

## ICF

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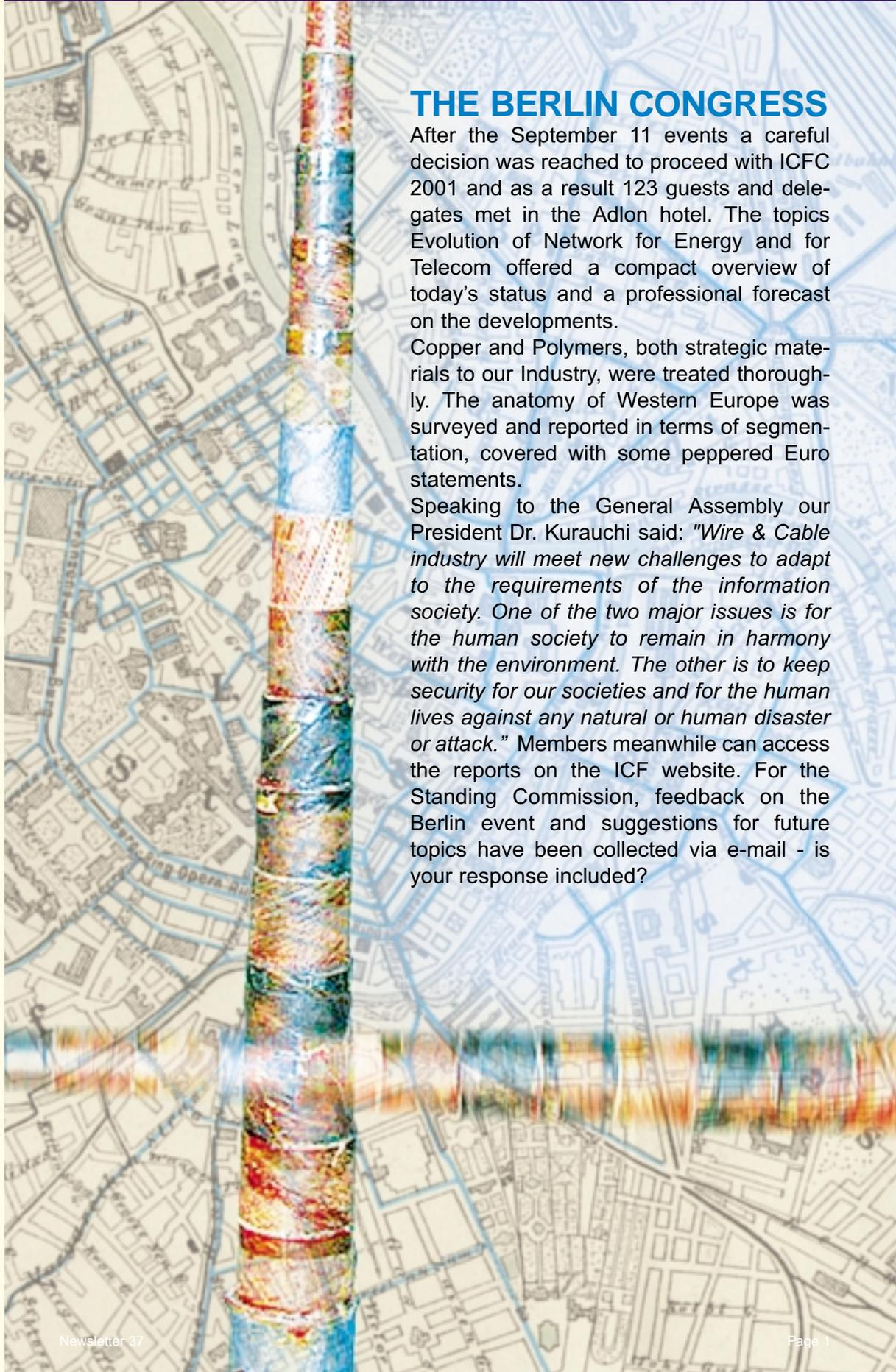
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## THE BERLIN CONGRESS

After the September 11 events a careful decision was reached to proceed with ICFC 2001 and as a result 123 guests and delegates met in the Adlon hotel. The topics Evolution of Network for Energy and for Telecom offered a compact overview of today's status and a professional forecast on the developments.

Copper and Polymers, both strategic materials to our Industry, were treated thoroughly. The anatomy of Western Europe was surveyed and reported in terms of segmentation, covered with some peppered Euro statements.

Speaking to the General Assembly our President Dr. Kurauchi said: *"Wire & Cable industry will meet new challenges to adapt to the requirements of the information society. One of the two major issues is for the human society to remain in harmony with the environment. The other is to keep security for our societies and for the human lives against any natural or human disaster or attack."* Members meanwhile can access the reports on the ICF website. For the Standing Commission, feedback on the Berlin event and suggestions for future topics have been collected via e-mail - is your response included?





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## ICF FAREWELL

Your Secretary General, after having enjoyed this fascinating ICF job for five years, will retire by the end of this year with gratitude and recognition for all support given during that period and before. Please do not change your habits and continue to contribute to ICF to my successor.

## FIRST LIGHT IN VIENNA

More than a century ago first public electric light was installed full scale in Vienna. Because of noise, smoke and dirt, the power station was put up in the outskirts and by 3kV concentric underground cable the energy was brought to the city and distributed. Most likely, along the route, stretches of this cable still rest in retirement, maybe also in front of the ICF office at Graben.

## Insulating and Jacketing Materials

The materials used for insulating and jacketing form an important component of the raw material cost base for cablemakers, typically around 25% of the total. Unlike metallic conductor materials, there is no terminal market for these products, so prices are less transparent to the end user. However, prices do vary considerably over time and by location, these differentials often having to be absorbed by the cable industry.

With the exception of small amounts of impregnated paper and natural rubber, the base materials used for insulation and jacketing are synthetic polymers, products of the chemicals industry. A polymer may be described as a compound consisting of many repeating units, bonded together. The large number different polymers available vary in composition and architecture, this partly determining end product and processing characteristics. Other determining factors include the additives used (antioxidants, fillers, stabi-

lisers, flame retardant substances etc.) and processing method. The cable industry requires products that are both easy to process (generally meaning of low viscosity) while also providing first-rate final properties. These aims can conflict, and solutions are constantly being refined.

Today, just two polymers dominate the market for wire and cable insulation and jacketing – PVC and polyethylene (PE). These are both commodity thermoplastics. Despite emerging environmental concerns over its use, PVC remains the largest volume material used in wire and cable, particularly for low voltage energy products. Compounds of PVC offer good final properties, excellent processing characteristics and low price. The PVC used by the wire and cable industry is in the form of resin. This is compounded with plasticisers, stabilisers and fillers, resin typically accounting for slightly more than half of made up insulating and jacketing compounds.

Polyethylene use is generally limited to information and power cable applications, although use in low voltage wire and cable is increasing. Grades of PE are classified by density, the types LDPE (low density), LLDPE (linear low density) and, to a much lesser extent, HDPE (high density) being used in wire and cable. In general, such properties as stiffness, hardness, tensile strength, abrasion resistance, dielectric constant and softening temperature increase with resin density, while elongation, impact strength and cold temperature flexibility decrease with density. LLDPE is a variant providing enhanced low and high temperature, abrasion and impact resistant characteristics.

Although they have excellent electrical properties, PE formulations can be deficient in maximum operational temperature and mechanical properties. Both deficiencies can be overcome by the process of crosslinking, to create XLPE. Through crosslinking, individual polymer molecules are tied together to form a network structure, creating a thermoset compound. XLPE is the dominant insulation and jacketing material used in MV/HV power cable applications.

While PVC and PE are major strategic materials as far as the wire and cable industry is concerned, the converse is not really true. For the chemicals industry, wire and cable is an important, but by no means dominant, market. The chemicals industry divides its products into commodity and engineering plastics. In



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volume, the commodity grades are by far the more important (a market of 131 million tonnes in 2000), but engineering products (5.5 million tonnes) generate much higher unit margins. PVC and PE are mainstream commodity plastics.

Polyethylene accounts for the largest volume of total plastics consumption worldwide, with around 41% of the total commodity market (or 54 million tonnes in 2001). Wire and cable constitutes little more than 3% of all PE use. By far the most important market for PE is packaging, mainly using film grade material. HDPE is also used in more robust household goods and construction applications.

PVC has the third largest volume of consumption worldwide, its 20% share (26 million tonnes in 2001) falling slightly behind polypropylene. The chemicals industry typically divides the PVC market between rigid and plasticised PVC sectors, with 68% and 32% share respectively. While wire and cable is a significant market for plasticised PVC, accounting for around 22% of this sector, it constitutes only 7% of the total market for PVC. For rigid PVC, the main markets are pipes and fittings, profiles and tubes and fibres and sheets. In the plasticised PVC sector, wire and cable use competes with sheet, flooring, coated fabrics, shower curtains and furniture.

Although not as volatile as copper and aluminium, the prices of commodity polymers do vary substantially,

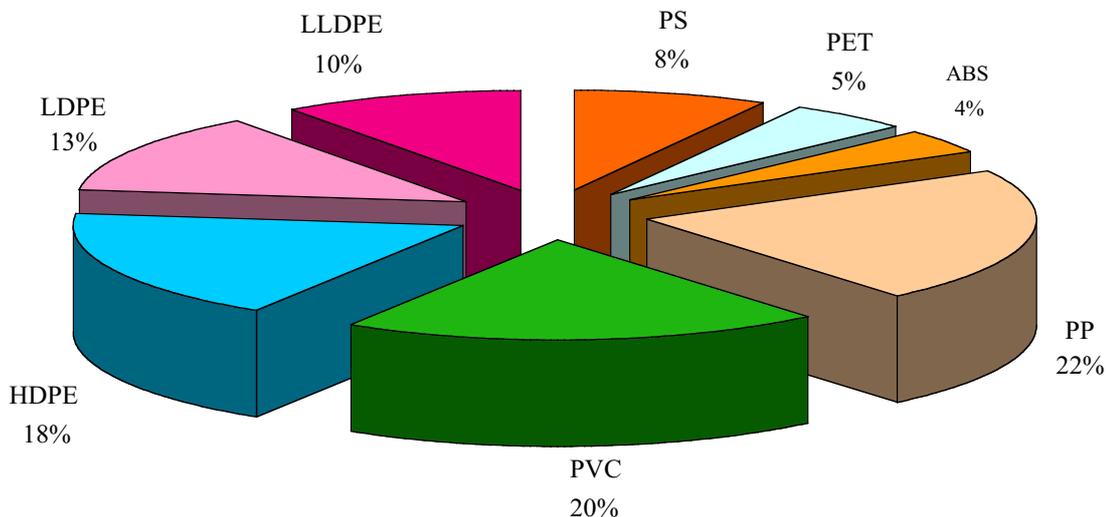
changes often being hard to predict. Variations in feedstock price form one component in the price equation. PE, based wholly on ethylene feedstock, tends to be more volatile in price than PVC, which is based on 44% ethylene, 56% chlorine feedstock. Perhaps more important than feedstock prices, however, are the trends within the chemicals industry itself. Capacity utilisation rates, trade patterns and the success or otherwise of the major producers in controlling prices are the major issues involved.

The petrochemicals industry has undergone some major changes. Although still quite fragmented, in recent years mergers and acquisitions in the olefin (hydrocarbon-based) chemicals sector have created a global industry structure based on cheap feedstock. New investment has created concentrations of ethylene production in the Middle East, Asia and North America. Individual projects are rising in scale, a fact that tends to increase geographical concentration.

Based on several years of strong market growth, a large amount of new capacity for both feedstock and resins came on stream in 2000 and 2001 just as the market hit a downturn. Consultants CMAI estimate that capacity utilisation in plastics fell by 2.25% worldwide in 2001 to reach 81.25%. PE, which has been the focus of much recent investment, saw its operating rate fall by 4% to 81%, while the slower growing PVC sector remained flat at 86% utilisation. Like the

## World Plastics Consumption Volume by Product

*Total = US\$130 billion*





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## Insulation and Jacketing Materials Market Growth ('000 tonnes)

	1997	1998	1999	2000	2001	% change			
						1998	1999	2000	2001
PVC Compound	2957	2927	3064	3270	3212	-1.0	4.7	6.7	-1.8
L/LDPE	1429	1460	1563	1721	1726	2.2	7.1	10.1	0.3
HDPE	98	99	103	111	110	0.8	3.6	7.9	-0.8
Other Materials	526	530	554	595	588	0.7	4.5	7.4	-1.2
<b>Total Market</b>	<b>5010</b>	<b>5015</b>	<b>5283</b>	<b>5697</b>	<b>5636</b>	<b>0.1</b>	<b>5.3</b>	<b>7.8</b>	<b>-1.1</b>

Data: Metalica Source: Metalica Database

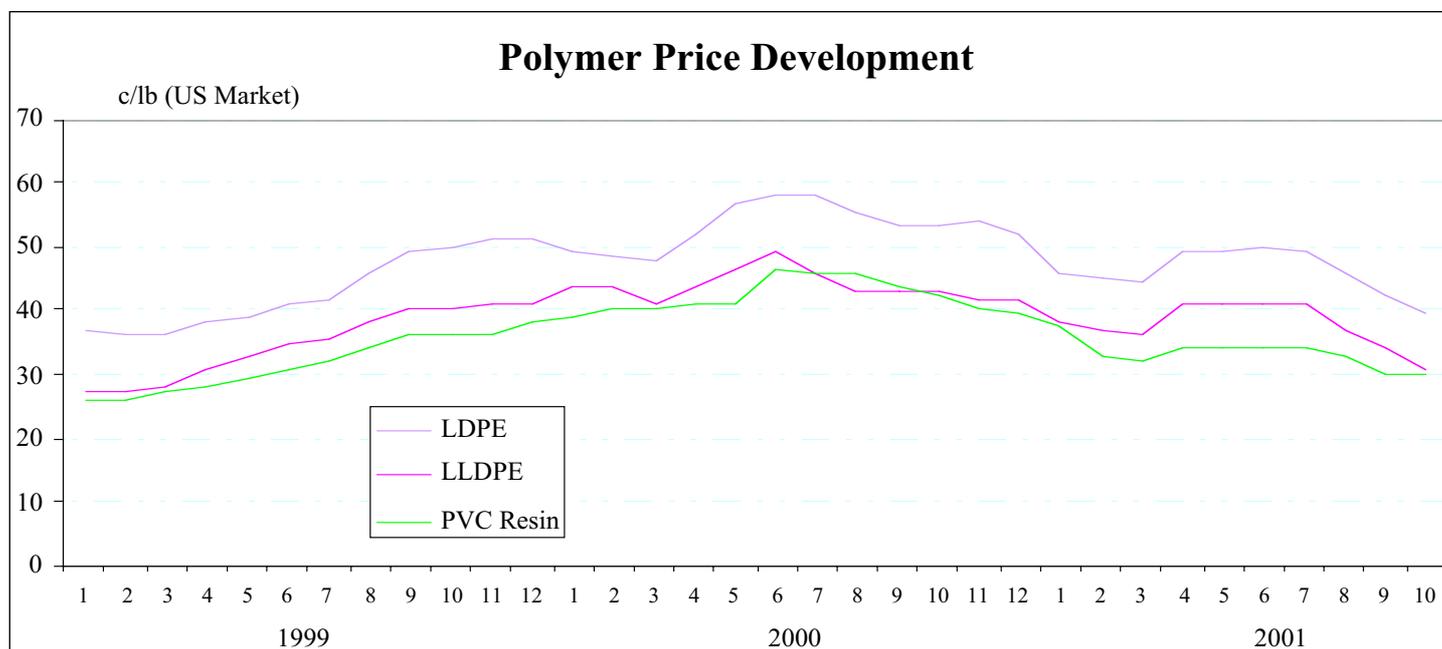
downstream products, utilisation rates for ethylene crackers have also fallen.

The net result of weaker than expected demand is lower prices. Lower feedstock prices have allowed a natural drop in the price of commodity plastics, but the scale of the fall reflects stronger competition within the processing sector itself. In October 2001, prices of both PE and PVC were around 30% lower than they had been a year previously. Low prices are expected to endure until demand rebounds; most analysts put this in the second half of next year. A concerted effort by the major producers to hike prices in the third quarter of this year failed to make any impact at all.

While commodity polymer price change will inevitably impact on the bottom line profitability of wire and cable making, it appears inevitable that a transforma-

tion industry such as this, that itself creates primarily commodity products, will be destined to achieve only small margins. Achieving a competitive edge in processing or better pricing through product differentiation are means by which this low margin trap can be avoided, at least for the more astute suppliers. Effective use of advancing materials technology is one means towards this end. We have seen this in the use of special materials in reduced fire hazard cables with better flame retardant or low smoke, zero halogen characteristics. Though initially gaining a large price premium, however, margins on these products have been eroded and volumes have remained quite small; reduced fire hazard cables probably still

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account only 4-5% of the cable market worldwide. Legislation may radically alter this picture, providing an opportunity for those suppliers able to offer reduced fire hazard products to the volume market.

Legislation could also provide an opportunity if, as already appears certain in parts of Scandinavia, PVC use in cables is banned. In his coverage of the topic in the Berlin ICF Congress, Prof. Ulf Gedde pointed out that the technical problems regarding PVC have already been minimised with the stabilisers and plasticisers in use today. Organic stabilisers and linear PVC, both in development, could eliminate the problem altogether. Yet, as the arguments involving PVC are partly political in nature, we may expect to see it displaced, at least in some important markets. If PVC is to be replaced, what is the alternative? In his presentation, Prof. Ulf. Gedde explored the possibilities in XLPE. A critical development is the development of faster peroxide crosslinking using diene units. (Lower process speed has always been the major drawback of XLPE in relation to PVC formulations.) Prof. Gedde also pointed to much more radical developments in polymer science that may impact on cablemakers. The development of bimodal materials and single-site technology offer opportunities for the development of precisely targeted individual compound formulations for specific cable applications. Such product differentiation could only be good news for the cable industry.

## News in Brief

(provided by Metalica, UK)

### Revised Terms for Sale of Lucent OFS Division:

On November 16th **Furukawa Electric** signed a contract with **Lucent Technologies**' to buy the bulk of its fibre optic unit for US\$2,127 million. Although this figure is higher than the originally agreed US\$1,875 million, it reflects a substantial increase in Furukawa's share of the former Lucent business.

**CommScope** will now pay just US\$173 million, down from the originally agreed US\$650 million, taking the total to be paid for the Lucent unit down to

US\$2,300 million, from US\$2,525 million. This does not include the sale of Lucent's operations in China to **Corning**, which is still pending. Furukawa and CommScope have agreed to set three new companies to run the combined business. Fitel USA Corp will be a holding company and OFS Fitel will operate optical fibre production, both will be wholly owned by Furukawa. OFS Brightwave, the cabling unit, will be 81.6% owned by Furukawa, 18.4% by CommScope.

**Restructuring at Corning:** Early in October **Corning** announced a restructuring programme to result in a charge of US\$1 billion in 2001. It made the decision to idle the majority of its optical fibre facilities and to significantly reduce output of cable in order to reduce inventory. In the fourth quarter it intends to lay off another 4,000 employees on top of the 8,000 already made redundant this year. Most of the layoffs are in the United States, although Corning also has closed its Deeside optical fibre plant and idled the nearby Whiston cable plant in the United Kingdom, with the loss of 606 jobs.

### General Cable Sells Building Wire Business to Southwire:

In a major realignment of US cable assets, **General Cable** has finalised the sale of its building wire business to **Southwire** for an initial cash sum of US\$82 million. Additionally, General Cable expects to collect US\$28 million in outstanding receivables. The sale includes cable plants at Walkinsville, Georgia and Kingman, Arizona and equipment from the Plano, Texas plant. General Cable will retain its Plano wirerod line. As part of the deal, General Cable will take on Southwire's Cyber Technologies data cable business, valued at US\$4 million, based in Peachtree City, Georgia. The deal brings to US\$380 million the sum received by General Cable in the sale of non-strategic assets over the past fifteen months, the money being used to significantly reduce the company's financial leverage.

**LG Cable Plans Chinese Joint Venture:** South Korea's **LG Cable** has announced that intends to build a fibre optic cable plant in China next year, probably in Tianjin. It expects this to be in joint venture with an existing Chinese producer. The company expressed concern that, without domestic facilities, LG could be excluded from this growing market as Chinese capacity increases.

**Chinese Optical Fibre Plant:** Chinese electronics



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company **Shanghai Hua Yuan** has announced that it is to invest US\$300 million in the construction of an optical fibre facility in co-operation with US-based traders.

**CDT Acquisition in the Czech Republic:** US-based **Cable Design Technologies** has entered into an agreement to acquire 79% of Czech cable producer **Kablova Decin Podnolky**. The former Siemens company makes copper communications, speciality and fibre optic cable. Sales in 2001 are expected to reach US\$45 million.

**New Plants in Latin America:** United States drawn wire producer, the **International Wire Group** has purchased a greenfield industrial site in Durango, Mexico; full production is expected to commence early in 2002. In Brazil, **Draka** is opening two new telecom cable plants to serve the soon to be deregulated telecom market.

**Automotive Wire Investment by Pirelli:** Pirelli's subsidiary **Pirelli Energie Cables et Systemes France** has formed a 51%/49% joint venture with **Tunisie Cables** called Auto Cables Tunisie to make automotive wire in Tunisia. The new company is expected to commence output in the second quarter of 2002 and build up to 500,000 km of cables per annum, generating revenue of Euro 15 million. Total initial investment is slated at Euro 3.6 million.

**Automotive Harness Plant Closures:** In Kentucky, USA **Sumitomo Electric Wiring Systems** is to close three plants in Morgantown and Edmonton and shed 900 jobs in harnesses and components. Production will be shifted to Mexico. In Italy, **Delphi Automotive** is to close its wiring harness plant in Desio, with the loss of 96 jobs. The Delphi closure is part of a restructuring plan aimed at reducing its workforce by 11,500.

**Cable Plant Closure in Ireland:** Irish LV energy cable producer **Irish Driver-Harris** is to close, with the loss of 42 jobs. Rising costs of production coupled with low selling prices in Ireland and the UK were cited as reasons for the closure.

**Nextrom Spins Off Metallic Cable Machinery Unit:** Swiss-based **Nextrom** has announced a management buyout of its Metallic Cable and Pipe division to form the new independent company, Maillefer. The spun off unit intends to focus on its core competence in extrusion technology.

**Results Round Up:** Third quarter cable company financial results reflect worsening market conditions. **Furukawa Electric** has committed to its huge investment in fibre optics despite a year-on-year fall in first half net profit (to September) of 79% to Yen 22.5 billion on flat sales. For the year to March, Furukawa has slashed its forecast net sales from Yen 850 to Yen 792 billion. The current state of the United States market is shown in the figures of **Superior Essex**, with an 11% decline in net sales over the first nine months of 2001 to US\$1385 million and a 17% decline in the third quarter compared to last year. The company recorded a net loss of US\$10.5 million for the year to date. For its continuing business, **General Cable** reported a 5% fall in net sales to US\$1291 over the first nine months of 2001, a fall of 12% for the third quarter alone. Including the discontinued building wire and cordsets business sales, General Cable's sales performance was much worse, this sector dragging the company into a nine month loss of US\$6.8 million. Even these figures look good when compared to those of **Corning**, exposed as it is to the downturn in fibre optics business. Corning's net sales in the third quarter were US\$1.5 billion, down 21% on last year. In the quarter, Corning made a net loss of US\$220 million. It expects a similar loss in the fourth quarter, based on sales of just US\$1.0 billion. In comparison, the figures of the main European-based cablemakers are very good. **Pirelli** and **Nexans** both reported positive sales development over the first nine months, of 9% (to Euro 3571 million) and 5% (to Euro 3676 million) respectively. Pirelli results for its total business show a nine-month net income excluding extraordinary items of Euro 287 million, comparable to last year. These European leaders, however, also show negative sales development and a sharp decline in profitability in the third quarter, conditions that were expected to persist into the fourth quarter.

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