

Point-to-Point

A Dow Electrical & Telecommunications Update



POWER • TELECOMMUNICATIONS • WIND • BUILDING AND CONSTRUCTION • PERSONAL ELECTRONICS • APPLIANCES • TRANSPORTATION



*Tim Laughlin,
General Manager,
Dow Electrical &
Telecommunications*

Thus far, 2011 has been a landmark year for Dow Electrical & Telecommunications (Dow E&T). We've changed our name. We've been integrated into Dow's Performance Plastics Division. We continue to make great progress with our asset investments in North America and Europe. We are progressing with new asset footprints in the emerging economies and will capitalize on the recently executed JV with Saudi Aramco, SADARA. We're making progress on next generation and non-polyolefin technologies. And, we've signed several DOW INSIDE licensees! Taken singly, these are all noteworthy. Together, they demonstrate our continued momentum and commitment to hard work, passion and vision for the industries we've been serving for nearly six decades.

With a growth strategy that moves beyond raw material supplier to a technology and solution provider, we made the decision to change our name to Dow E&T. Recent advances in bio-based chemistry have enabled us to play a larger role in personal electronics, appliance, transportation and building & construction markets. Now, with our integration into the \$15 billion Dow Performance Plastics Division, the time is right to leverage the Dow portfolio in an even wider capacity to bring new technology and products to market. Further, as an Official Olympic Worldwide Partner and Official Chemistry Company for the Olympic Movement, Dow and its customers are uniquely positioned to supply technology and products into Olympics-related infrastructure that truly bring the Games to millions of people around the world. And, beyond this organic growth, we also are exploring several potential alliances with com-

panies whose products and experience enhance or complement our own.

In regard to asset investments, our improvements at facilities in Texas and Germany are well underway. These improvements support our next generation medium voltage (MV) materials as well as high (HV) and extra high voltage (EHV) applications that continue to grow in

every region of the world. The modernization projects will help us realize further reliability, performance and capacity enhancements that will enable us to continue to meet or exceed our customers' needs and offer peace of mind to end

users for decades of reliable cable service.

Finally, we couldn't be more proud than to announce the signing of several valued customers to our Dow Inside licensee initiative. The Dow E&T team has worked tirelessly for nearly two years on creating a true paradigm

"We're making progress on next generation and non-polyolefin technologies. And, we've signed several DOW INSIDE licensees!"

shift on how the industry perceives the materials that go into power and telecommunications wires and cables. There is no doubt that the use of quality materials up front can save money over the life of the system. Along with quality manufacturing by our Dow Inside partners,

collectively we can enhance the value of our combined brand offering and ensure years of reliable service to end users. We are appreciative of the trusted relationships with these customers and look forward to other customers that may join us in this effort.

Dow Electrical & Telecommunications signs multiple DOW INSIDE licensees

The Dow Inside initiative helps enable reliable, long-life wires and cables to power, electronics and telecommunications industries

Dow E&T is in the process of signing several Dow Inside license agreements with key customers in strategic geographic regions. Under the terms of the Dow Inside agreement, each licensee uses DOW ENDURANCE™ insulation, semi-conductive and jacketing materials to manufacture electronics wiring and/or MV and HV power cables. In exchange, Dow E&T will provide the companies with forward-thinking technologies, proven products and enhanced service that benefit both the customer and Dow in a demanding market. In addition, Dow E&T also will offer co-marketing opportunities to support Dow Inside partners.



Two significant end users choose TR-XLPE in India

Material choice is essential in production of long-life reliable cables

The Kalapakam Unit of Bhabha Atomic Research Center (BARC), Department of Atomic Energy (DAE) in India has upgraded material specification for MV power cable to tree-retardant crosslinked polyethylene (TR-XLPE). When considering frequent or early failures of cables made with lesser materials, BARC made the decision to adopt TR-XLPE. As an additional measure to ensure excellent quality cables, the BARC has specified Dow as one of only two vendors for the insulation and semiconductive compounds in the specification.

Maharashtra State Electricity Distribution Company Limited (MSEDCL), the largest

Among several valued customers in various stages of negotiation, the following four companies have completed Dow Inside licensee agreements:

- Chongqing Taishan Cable Co. Ltd. (China)
- Sevkabel Holding (Russia)
- Uncomtech Group (Russia)
- PT SUCACO Tbk (Indonesia)

Chongqing Taishan is a key player in the Chinese wire and cable industry and was the first customer to sign a Dow Inside agreement. Sevkabel is one of the largest cable manufacturers in the Russian Federation and is an official supplier to Olympstroy, the state corporation that controls the construction of Olympic installations. Sevkabel is supplying power cable to the region for the 2014 Sochi Games. Uncomtech Group is the largest cable holding in Russia and will formalize its agreement with Dow at a signing ceremony at Khimia in Moscow this October. PT Supreme Cable Manufacturing & Commerce Tbk (PT SUCACO Tbk), is Indonesia's largest and leading cable manufacturer.

For more information on Dow E&T's Dow Inside program, please contact a Dow Representative or visit our web site at www.dow.com/electrical.

state-owned power distribution company in India, has created a specification option for TR-XLPE insulation for their 11kV, 22kV and 33kV distribution cables. Although this specification co-exists with their standard XLPE cable specification, this is the first time a government utility in India has recognized TR-XLPE and clearly outlined performance requirements.

For more information on the value of DOW ENDURANCE TR-XLPE materials, please contact your Dow representative or visit our web site at www.dow.com/electrical.

Dow E&T engages power community at R&D meetings

By Simon Sutton, European End-use Marketing Manager



Working across the value chain is central to Dow E&T's strategy. Our marketing activities with end users are a good example of this type of engagement. For those concerned about innovation, working together from the fundamental premise to the applied end of the spectrum, is essential to success. Recently, we had two opportunities to put these principles into action.

First was an R&D workshop organized by the European Network of Transmission System

Operators for Electricity (ENTSOe) in which Dow E&T participated. Drawing representation from utilities, government, the European Commission, OEMs, and consultants, the event helped align current European funded programs with a framework of strategic R&D aims developed by ENTSOe. As a result, the European Electricity Grid Initiative (EEGI) was formed to help Europe meet its carbon emission reduction targets, facilitate smart grid technology and

help TSOs avoid duplicating efforts.

Dow E&T also engaged with R&D providers at an event held in France in July. This discussion meeting brought together leading academics from across Europe, along with a limited number of OEMs to discuss dielectric research. Four fundamental areas of research were covered that could lead to benefits for end users. Each session started with a challenging, sometimes provocative, assessment of the current state of

knowledge. Smaller groups then debated a series of questions before feeding back conclusions to all workshop attendees. By the end of the workshop, a number of focused research aims had been defined. These will be further developed in the coming months.

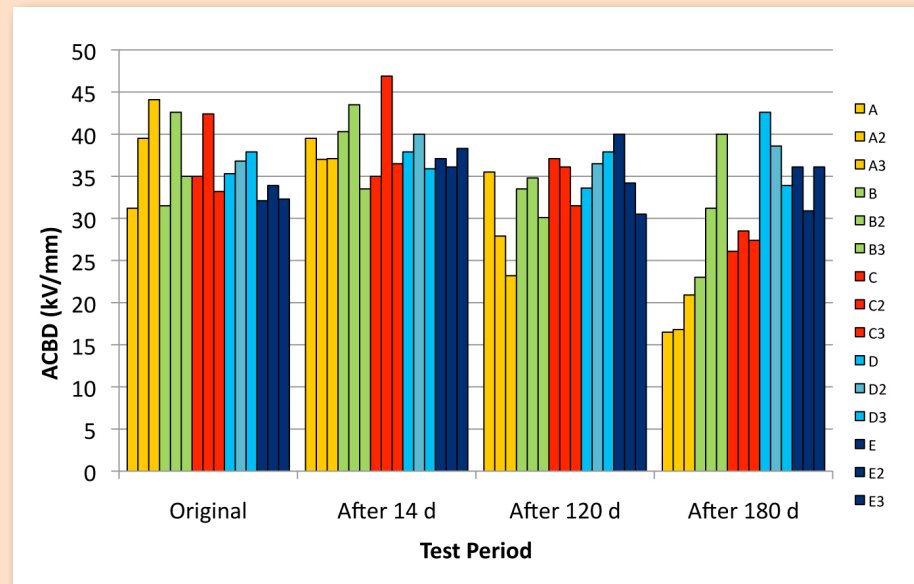
By the end of the workshop, a number of focused research aims had been defined. These will be further developed in the coming months.

aims had been defined. These will be further developed in the coming months.

Manufacturing techniques and quality materials crucial to reliable cable performance

This summer, State Grid EPRI of Wuhan, China presented a paper at JICABLE 2011 titled “The influence of manufacturing technique to power frequency breakdown characteristics of XLPE power cable.” The paper discussed the findings of Accelerated Water Tree Testing (AWTT) conducted on five sets of cables made by five different cable manufacturers in China using the same Dow materials. As shown in the figure on the right, all cables except A were found to meet China’s industrial standard DL/T-1070-2007 after 180 days.

Cable samples from manufacturer A had large amounts of bowtie trees, whereas none were found in cable samples from the other four manufacturers. It was acknowledged that “because the same cable materials were used, the reason is not the component and purity of the cable materials...the reason in samples of



cable A is the manufacturing technique.” More voids and contaminants also were found in cable samples from manufacturer A than from the other four manufacturers. This led to the conclusion that “...besides reliable cable materials, manufacturers should also focus on manufacturing technique.” This comprehensive study is a clear illustration of the importance of quality materials and quality manufacturing processes –

the cornerstone of Dow E&T’s Dow Inside initiative.

For more information or to obtain a full copy of the paper, please contact your Dow representative or download from our web site at www.dow.com/electrical.

“The influence of manufacturing technique to power frequency breakdown characteristics of XLPE power cable.”

Product showcase

DOW ENDURANCE™ HFDC 4202 EC qualification update

Dow E&T is happy to report that our qualification of next generation DOW ENDURANCE HFDC 4202 EC continues successfully. In compliance with Insulated Cable Engineers Association (ICEA) requirements, this enhanced MV insulation material is undergoing the stringent AWTT qualification with two cable manufacturers in North America. After 120 days with five different material combinations, the average value significantly exceeds the minimum ICEA standard – indicative of the consistency of performance we've come to expect from DOW ENDURANCE materials.

For more information about our next generation MV materials, please call your Dow representative or download the DOW ENDURANCE HFDC 4202 EC product sheet available at www.dow.com/electrical.

™®Trademark of The Dow Chemical Company and its subsidiaries.

At Dow Electrical and Telecommunications, we'll help you keep the lights on and get people connected. We're working with cable manufacturers, utilities, testing institutes and other global industry experts to provide the products, technology, solutions and knowledge you need to achieve your objectives. Our goal is to create materials that help deliver reliability, longevity, efficiency, ease of installation and protection. Whether you manage power, voice or data connections, we can support your current and future transmission and distribution needs. With more than 60 years of industry experience, Dow Electrical & Telecommunications is a business unit of The Dow Chemical Company and can be found online at www.dow.com/electrical.

Calendar of events

Dow Electrical & Telecommunications experts participate in many industry events. Please visit us at the following:

Fall ICC – Denver, CO, USA
October 24-26, 2011

IWCS – Charlotte, NC, USA
November 6-9, 2011

Kabeltagung – Erfurt, Germany
November 28- 29, 2011

Spring ICC – Seattle, WA, USA
March 25-28, 2012

WIRE – Dusseldorf, Germany
March 26-30, 2012

IEEE/PES – Orlando, FL, USA
May 7-10 , 2012

Windpower 2012, Atlanta, GA, USA
June 3-6, 2012

