I.C.F.

NEWSLETTER

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ICF

IWCS – 50th Anniversary:

News:

Statistics

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2002

year of the horse

NEW MEMBER

We are very pleased to welcome J-Power Systems Corp. of Japan as Full Member, which is a joint venture between Hitachi Cable and Sumitomo Electric Ind. Ltd. and specialized in High Voltage Power Cables.

ICF CONGRESS – BEIJING 2002

October 23–27: The venue will be The Grand Hyatt Beijing, newly opened at the end of 2001 and just located near to Tian An Men Square.

The following 4 topics will be presented

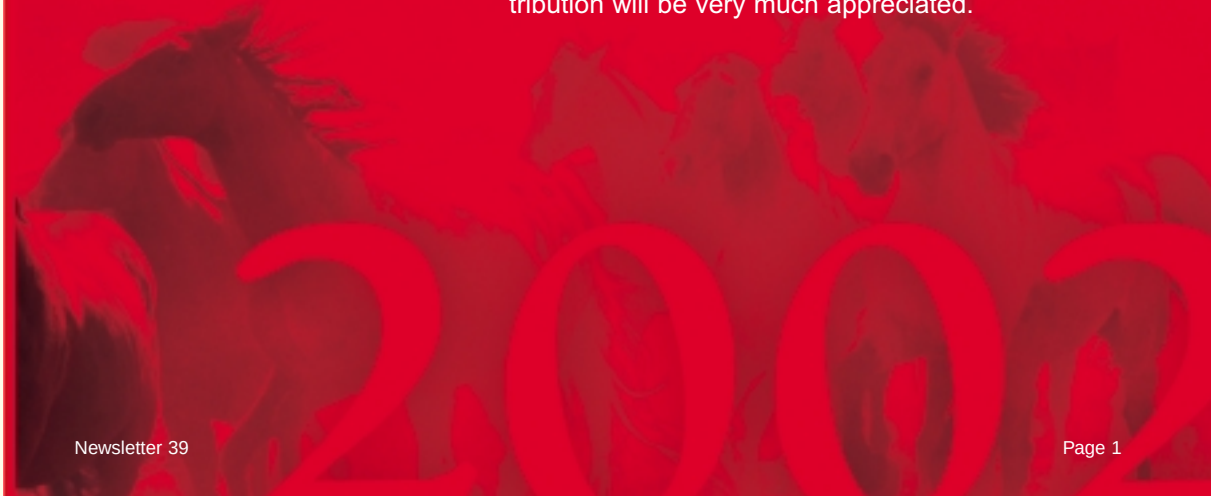
- Focus on China (Economy and (Cable) Industry after WTO)
- Cable Industry Structure
- Environmental Issue
- Standardisation

YEAR OF THE HORSE

This is the 12th Congress and, in Chinese sense, 12 years mean one cycle of the 12 horary singes (12 animals). This is the year of the Horse and, according to its legend, it is a year to get over obstacles to make progress for the future. Cable industry should be encouraged for the next jump!!

NEW SECRETARY GENERAL

Since the beginning of this year, your new Secretary General is in office, succeeding his predecessor who served for 5 years. Your continued support and contribution will be very much appreciated.



The Future of Cable Industry- Challenge for the 21st Century –

(Excerpt of keynote speech by Dr. N. Kurauchi, ICF President, at the 50th Anniversary of the IWCS in Florida, Nov 13, 2001)

"Good morning, Ladies and Gentlemen, I am very pleased to be here at this golden jubilee Plenary Session, and I am very honoured that you have invited me to address you on behalf of the International Cablemakers Federation on this memorable occasion, the fiftieth Anniversary of the International Wire and Cable Symposium.

The cable industry has been suffering from the impacts due to changes among the customers for the past few decades, such as deregulation and liberalization in power and telecom sectors and shift of production to developing countries especially in the electronics and automotive industries. Recent recession in the world economy is a very difficult issue to our industry as well. In order to overcome the difficulties, most of the member companies of ICF are facing challenges by taking necessary measures including: capacity adjustment and restructuring within the individual companies or alliance or consolidation with other companies. There were many announcements and articles in the newspapers on these issues in our industry during the past several months. Before starting on the subject "Challenges for the new century", I would like to review very briefly the history of applications of electricity and their contribution to the modern society.

Historical review on the role of cable industry

In the 19th Century, electricity came into various practical applications, such as telegraph and telephone for communication, electric light for illumination, electric motor and generator for factories, electrified railroad for transportation, electric power systems for public services to supply energy and wireless communication, initially, for marine application. They stimulated and contributed to the further development of the industrial revolution. The first practical application of the telegraph was for the railroad in the 1830's. Wires were installed along the railroad tracks. The first submarine telegraphs cable was installed across the Straits of Dover in 1850. The submarine cable for this purpose was composed of stranded copper wires and insulated with gutta percha. The electric wire and cable industries in Europe and North America must have started early in the 19th century. The 20th century is called "The Century of Technology Innovation" because new technologies and inventions were introduced in the industries and utilized in society including automobile, airplane, synthetic materials, application of atomic power, radio and TV broadcast, computers, semiconductor devices etc. Modern industries stimulated the world economy and brought about rapid economic growth in many countries during the last few decades of the last century. I think that the most important achievement in the last century for modern society is that the advanced lifeline networks were built to support the operation of industries and the life of the people. The major lifeline networks are for energy, transportation and information. Wire & cable technology together with electric technology has played an important role in building such advanced lifeline networks. Power cable is the transmission media of energy, extra high voltage power cable contributed to the construction of the efficient power network, winding wire is the component of the motive power system in the transportation networks, control cable is used for the control systems in the networks, and copper communication cable and optical fiber cable are for information network.

Not only in the social infrastructure as I mentioned, but also in the independent machines and equipment, wires and cables share a key role in the performance of each machine and equipment. In a luxurious passenger car, for example, the wiring harness is composed of more than 1500 circuits and the total length of the circuitry is almost 2000m.The role of the wire and cable industry in the 20th century was two fold: supplier of key components and leader in creating innovative lifeline networks. Our industry has accumulated knowledge and expertise for production, installation and maintenance of the lifeline networks.

New Challenges for the 21st Century

We shall be confronted with several issues emerging on the lifeline networks.

(1) One is **the increasing demand of energy, transportation as well as information in each lifeline network.**

(2) Another challenge is that of **environmental protection,** as Natural resources are limited in quantity but are

being consumed day by day. According to some estimates, oil and natural gas will be consumed completely in this century. Global environmental problems will also be closely observed, e.g. air pollution, water pollution, global warming due to the greenhouse effect of carbon dioxide, ozone depletion, acid rain, and desertification.

(3)The third issue is **security of lifeline networks:** Lifeline networks must be very reliable, as any failure causes inconvenience or even damage to society. The system of the network should be designed to protect the lifelines from natural calamities, or disasters caused by human negligence or attacks. Security of lifelines should be considered from various points of views. In terms of scale, for example, security must be maintained on global, regional, national, territorial and individual basis.

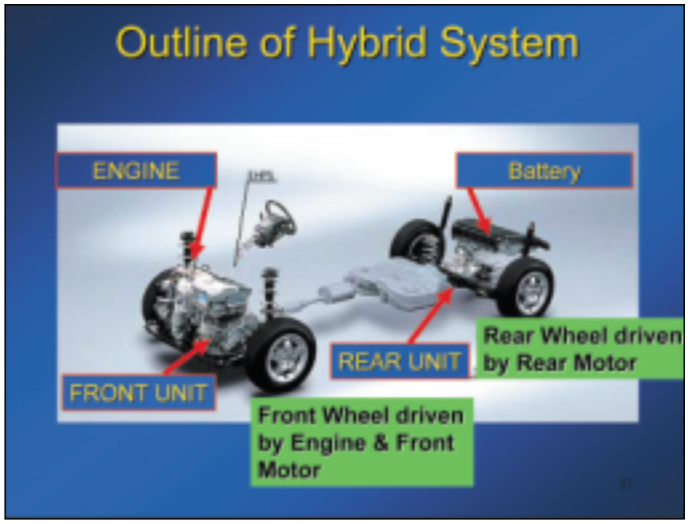
Our challenges are very broad and diverse, and the wire & cable industry has already been deeply involved. The new technology required for lifelines has to cope with the emerging issues in this century. The system should be adaptive, flexible and intelligent to meet the changing demands or requirements.

Among this requirement, I think the concept of “intelligent” is most important. Progress in information technology will enhance the capability to meet the new requirement. In order to realize such intelligent system, the components must have higher reliability, efficiency and controllability and be lower in cost than the conventional components. Our industry has invested heavily in R&D activities to challenge these requirements. The followings are some examples: I picked up four topics from Japan, simply because of my familiarity with them, but similar challenges must have been attempted in other regions of the world.

(1) Hybrid Electric Vehicle (HEV):

HEV was put on the market for the first time by TOYOTA Motors in 1997 and more than 60 thousand cars have been sold in 15 different countries. Early this year, TOYOTA started to sell another HEV model, a 4 wheel-drive, medium-size passenger car. The gas mileage defined in the Japanese Standard is 18 kilometers per litter or 42 miles per gallon, which is about double of that of the same model of the conventional type.

This picture shows the driving system of the 4 wheel-drive HEV. Combustion Engine is mounted on a front unit. Battery is mounted on a rear unit. Front wheels are driven by engine and front electric motor. Rear wheels are driven



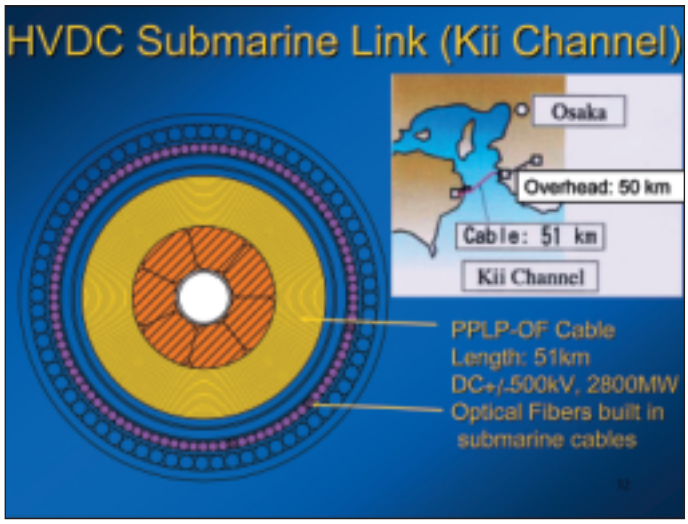
only by rear electric motor. There is no drive shaft between the front and rear units. Electronic unit controls the operation of the components in order to minimize gas consumption.

It is obvious that such HEV raises new demands to wire and cable industry. I mentioned earlier that the intelligent system is significant for the lifeline system in this century. I chose the HEV as the first topic because I think the HEV is a good model of such intelligent system. Though the system is simple, independent and operable in a small space, it works very intelligently so as to take the best advantage of the components to maximize the gas mileage and to get the resultant performance of doubling it. The concept of intelligent system is also finding applications on much wider scale .The following three topics are about the components, which have potential to meet the requirements in the intelligent power systems in the near future

(2) EHV DC Submarine Cable:

Broader coordination among the power systems is useful to enhance efficiency and security of the power lifelines. For these purposes, high voltage DC transmission has the advantages of lower losses and no charging current, which are important in the high power, long distance link especially in the submarine systems. This picture shows a new high voltage DC submarine link completed across the Kii Channel in Japan last year.

To handle a high power transmission of 2,800MW through the channel, DC submarine cable of 500KV was developed with oil-filled “polypropylene laminated paper (PPLP)” insulation of the outer diameter of about 200mm.



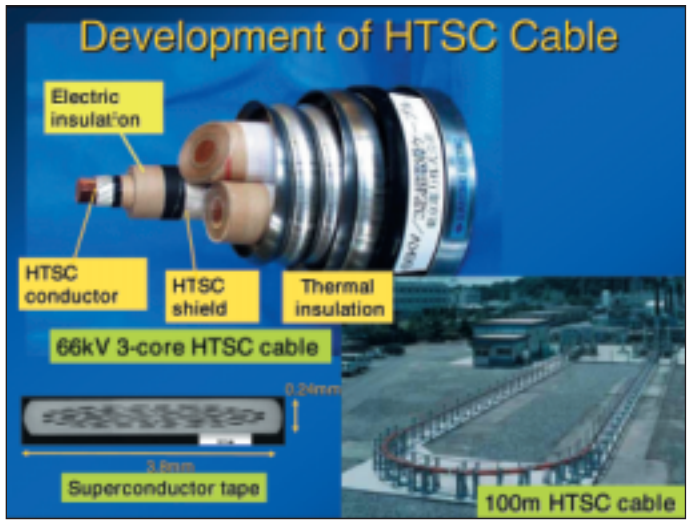
This cable handles the highest power for submarine use thus far. Several fibers housed in steel pipes are incorporated in the outer layer of the cable for information transmission as well as sensing damage to the cable. Total length of the DC link is slightly over 100km, of which the portion of submarine cable is about half.

The Kii Channel has a rapid tidal current, heavy ship traffic and fishing activities. The cable was paid off from the ship and simultaneously buried with a plough-type laying and embedding machine with water jet, working on the seabed. Four cables were installed in parallel at about 150m separations and about 3 meters under the seabed along the whole 50km route in the channel in order to protect from damage.

(3) HTSC Cable

High Temperature Superconductor (HTSC) cable is expected to transport high power in a compact size with small transmission loss because its allowable current density is several hundred times of that of a conventional copper conductor. This picture shows the verification test, which started in Japan in 2001, on a 100meter length cable system in the expected practical environment. The cable was designed to handle 66kV and 1kA and installed in a duct of 150mm diameter. Three cable cores are housed in a thermally insulated pipe structure.

The electric insulation is composed of PPLP tapes impregnated with liquid nitrogen. The cable conductor is composed of several-tens of superconductor tapes wound on stranded copper conductors. The tape conductor has filaments of superconductor material embedded in silver alloy as shown at bottom left of the picture.



(4) Redox Flow Battery (High Power Secondary Battery)

Redox flow battery was originally developed for high capacity energy storage in power network systems for the purpose of load leveling. Recently Redox flow battery is recognized as an efficient uninterrupted power supply (UPS) at semiconductor plants because of its capability to compensate voltage sags of short duration. The pictures show the first application in Japan in a semiconductor plant, installed early 2001. This battery has an electrolyte tank of vanadium sulfate as the energy storage and has features of room-temperature use, long life, easy maintenance and flexibility in operation. RF battery will be applied in various fields for load-leveling, frequency regulation, emergency power supply, stabilization of power fluctuation and compensation of voltage sag.

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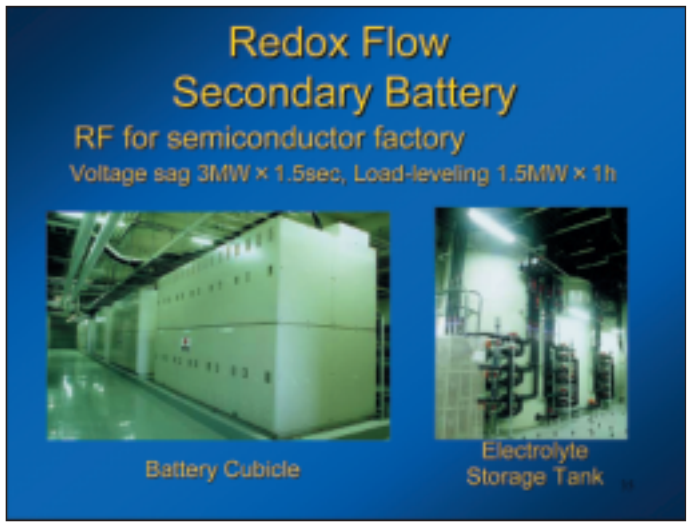

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(5) Internet and Optical Communication

Internet has brought about impacts on both the users and information networks. It provided boundary-less communication over the world, realized efficient multimedia communication and created new business opportunities.

On the other hand, it realized efficient use of transmission media, caused rapid increase in information traffic and introduced new concepts to information delivery systems, such as world wide web (www), voice on internet protocol (VoIP) and best-effort concept. It can also be regarded as a typical example of the intelligent system. For example, we can collect information from all over the world with just one click on the PC. The information is transmitted through the network by steering its own way to the destination regardless of some local damages in the networks.

Internet tomorrow will require broader bandwidth, increase of number of internet addresses and mobility, with higher security, reliability and availability. The technologies to meet these requirements are already in the process of development such as advanced optical communication, internet protocol system version 6(IPv6) and the 3rd generation mobile phones.

Finally, I'd like to touch upon Optical Communication.

Several hundred million kilometers of optical fibers have already been installed over the world to form the global, as well as local information networks. However, since the demand on traffic flow will continue to grow very rapidly, it will be insufficient to meet these needs by the fiber cable deployment alone. In order to meet the demand, we have to increase the capacity of optical cables by multiplex technologies. As you all know, the capacity of a cable is proportional to the product of the effects of three multiplex methods, SDM, TDM and WDM, that is, multiplex by density in space, time and wavelength. SDM has been intensively discussed at IWCS as an issue regarding cable structure. The optical fiber count in a cable has increased remarkably by the progress of cable technologies in design and production. The capacity in a fiber has been increased more than a thousand times during the past ten years by the multiple effects of TDM and WDM. Such high growth in capacity has been achieved by the progress in both fiber and photonics device technologies, which are now getting ready to meet the increasing demand in information networks in this century.

Conclusion:

The 20th century is called the "Century of Technology Innovation", which created modern industries and provided modern lifeline networks as part of social infrastructure.

The wire & cable industry has played an important role not only as a supplier of the key components of the lifelines but also as a leader in creating innovative networks. Our industry has invested heavily on R&D to create new technologies and products. At the same time, our industry has accumulated knowledge and expertise on systems, components, installation and maintenance of the lifelines. We shall be confronted with new difficult issues emerging in this 21st century.

I am confident that our industry will continue to contribute to society by finding solutions if our industry overcomes the current business issues step by step and becomes sound enough to continue to make investment in R&D.

Thank you very much."

News in Brief

(provided by Metalica, UK)

Reversal of Fortunes at Tyco: The diversified **Tyco International** industrial group is reviewing options for the break up of its business empire, indicating a sharp change in direction after seven years of rapid growth through acquisition. Plans announced in January for the spin-off of three units by IPO covering Healthcare, Fire Protection and Flow Control and Financial Services business appear to have been shelved; Tyco is now offering its Fire Protection and Flow Control unit along with Plastics business for direct sale. The move comes amidst reports of irregularities in financial reporting, a need to cover US$11 billion in debt and a halving in company share values in the early weeks of 2002. Wire and cable and connector business, part of Tyco's Security and Electronics unit, is expected to remain within the new look Tyco. The company should also hold on to its majority stake in the submarine fibre optic cable company **Tycom Ltd.,** which is to be substantially downsized with the loss of 1,000 of its 2,250 workforce worldwide.

Avaya Reviewing its Options: The fate of the data cable business of **Avaya Inc.** is currently under review by Salomon Smith Barney. Options include the possible sale of this business unit.

Fibre Optics Woes Continue: A US$614 million fourth quarter pre-tax restructuring charge was announced by **Corning Inc.,** bringing the 2001 total to US$961 million. The charge was taken in the context of a drop in fourth quarter sales from US$2.1 billion in 2000 to only US$974 million, with an even larger 65% drop in telecom sector

business. While stressing little change in the underlying market, Corning is recalling some of the 2,000 workers temporarily laid off in October at its Wilmington and Concord fibre plants in North Carolina, USA. Meanwhile, **Furukawa Electric** will reduce its output, having commenced a two-week-per-month work schedule for the 2,900 workers at its Atlanta, Georgia plant, purchased from Lucent late in 2001.

Investments in China: In Shanghai, **Draka Holding** is a partner in a new fibre optic cable venture, scheduled to commence production during 2002. Draka will have a 25% direct stake in the unit, the remaining 75% being held by the existing fibre optic cable company YOFC, in which Draka has a 37.5% stake. The other partners in YOFC are China Telecom and CCIG. Investment in the unit is planned at US$30 million. Meanwhile, construction of an optical fibre and fibre optic cable plant has been started by **Sumitomo Electric Industries** (SEI) in Shenzen, Guangdong following government approval of a proposed increase in capitalisation of SEI's wholly owned subsidiary Sumitomo Electric Optical Fiber and Cable (Shenzen) Co. Ltd. The plant, with targeted revenue of Yen 10 billion (US$75 million) in 2003, should commence output of cable in September 2002 and fibre early in 2003. Separately, SEI has set up a new company in Suzhou City, Jiangsu for the production of OEM electronic cables. The company is intended to commence operations in October 2002 and has a sales target of Yen 2.5 billion (US$19 million) in 2003.

Investments in South Africa: South Korean **Taihan Electric** has committed an initial US$10 million to a cable joint venture in Vereeniging, Gauteng Province. The plant will have 0.3m fkm fibre optic cable capacity, but will also produce bare aluminium conductors, copper strip products, bare copper wire and power cable. In Somerset West in the Western Cape, **FiberCore** has taken a 60% stake in a new optical fibre joint venture. Investment in this project is slated at US$28 million; production is due to commence in the first half of 2003.

Fibre Optic Cable Joint Venture in Japan: A memorandum of understanding has been signed relating to the formation of a 50/50 joint venture between **Hitachi Cable** of Japan and **Corning Inc.** of the United States to make fibre optic cable in Japan. The new company will take on the existing fibre optic cable equipment of Hitachi Cable's Hitaka Works in Hitachi City, while Corning is due to transfer fibre making equipment from the United States to Japan. The new company is expected to be operational by August 2002.

Corning Continues to Mop Up ex-Siemens Cables Stake: The 51% stake in Indonesian fibre optic cable firm PT Siemens Kabel Optik owned by Siemens has been transferred to Corning Inc., the balance of ownership remaining in local hands. The company, now to be called PT Communications Cable Systems Indonesia, is based in Cilegon, West Java and employs 70 people.

Developments in Automotive Wire Harnesses: An ignition cable and wire assembly plant in Bochum, Germany owned by **Delphi Automotive Systems** has been closed, with the loss of 329 jobs. This brings the number of Delphi plant closures to eight, out of the nine planned closures announced in March 2001. Delphi also claims to be on track in its target staff reduction of 11,500 people, due to be completed by the end of the first quarter of 2002. Meanwhile, **Leoni AG** has committed to a major Euro 40 million investment in harness production and assembly at Stryj in the Ukraine. The plant, due to be operational mid-2003, will make 42,000 cable sets daily and employ 4,000 people.

Leoni Expands in Special Cables: Nuremberg Elocab Sonderkabel, a wholly owned subsidiary of **Leoni AG** has acquired the French robotics cables and systems supplier **Composants Industriels Automobiles.** CIA employs 100 people.

Volex Rationalises in Europe: The infocom and power cord operations of **Volex Group** plc in Europe are to be merged, with a halving of the combined workforce to 450 employees. The new unit will be headquartered in Ireland, with employees also in Croatia, Estonia, Sweden and the UK. Most job losses will be at Leigh in the UK and Castlebar in Ireland. The move follows a similar reorganisation in the United States late in 2001, when Volex' Dartmouth, Massachusetts plant was closed.

Southwire Expands in Mexico: Through its bare overhead conductor subsidiary Southwire Americana de Mexico, **Southwire Co.** has announced plans to invest in insulated utility power cable capacity in Mexico.

General Cable Expands in Australasia: Through its New Zealand subsidiary, **General Cable Corp.** has acquired the Australian data cable company **Brand-Rex Pty.** from UK-based Novar plc. The acquisition is expected to add US$10-15 million in annual revenue for General Cable.

The ICF Newsletter is published several times each year by The **International Cablemakers Federation**, P.O.Box 26, A-1014 Vienna

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