pictures (camera/cell phone), Videotaping or electronic recording during this conference is not permitted.

EXHIBIT HALL SCHEDULE (Exhibit Hall C2)
All Registered Attendees

Monday, Nov 11, 2013..... 2:00 PM to 6:00 PM
Tuesday, Nov 12, 2013.....10:00 AM to 6:00 PM

HOSPITALITY RECEPTION – EXHIBIT HALL
Monday, Nov 11, 2013 – 5:00 to 7:00 PM

All attendees are cordially invited to the IWCS 62nd hospitality reception on Monday evening. Cocktails and light snacks. Your IWCS Conference badge is required for admission. Badges must be picked up by 6:30pm on Monday.

LUNCH
Monday, Nov 11, 2013

Plenary Session (Ballrooms A/B) – Registered Technical Symposium attendees only (seats are limited).

63rd International Cable • Connectivity Symposium
November 9-12, 2014
Rhode Island Convention Center
Providence, RI, USA

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Partner Level

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COMMSCOPE®	CommScope is a global leader in connectivity solutions for communications networks. We provide infrastructure solutions for wireless, business enterprise, residential broadband and carrier wire line networks with industry-leading brands such as Andrew®, SYSTIMAX® and HELIAX®. Founded in Hickory, North Carolina more than 30 years ago, CommScope and its worldwide team of more than 13,000 employees create infrastructure solutions for communications networks in more than 130 countries.
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DUPONT®	DuPont is the premier supplier of high performance fluoropolymer resins and films. Our Teflon® and Tefzel® products have been helping the wire and cable industry meet their most demanding applications for over 75 years.

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ofs A Furukawa Company	OFS is a world-leading designer, manufacturer and provider of optical fiber, optical fiber cable, FTTX, optical connectivity and specialty photonics products. Our manufacturing and research divisions work together to provide innovative products and solutions that traverse many different applications as they link people and machines worldwide. Between continents, between cities, around neighborhoods, and into homes and businesses of digital consumers we provide the right optical fiber, optical cable and components for efficient, cost-effective transmission. OFS's corporate lineage dates back to 1876 and includes technology powerhouses such as AT&T and Lucent Technologies (now Alcatel-Lucent). Today, OFS is owned by Furukawa Electric, a multi-billion dollar global leader in optical communications. Headquartered in Norcross (near Atlanta) Georgia, U.S., OFS is a global provider with facilities in Denmark, Germany, Russia and the United States.

Platinum Level

TEIJIN Human Chemistry, Human Solutions	Para-aramid yards, standard and water-blocking finishes.
TA TEKNOR APEX	Teknor Apex Company, a supplier of thermoplastic compounds to the wire and cable industry offers a full range of RoHScomplaint, UL-Recognized extrusion and molding compounds.
Wire & Cable Technology International	Official Magazine of the IWCS Conference TM

Gold Level

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MILTEC UV	Miltec UV is the leading manufacturer of high performance UV curing systems used in optical fiber draw towers for coating, coloring, and cable marking. For over 20 years, we have provided the industry with superior quality and service, serving both domestic and international markets.
Prysmian Group	Prysmian Group is world leader in the energy and telecom cables and systems industry. With sales of some â, 7 billion (pro-forma 2010 Prysmian/Draka) and 22,000 employees across 50 countries and 98 plants, the Group is strongly positioned in high-tech markets and provides the widest range of products, services, technologies and know-how. In the Energy sector, Prysmian Group operates in the business of underground and submarine power transmission cables and systems, special cables for applications in many different industrial sectors and medium and low voltage cables for the construction and infrastructure industry. In the Telecom sector, the Group manufactures cables and accessories for the voice, video and data transmission industry, producing optical fibres, optical cables and connectivity. Prysmian is listed on the Milan Stock Exchange in the Blue Chip index.
SOLVAY asking more from chemistry®	Solvey Solexis offers Halar®, Solef ®, Hylar ®, Hyflon® , melt processable fluoropolymers, Algoflon® PTFE for wire and cable applications in telecommunications, microelectronics, oil and gas, automotive and other industries.
webindustries Listen. Create. Deliver.	Web Industries is a global leader in specialty film extrusion and a pioneer in producing foamed and fibrillated tapes. Our wire and cable product portfolio includes the SuperBulk® cable filler family as well as identification, isolation, and binder tapes. We use our proprietary systems and best-practice methodologies to deliver high-quality, next-generation cable components that are found in some of the world's most advanced wire and cable products. We combine end-to-end design, development, converting, and manufacturing services with innovative thinking and creative problem solving to help our partners speed products to market, reduce costs, and maximize product success.

Donor Level

UL	Underwriters Laboratories has the expertise, testing capability, brand recognition and global presence needed to provide a full portfolio of wire and cable testing services for Fire Safety, Performance Verification, Component Cabling and Compound Performance to the industry. Our investigation services are supported by one of the most comprehensive Follow-Up Programs in the third-party certification industry that helps users, specifiers, distributors and manufacturers identify cabling products that meet nationally recognized safety requirements as well as industry specifications for performance and quality.

NOTES:

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