NEWSLETTER

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I.C.F.
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NEW MEMBERS

We welcome

- Cables de Comunicaciones Zaragoza S.L., Spain, belonging to Aberdare Group,
- Moskabelmet JSC from Russia, also known from Elkat and the JV with ABB.

Two companies from China:

- Jiangsu Zhongtian Technologies Co., Ltd. and
- Hangzhou Walsin Power Cable & Wire Co., Ltd.

Returned have

- Industrial Cables (India) Ltd. and
- Haryana Telecom Ltd.

CONGRESS IN BERLIN

In Germany Berlin is THE place to see and the Hotel Adlon is THE place to be. The reason to go there is of course the 11th ICF Congress, October 10-14, for which the invitations have been sent. Kindly register before 15 July to enable a smooth and solid preparation of your stay and do make sure not to miss any of the pleasant social events.

Topics

On Thursday, October 11, the business program opens with a study on the **evolution of energy networks.** Change in the world of electric power is accelerating and we will seek to explain why and how this affects wire and cable. Also that Thursday morning, **strategic materials** will be dissected: copper, ever present and still volatile, followed by polymers that get more specialised and tuned for application. After lunch we meet again for a Round Table world-wide outlook by the Council and for the

General Assembly. Friday morning will bring **evolution of telecom networks,** or should we say revolution? The waves run high and deep these days, what possible consequences could that have for wire & cable? A **regional analysis** for Europe, in the meanwhile familiar segmentation format, will conclude the business program.

Social Program

Welcome on Wednesday evening at the Adlon for the traditional reception. The ladies program on Thursday and Friday offers several options to explore and enjoy Berlin and its surroundings. Friday's dinner will be at the Post Museum, and the excursion on Saturday will bring us to the Parliament Dome, followed by a boat trip that will finish with an Oktoberfest.

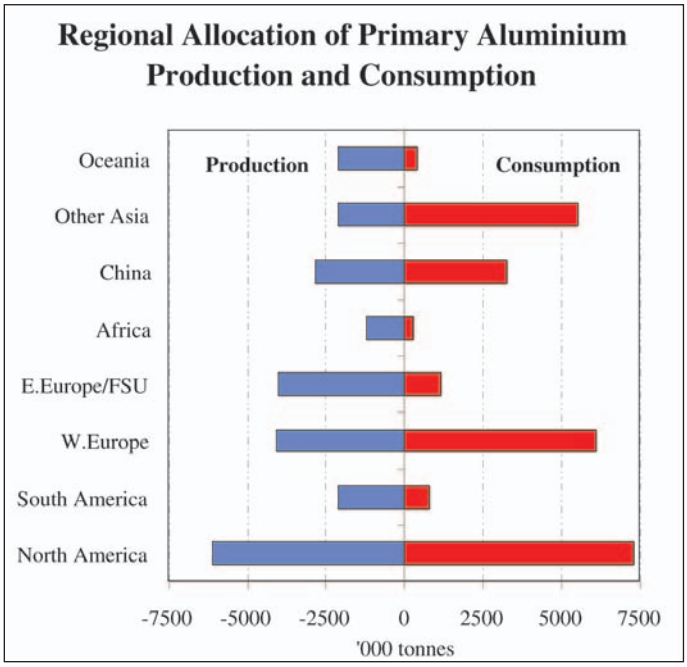
COVER PICTURE

Fast is the track of hard disk development. The magnetic drum on show weighs 5 kg, was built in 1973 and offers 1 Mb, in those days an impressive capacity. Now we look at it as a primitive stage in the evolution to reach today's 100 Gb in miniaturised diskdrives, weighing only 50 gram.

Aluminium: The Other Metal

While copper is the dominant conductor material used in metallic cable, aluminium also has a significant role. Some of the issues surrounding aluminium supply, including price uncertainty, are similar to those in copper. There are also important differences in the structure of supply, reflecting disparities in the industry and market structures pertaining to the two metals.

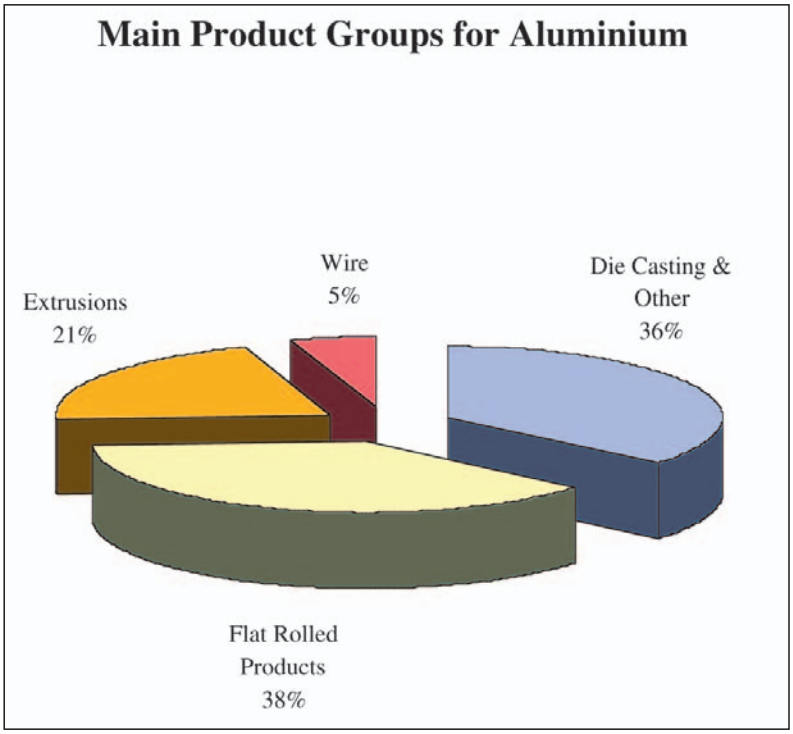
One significant difference is the much lower relative importance of the cable industry to aluminium suppliers. Whereas insulated wire and cable is the dominant end use for copper, it constitutes less than 4% of aluminium use in products. The aluminium industry is rather less open than the copper industry in disclosing information on its markets in terms of fabricated products. The end use segments defined can be matched against the applications axis of the products/applications matrix that



we have defined for cable, although not exactly. "Construction", accounting for 19% of aluminium consumption, contains most of what we would define as "Premise" end use. A small proportion of "Electrical" use, 8% of aluminium consumption, also fits within the Premise category, but this group contains much more end use in "Infrastructure" (in utility power cable and bare overhead conductors) and also non-wire products used in the OEM sector. Apart from these two end use categories, nearly all other use of aluminium is in "OEM" categories or, alternatively, in "General" markets where the metal is employed to make finished goods that have value in their own right (a sector that does not really have an equivalent in copper). The huge "Packaging" market in beverage cans and other containers, constituting 21% of all aluminium use, is the prime "General" market application. The main OEM categories for aluminium use are "Transport" (30% of use) and "Machinery & Equipment" (10% of use). The remaining "Consumer Goods" (6%) and "Other" (6%) sectors are also primarily OEM or General market categories, taking the OEM & General total to over 70% of aluminium use, much larger than for either copper or wire and cable.

In terms of the products fabricated from aluminium, the industry tends to focus on just two groups, namely flat rolled products and extrusions. Taken together, these categories account for nearly 60%

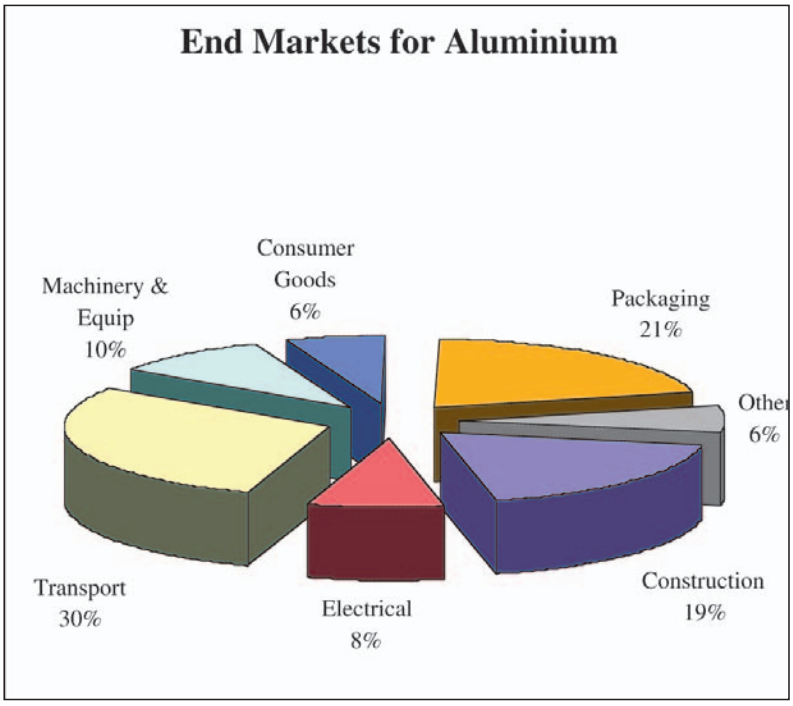
of all aluminium use, rather more of primary aluminium. Apart from this, aluminium use in products is quite fragmented. Die-casting, accounting for a large proportion of secondary aluminium use, is the single most important fabrication sector outside the two main product groups.



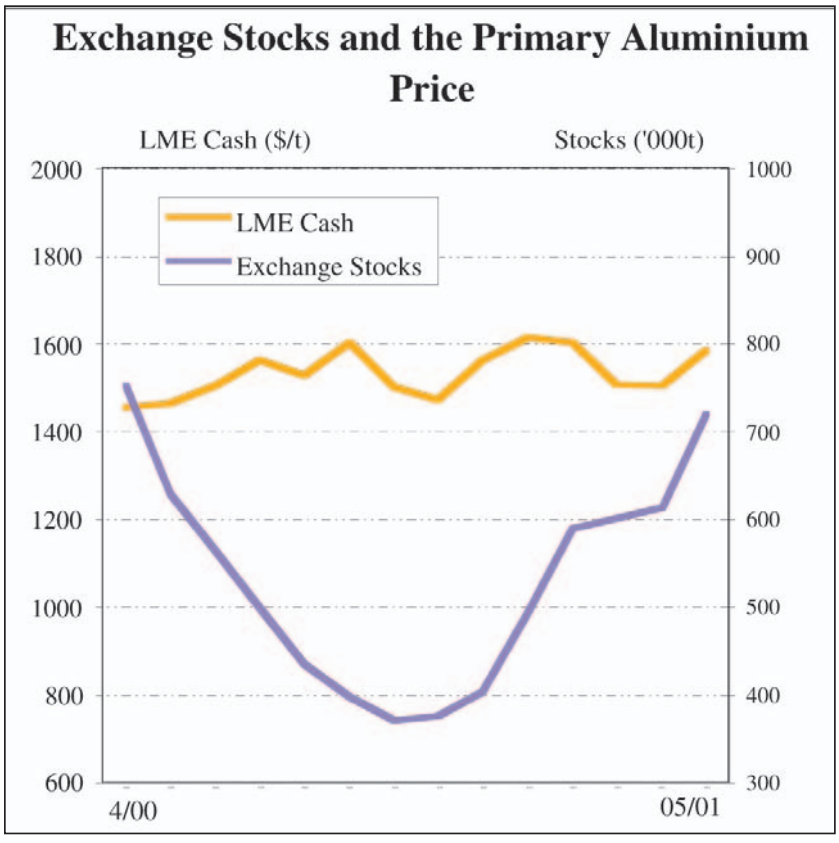
Within this industry structure, "Wire" is something of an anomaly. Although quite a small market in the context of the aluminium industry overall, it is well defined in terms of product (wirerod), quite well defined in terms of customer group and sufficiently attractive in fabricating margin to attract the interest of the aluminium majors. Unlike copper, aluminium wirerod capacity is mostly integrated within the aluminium industry supply chain. In total, we estimate aluminium wirerod output in 2000 at around 2.3 million tonnes out of a total aluminium consumption of slightly over 40 million tonnes (including secondary metal). Wirerod output includes both pure and aluminium alloy products.

Aluminium wirerod markets can be divided into three groups; the bare overhead conductor, insulated cable and non-electrical mechanical wire segments. We estimate the size of these three markets at 0.9, 0.6 and 0.8 million tonnes respectively. A large proportion of bare overhead conductor is made alongside wirerod lines by aluminium companies themselves. Mechanical wire is often produced on dedicated wirerod lines, again largely owned by aluminium companies. This product is used in such items as fence wire, packaging, nails, rivets, zips and closures. Supply of aluminium wirerod to the wire and cable industry also originates mainly from lines owned by integrated aluminium companies.

Most of the aluminium conductor used by the wire and cable industry is in power cable, nearly all for products used for network distribution by the power utilities. We estimate worldwide consumption of aluminium in power cables at 755,000 tonnes in 2000. There are additional markets for aluminium conductors in building wire, winding wire and CATV coaxial cable. All three of these markets are thought to account for slightly less than 50,000 tonnes of aluminium use each, annually. In the past, aluminium did also find some use in telecom cable, especially in Eastern Europe/CIS but also the United Kingdom, where it was substituted for copper in the late 1960s when copper prices were very high.



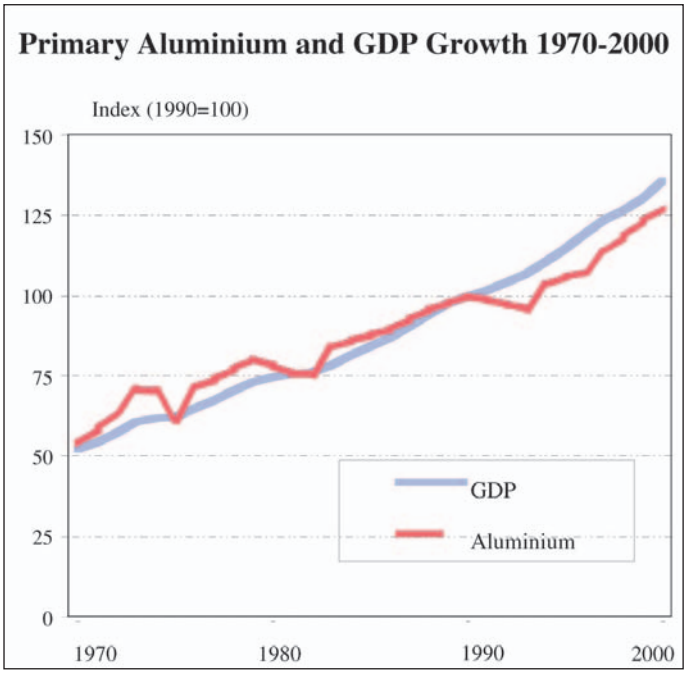
On the surface, the arguments in favour of aluminium and against copper are quite persuasive. Although not as good a conductor as copper per unit volume, for any given weight of metal, and certainly for any given price, one can buy substantially more conductor in aluminium than in copper. Here are the sums. The electrical resistivity of copper (at around 1.75 microhm-cm) is much less than that of aluminium (2.83 microhm-cm). As a result, aluminium transmits approximately 61% of the amount of electricity per unit volume as copper. Per unit weight, the story is quite different. With a density of 8.91 gm/cu.cm, copper is more than three times as heavy as aluminium; the latter's density is 2.71 gm/cu.cm. Multiplying the weight differential (3.29) by the conductivity differential (0.61) we come up with a figure of almost exactly two, indicating that, for a given weight of metal, aluminium provides twice the conductivity of copper. As metal is sold by weight, this differential is significant. Moreover, copper is priced higher than aluminium, so the apparent cost advantage is more than two-to-one.

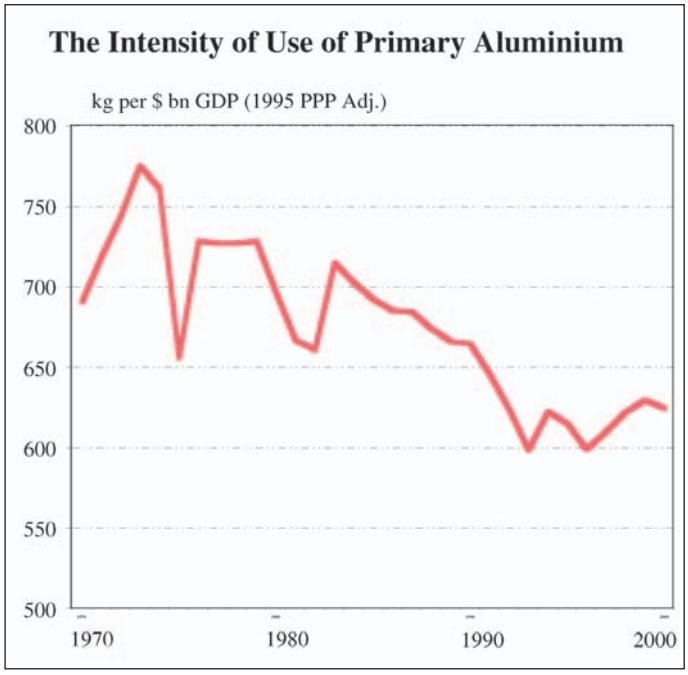


In reality, the cost differential between the two metals is less extreme. It is normal for aluminium conductors to be "over-sized" relative to the strict electrical definition, the lower tensile strength of the metal and dangers incurred by heating being reasons for this. The greater conductor size in aluminium cables means additional costs in insulating and jacketing materials and in logistics. More seriously, if the higher energy loss in aluminium cables is calculated over a cable's lifetime, copper's economics look very much better. This being said, lifetime costing is rarely the basis upon which purchasing decisions are made. The lack of further penetration by aluminium cables, therefore, has more to do with their other disadvantages. In comparison with copper, aluminium has a low tensile strength, a low modulus of elasticity, a high coefficient of thermal expansion, a tendency to "creep" and to make a non-conductive oxide skin when exposed to air.

The disadvantages of aluminium effectively limit its use to applications where cables can be joined to each other and to terminals with fixed, tight connections and where there is little or no disturbance after installation. These conditions apply to utility power cables, but little else. Aluminium can be considered suitable in building wires used in the service entrance and central core of buildings and in winding wire in applications where sporadic use makes higher energy losses largely irrelevant. Electric ballast in fluorescent lights and sink garbage disposal units are examples. Copper-clad aluminium is used in CATV coaxial cables; as it is the surface layer that is utilised in such products, so there is no electrical disadvantage in using this cable type compared to pure copper designs.

The geographical penetration of aluminium in insulated wire and cable is far from even. In the utility sector, aluminium is technically favoured where cable installation is largely overhead because of its lighter weight, but differences in the metal's use are more often determined by established installation





practice rather than logic. Some countries have favoured the use of aluminium historically and continue to demonstrate high levels of use. The United States is particularly aluminium-friendly. Its use of around 300,000 tonnes of aluminium in cable in 2000 constituted 13-14% of all metal use in conductor by weight. The United States alone accounts for around one half of aluminium use in cable products other than utility power cable.

In some countries, aluminium is (or has been) considered to be a strategic material. Its use is favoured as a result. The countries concerned include the Former Soviet Union, Eastern Europe, India and France. In the former European Eastern Bloc aluminium was incorporated in the official building codes in preference to copper. This was also true of India. In these cases, the penetration of copper in applications where it is evidently more suitable is slow as a result.

In Western Europe, aluminium has a high penetration in utility power cable as the utilities have been persuaded by the economic case, but little is used in other products. Including the FSU and Eastern Europe, we estimate European use of aluminium in cable in 2000 at 330,000 tonnes, or 11% of the total market. In contrast, aluminium is generally not favoured most of Asia. Taking Asia, Africa and Oceania as a whole, we estimate aluminium consumption in cable at only 190,000 tonnes, or 6% of the regional market.

While the exposure of cablemakers to the aluminium market varies enormously, the same procurement issues are faced by all. Like copper, aluminium prices are hard to predict with any certainty. Small changes in the fine balance between demand and supply can have a dramatic impact on the global market balance that, all else being equal, should determine price. The aluminium market has seen the same tendency to underestimate future demand as in copper, failing to recognise that the intensity of use of metal per unit of GDP has been increasing since the early 1990s. Also, like copper, aluminium is subject to the market manipulation of price.

In some respects, the price uncertainty faced by a buyer of aluminium is even worse than for copper. Cable industry buyers mainly purchase aluminium wirerod rather than unwrought product. The fabricating charge applying to wirerod is highly variable. As many wirerod lines are owned by integrated aluminium suppliers, the fabricating charge may bear little relation to the actual cost of processing, as fabricating margins can reflect a supplier's interest in marketing the underlying aluminium rather than the true costs. Disparities in fabrication charges lead to large differences in the amount paid for wirerod by competing cablemakers,

Even without the fabrication charge distortion, aluminium is subject to frequent price change. As shown above, a high proportion of aluminium use is in OEM and consumer markets, such as the automotive sector. These markets are subject to severe cyclical variations, compounded by multi-product supply chains that amplify inventory adjustment effects on metal demand. In comparison with copper, aluminium use is more focussed geographically, North America accounting for a large proportion of the metal's use. The resultant sharp year-on-year variations in demand growth are inevitably associated with price volatility.

Other issues also work to ensure that the price pressures on aluminium are quite different from those in copper. In comparison with the red metal, the aluminium industry consists of large, vertically integrated companies with a relatively high degree of pricing power. Unlike copper, the aluminium industry has shown its ability to curtail capacity dramatically when the pricing environment dictates this. This was done to great effect in 1994. The power of Western World suppliers to control price in aluminium, however, is strictly limited by a forceful role played by both Russia and China. (Unlike copper, the aluminium industry still thinks of itself in terms of Western World, rather than global, market balances.) Russia is a huge and often unpredictable net exporter of copper to the West. China is both a major producer and consumer of aluminium. Its importance in the market is the uncertainty it creates, resulting from poor recording of the level of output, consumption or stocks in the country.

Right now, aluminium's cost structure, rather than industry structure, is the most important determinant of prices and prospects. Even under normal circumstances, electricity costs dominate the aluminium industry's cost profile. With the recent ballooning of power costs in the United States, production has been unsustainable and there have been huge capacity closures (totalling 1.5 Mta) in the Pacific Northwest. In Brazil, also, major cuts to output could occur as a result of an electricity shortage.

Without the supply-side problems and the rapid industry response to confront them, aluminium would now certainly be in surplus. Demand has collapsed in the United States, by far aluminium's most important market. US orders for aluminium products were down by 17.6% year-on-year in the first four months of 2001. Despite the huge reversal in demand, however, most observers see production cutbacks as sufficient to allow the market to remain in substantial deficit in 2001 and 2002. The one proviso is perhaps uncertainty in China. Here, both production and consumption of aluminium are increasing at a phenomenal pace. In 2000, China was a net importer of around 700,000 tonnes of aluminium, much of which was evidently put away into stock. This year, different views on the size of China's stockpile, its output and rate of consumption growth, lead to widely divergent views on

Primary Aluminium Balance, Stocks and Prices - Consensus Forecasts ('000 tonnes)

	1999	% Ch	2000					% Ch	2001					% Ch
	Yr	99/98	Q1	Q2	Q3	Q4	Yr	00/99	Q1	Q2	Q3	Q4	Yr	01/00
Prices														
LME Cash ($/t)	**1363**	*0.4%*	1640	1478	1564	1511	**1549**	*13.6%*	1576	1545	1575	1625	**1580**	*2.0%*
Primary Aluminium Balance														
Primary Production	**23690**	*4.3%*	6030	6050	6120	6260	**24460**	*3.3%*	6040	6070	6050	6170	**24330**	*-0.5%*
Primary Consumption	**23505**	*5.8%*	6140	6550	6160	6050	**24900**	*5.9%*	5960	6210	6070	6200	**24440**	*-1.8%*
Balance	**185**	*n/a*	**-110**	**-500**	**-40**	**210**	**-440**	*n/a*	**80**	**-140**	**-20**	**-30**	**-110**	*n/a*
Primary Aluminium Stocks														
LME	**790**	*24.2%*	755	515	361	322	**322**	*-59.2%*	474	530	405	360	**360**	*11.8%*
Other Exchanges	**93**	*n/a*	97	60	85	153	**153**	*64.5%*	186	185	160	135	**135**	*-11.8%*
Producer Stocks	**1799**	*-5.3%*	1801	1686	1792	1787	**1787**	*-0.7%*	1903	1750	1680	1625	**1625**	*-9.1%*
Visible Stocks	**2682**	*5.5%*	**2653**	**2261**	**2238**	**2262**	**2262**	*-15.7%*	**2563**	**2465**	**2245**	**2120**	**2120**	*-6.3%*

the scale of net imports this year. Possibilities as wide apart as there being a 700,000 tonnes net imports to even small net exports have been expressed. With this degree of uncertainty in just one country, market balance and price forecasting is not easy. In the last table, we present what we regard as the consensus (or average) view.

News in Brief

(provided by Metalica, UK)

Nexans IPO Now in Progress: June 13th has been set as a proposed date for closure of an Initial Public Offering of wire and cable giant **Nexans** by **Alcatel.** Shares are priced at Euros 23.5-27.0, valuing the company at Euros 590-675 million (US$510-590 million). The business unit achieved revenues of Euros 4.3 billion (US$3.7 billion) in 2000. The offering was delayed last October, while Alcatel debated whether or not to sell the business to another company. Alcatel now plans to sell at least 70% of the shares to the public.

Negotiations for the Sale of Lucent Cable Business: Drawn out negotiations for the sale of **Lucent's** fibre optic cable business continue, **Alcatel** and **Pirelli,** separately or in combination, are the names most closely associated with a possible deal. The sale was proposed in February; since then the price tag for Lucent's cable unit is reported to have fallen from as high as US$8 billion to only US$4-5 billion. Talks around a much larger proposed deal for the purchase of the entire Lucent business for US$40 billion through a share swap to create a new giant in the telecom business are reported to have collapsed at the end of May.

Pirelli Reports Strong First Quarter Results: The world's number one cablemaker, **Pirelli SpA,** reported a massive 73% rise in first quarter operating profit to Euros 90 million in its cable business. Revenues had surged by 14.7% to Euros 1.21 billion, despite what it claimed to be a less favourable operating environment.

Joint Ventures in China: Italy's **Pirelli Cable** has agreed with **Jiangsu Baosheng** to set up a joint cable production site in Tianjin. The two companies have an existing joint venture in Baosheng, initially formed with BICC in 1997, before the acquisition of BICC's energy cable assets by Pirelli. Jiangsu Baosheng claims that the Tainjin facility will make the company China's number one energy cable supplier. Meanwhile, **Nexans** of France has opened another cable joint venture in Tianjin, Nexans Tianjin Magnet Wire and Cables Co. The Nexans partner is **Tianjin Electromagnetic Wire Factory.** The new US$28 million company will employ 160 people in a 2,000 sq.m. plant.

Walsin Lihwa to Expand Further in China: Taiwan's **Walsin Lihwa,** already the leading foreign investor in Chinese cable, has announced plans to expand output of copper telecom cable, optical fibre and fibre optic cable and power cable. It already has thirteen joint venture companies in China, two of which make copper wirerod and most of the remainder making insulated wire and cable. The company forecasts an 83% year-on-year increase in sales from Chinese operations to NT$22 billion (US$650 million), making Chinese revenues close to those generated in Taiwan itself.

Concentration in Polish Cable: A sale of 70% of the stock of **Elektrim Kable SA** by Elektrim SA for US$100 million to competing Polish cablemaker **Krakowska Fabryka Kabli SA** (KFK) is being finalised. Currently, Elektrim Kable and KFK parent, **Tele-Fonica,** account for 50% and 30% of Polish cable production respectively.

Realignment in Automotive Harnesses: Siemens automotive wire harness unit **Siemens Automobilova Technika** is to sell stakes in its two Czech cable plants to **Alcoa Fujikura Ltd** (AFL) and **Yazaki,** both leaders in this business. AFL will purchase a factory based in Stribro, while Yazaki will take a 75% stake in a sister unit in Pilsen, Siemens retaining the balance. Siemens Automobilova achieved revenues of US$65 million in 2000. Yazaki and Siemens Automotive AG have recently signed a wide-ranging co-operation agreement in automotive wire harnesses, Yazaki focussing on production, Siemens on technology, The agreement includes the formation of three joint venture companies, two for the development and sale of wire harnesses (based in Germany and the USA) and a third, split 75/25, focussing on harness

assembly. Existing Siemens factories in Slovakia, the Czech Republic (the Pilsen unit), Lithuania, Turkey, India and Brazil will be incorporated in this company that, in total, employs 5,000 people and generates revenues of US$240 million.

Delphi Cuts its Workforce: Leading automotive harness and equipment company **Delphi Automotive Systems** is to cut 11,500 jobs, 5% of its workforce, while closing or combining operations at nine of its plants. There will be 4,000 job losses in Mexico, a major site for Delphi's harness assembly. Plants in the United States, Brazil, Germany, Italy, France and the UK will also be affected.

Phelps Dodge Cable Unit Sale Off: US-based copper mining giant **Phelps Dodge** had announced that it intended to sell the wire and cable and chemicals business units of subsidiary **Phelps Dodge Industries** late last year, but this plan was abandoned early in May as no buyers at the right price could be found for what PD regards as fundamentally sound businesses in either sector.

Plant Closures and Lay-offs in the United States: Southwire closed its building and OEM wire plant in Osceola, Arkansas in March, moving output to two other plants. One month later, Southwire laid off 75 of its 500 workers at its Carrollton utility power cable plant, as orders were lower. **General Cable** has laid off 30 of 225 employees at its Kingman building wire plant, reducing schedules from seven to five days a week. It has also closed its Cass City telecom cable plant, moving production to Jackson, where 75 new jobs are to be created. Also in the communications sector, **Alcatel** is closing its submarine fibre optic cable plant in Portland, Oregon, concentrating operations in plants in France and Australia. **Avaya** is to cut 220 of its 3,500 staff at Omaha, Nebraska due to a transfer in less labour-intensive cable products, while **Commscope** attributes its planned cut to 500 jobs to slowing demand. Slower demand growth is also blamed by **Corning** for the loss of a further 1,000 jobs, bringing the total number of lay-offs this year to 4,300, 11% of Corning's workforce.

Mixed First Quarter Results for US Cablemakers: First quarter financial results for US cablemakers reflect a weaker market, but also contain some surprises. **Superior Essex** reported a 4% decline in sales to US$478 million, while net income also fell. It blamed the decline on poor pricing in low voltage energy cable and reduced sales of magnet wire, partially offset in telecom/data cable volumes and prices. **General Cable,** the other major US generalist cablemaker, reported flat sales, but a 22% gain in net income. Much the gain in profit (and a 7% increase in revenue) came from communications cable where, like Superior Essex, General Cable concentrates on copper cable. **Belden,** more focussed on copper telecom/data cable, achieved a 19% gain in net income to reach US$11.2 million on 10% higher sales (US$252 million). **The International Wire Group** (IWG), a manufacturer of bare and insulated products for the OEM sector, made a net loss of US$2.1 million on sales of US$125 million in the first quarter of 2001. This represents a 13.7% decline in revenue compared to the first quarter of 2000, when IWG made a net profit of US$1.4 million. A sharp reduction in sales to the automotive and electronics sectors is blamed for the poor result. The major optical fibre and fibre optic cable producer **Corning** announced that its first quarter pro forma profit was down by 47% to US$188 million, but this remains a strong result.

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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