



In this presentation we will attempt to shed some light on the structure of Western Europe's wire and cable industry. The approach to market description follows the methodology established in a similar presentation about the Americas wire and cable market at the Boston ICF Congress last year. The system of market segmentation applied follows the guidelines established at the ICF Hong Kong Congress in 1999 in a paper entitled "Market Segmentation: Its Purpose and Realisation". The data for this presentation is based on research commissioned by the ICF. Details of the full findings are contained in the book "Market Segmentation in Western Europe", which is available to all ICF member companies. I would like to give my thanks to the companies and individuals that helped me in my research, and hope that my findings do not contain too many surprises for you!

Looking at the wire and cable market of Western Europe, one fact is immediately very clear – it is very different from that of the Americas. Whereas the country markets of the Americas are diverse in nature but generally quite fast growing, the country markets of Western Europe are mature, slow growing and becoming increasingly competitive.

## **Western Europe's Cable Market**

### *Points to be Addressed*

- **How large is the market?**
- **How is the market segmented?**
- **How does the market relate to economics?**
- **What is the competitive structure?**
- **Implications for cable company strategy?**

With that rather depressing starting point, maybe we should look at the issues that need to be addressed. We wish to answer the following questions:

How large is Western Europe's market?

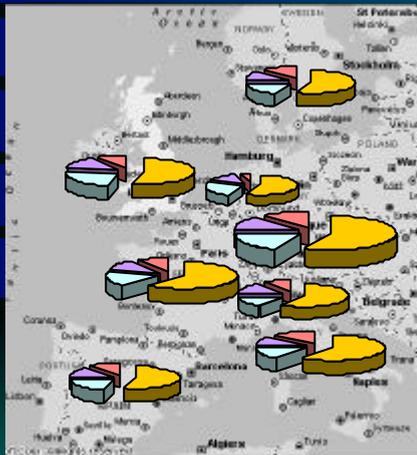
How is the market segmented?

How does the market relate to economics?

What is the competitive structure?

What are the implications for cable companies?

## W. Europe Market Value: *Euro 13.43 billion*

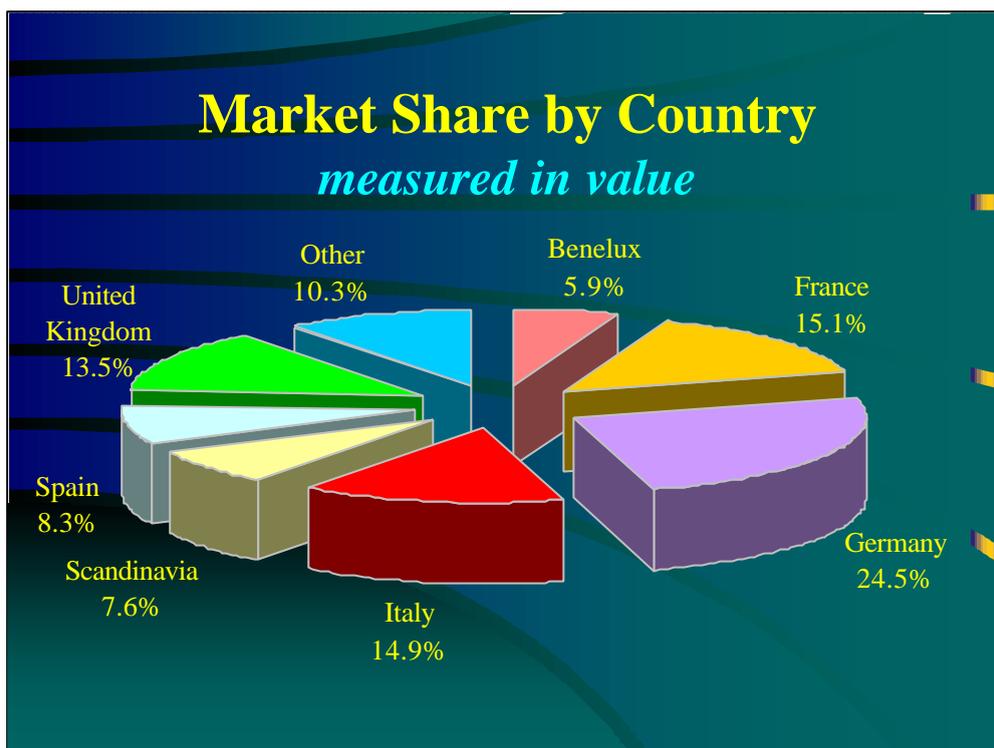


- Together, Germany, France, Italy and the UK account for 68% of the market.
- Energy cable accounts for 58% of the market, winding wire 10% fibre optic cable 13%, other telecom/data 19%.

Gold = Energy, Blue = Cu Telecom/Data, Red = Winding, Mauve = Fibre

First, the surprisingly difficult issue of the size of the market for wire and cable. Various estimates of market size have been made, with figures ranging from below Euro 10 billion to as much as Euro 25 billion. Western Europe does not benefit from having a common statistical body that is willing or able to collect high quality consistent data on industries, including wire and cable. While individual companies and national industry associations can go some way to filling the gap, disparities in the results achieved show just how difficult the issue of basic statistics can be. We have combined some of the findings of these bodies with more fundamental research to arrive at the figures in this report. The cable market value figures, as indicated here, are intended to reflect cable sales only, taking out all value added elements such as plugs and connectors, installation services etc.

Based on this definition, we arrive at a regional market value of Euro 13.4 billion for 2000.



Energy cable, in its many different forms, is the largest constituent of the market, with 58% share. Telecom/data cable has a 32% share, with winding wire taking the remaining 10%.

Looking at the country distribution of wire and cable consumption, Germany stands out as by far the largest national market .

Although it has slipped relative to other countries in recent years, Germany still accounts for nearly one quarter of the total. Then come three similar sized country markets – France, Italy and the United Kingdom. Together these three countries, with Germany, account for 68% of the entire market for wire and cable in Western Europe, leaving the other 32% to the remaining ten countries that comprise the regional market.

## Western Europe Market Value

### *Product and Country Detail*

Euro billion

	Energy Cable	Cu Telecom Cable	Fibre Optic Cable	Winding Wire	Total
France	1.3	0.3	0.2	0.2	2.0
Germany	1.9	0.6	0.4	0.4	3.3
Italy	1.2	0.3	0.2	0.3	2.0
Spain	0.6	0.2	0.1	0.1	1.1
UK	1.0	0.4	0.2	0.2	1.8
Other	1.8	0.6	0.5	0.2	3.2
<b>W.Europe</b>	<b>7.8</b>	<b>2.6</b>	<b>1.7</b>	<b>1.4</b>	<b>13.4</b>

Energy cable, in its many different forms, is the largest constituent of the market, with 58% share. Telecom/data cable has a 32% share, with winding wire taking the remaining 10%.

The product group shares in each national market are fairly similar (**Slide 5**). The main differences emerge in winding wire, especially for the smaller countries, the size of this segment depending on whether or not the specific industries that consume large volumes of the product are present. Germany counts particularly highly in winding wire. The balance between energy cable and telecom/data cable depends, in part, on the balance between and specific nature of construction market and network development. In the United Kingdom, investment in telecoms-related activity in 2000 was high in relation to building construction and power network development. This is reflected in the cable consumption figures.

## Western Europe Market Volume

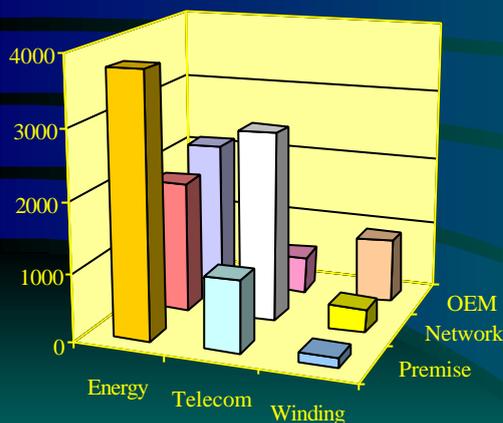
### *Product and Country Detail*

million tonnes conductor equivalent

	Energy Cable	Cu Telecom Cable	Fibre Optic Cable	Winding Wire	Total
<b>France</b>	0.26	0.04	0.02	0.06	<b>0.37</b>
<b>Germany</b>	0.37	0.06	0.06	0.11	<b>0.60</b>
<b>Italy</b>	0.24	0.03	0.03	0.08	<b>0.38</b>
<b>Spain</b>	0.13	0.02	0.02	0.04	<b>0.21</b>
<b>UK</b>	0.19	0.04	0.03	0.04	<b>0.31</b>
<b>Other</b>	0.35	0.06	0.06	0.076	<b>0.53</b>
<b>W.Europe</b>	<b>1.54</b>	<b>0.26</b>	<b>0.23</b>	<b>0.38</b>	<b>2.41</b>

In **Slide 6** we take a look at market size in terms of volume. Here we apply a “conductor equivalent” definition, equating fibre optic to metallic cable using the conversion one tonne of conductor equals 80 fibre km (giving an approximate equivalence in terms of value, not capacity). Using this definition, we estimate the market in 2000 at 2.41Mt conductor equivalent, comprising of 2.18Mt of metallic cable and 18.1 Mfkm of fibre optic cable. Country market apportionments in volume are similar to those in value, differences reflecting product mix and market pricing.

## The Product/Application Matrix *by value*



- The energy cable/  
premise segment is by  
far the most  
important, although  
other energy cables  
and telecom/data  
cables, both in  
networks and in  
premises, are also  
important.

In **Slide 7** shows graphically, in broad outline, where the different wire and cable product groups are destined in Western Europe. The graph is based on our nine-cell products application matrix, covered in our Hong Kong and Boston presentations.

To recap, the product/application matrix contains nine cells, defined by three product groups on one axis (energy cable, telecom/data cable and winding wire) and three application groups on the other (the premise, network and OEM markets).

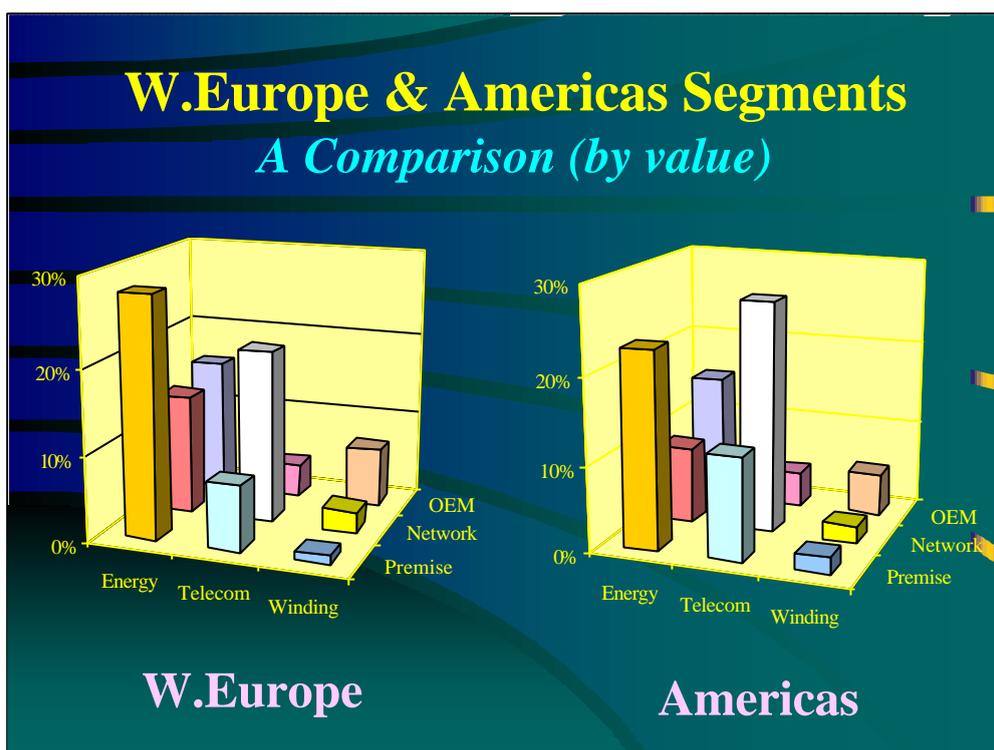
A cursory examination of this chart shows that, of the nine product/application cells identified, by far the most important in value terms are the three energy cable segments (energy/premise, energy/network and energy/OEM) and the telecom/network group.

## The Product/Application Matrix

	Energy Cable	Telecom Cable	Winding Wire
Premise	3.76 28.0%	1.03 7.7%	0.14 1.0%
Network	1.88 14.0%	2.73 20.3%	0.34 2.5%
OEM	2.12 15.7%	0.52 3.8%	0.92 6.8%

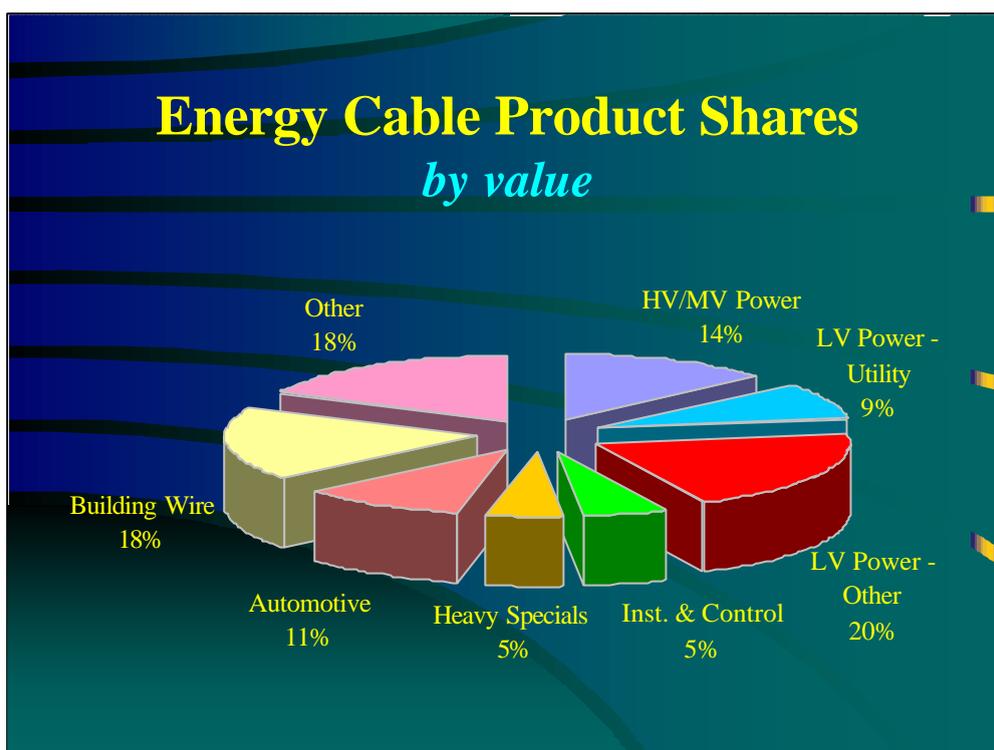
The figures show Euro billion

Together, these four account for 78% of market value in Western Europe (**Slide 8**). The other telecom/data cable cells, showing premise and networks use are also significant in value, despite relatively small volumes of cable going into these end applications. Winding wire, though important in terms of volume, is a less important market in value terms, the 7% of total wire and cable consumption value in the winding wire/OEM group reflects a very large volume of product.

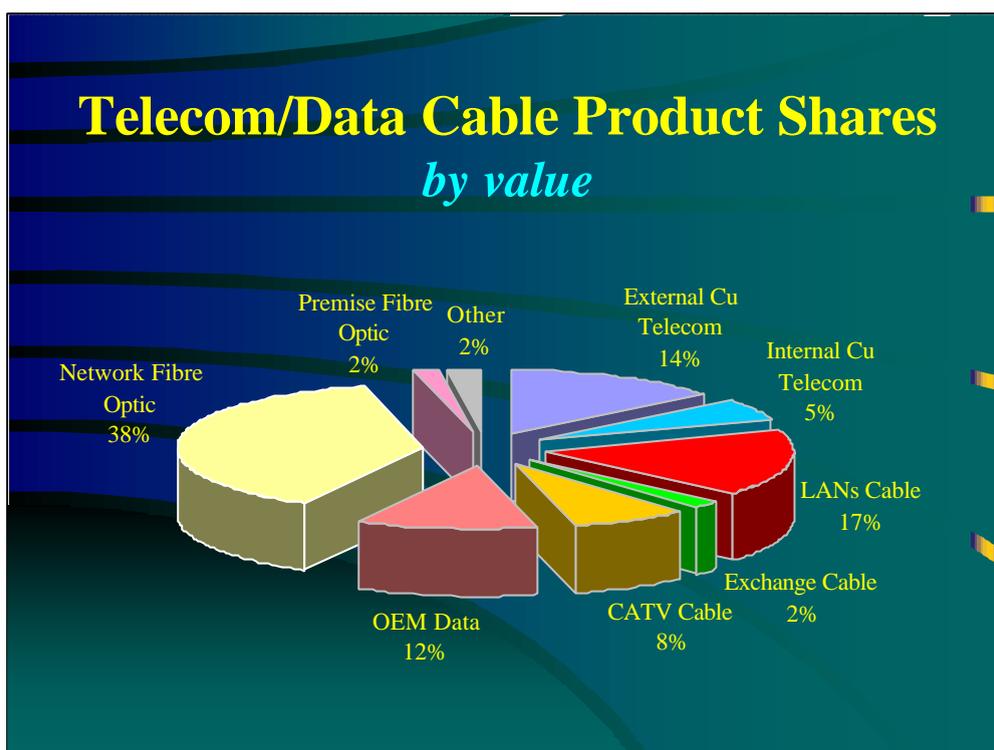


A glance at **Slide 9** shows that market segmentation in Western Europe is quite different than that in the Americas. The underlying data is in percentages of the total regional market. In relation to wealth, cable consumption is significantly higher in the Americas than in Western Europe, so where the segment figures appear low in Western Europe, in absolute size the difference is greater. Particularly noticeable is the relatively small size of the telecom/network sector in Western Europe compared to the Americas. Indeed, European consumption of wire and cable in this sector is less than two-thirds of that in the Americas in relation to the size of the two regional economies. Much the same is true of the telecom/premise segment.

OEM markets in energy cable and data cable are similar in size, proportionately, on both continents. In contrast, the huge energy/premise, winding wire business is larger in relation to the underlying economy in Western Europe. The relative strength of the energy/premise segment in Western Europe is particularly surprising given the higher current rating of internal wiring circuits which, all else being equal, should mean lower wire diameters and, hence, a lower value of the wire and cable consumed. In 2000, the energy/network segment in Western Europe was running ahead of that in North America, despite the fall in volume in recent years.

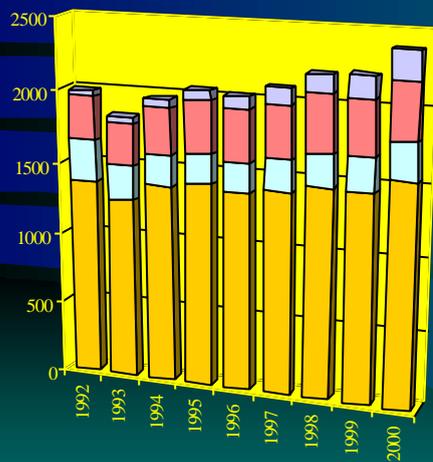


The broad differences in segment structure between Western Europe and the Americas suggest a need for more in-depth investigation and comparison of the two regional markets. In **Slide 10** we take a look at the product apportionment of the energy cable market in Western Europe. Although there is not time here to go into the detail of how the individual product groups relate to their end use segments, by a look at this chart it is possible to begin to answer questions such as why the energy/premise segment in Western Europe is not relatively small compared to the United States in value terms, despite the higher current rating of internal wiring circuits. Firstly, the product to which this consideration applies, primarily building wire, does not dominate the market. The chart shows building wire value (18% of the total) as lower than “LV Power – Other” (20%), a group consisting primarily of 1kV cable used in the premise segment. Then we should consider the role of aluminium in the premise segment, very small in Western Europe, but significant in the United States. On a conductor equivalent basis, aluminium wire is much lower in price than copper. This is part of the explanation, beyond this we need to look at the structure of the construction industry itself, particularly the much higher level of wire-intensive refurbishment work in Europe compared to the United States, and issues of pricing.



In **Slide 11** we take a look at Western Europe's telecom/data cable market product apportionment. Again, we see significant differences between the markets of Western Europe and the United States. In the United States, the absolute level of telecom/data cable use is higher in relation to the underlying economy in virtually all categories than in Western Europe. This is particularly true for product groups where the proportion of the telecom/data cable use is greater in the US than in Europe. This is true of external copper telecom cable, LANs cable and CATV cable. The differences tell us much about disparities in the competitive environment in the telecoms industry, and the existing network structures within which the operators are working.

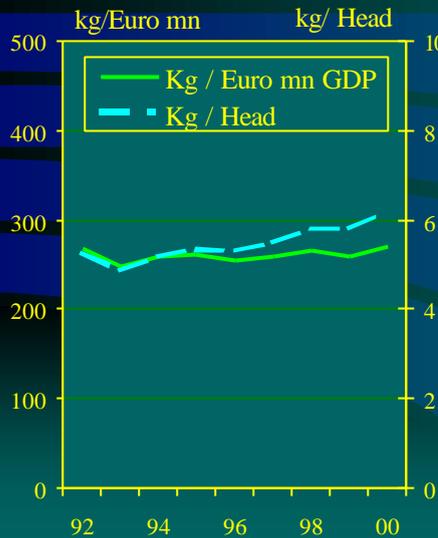
## Market Growth is Very Slow *by volume*



- Despite relatively strong recent performance, trend growth in metallic cable consumption between 1992 and 2000 was only 1.7% p.a.
- Even including fibre optic cable, the figure was only 2.7% p.a.

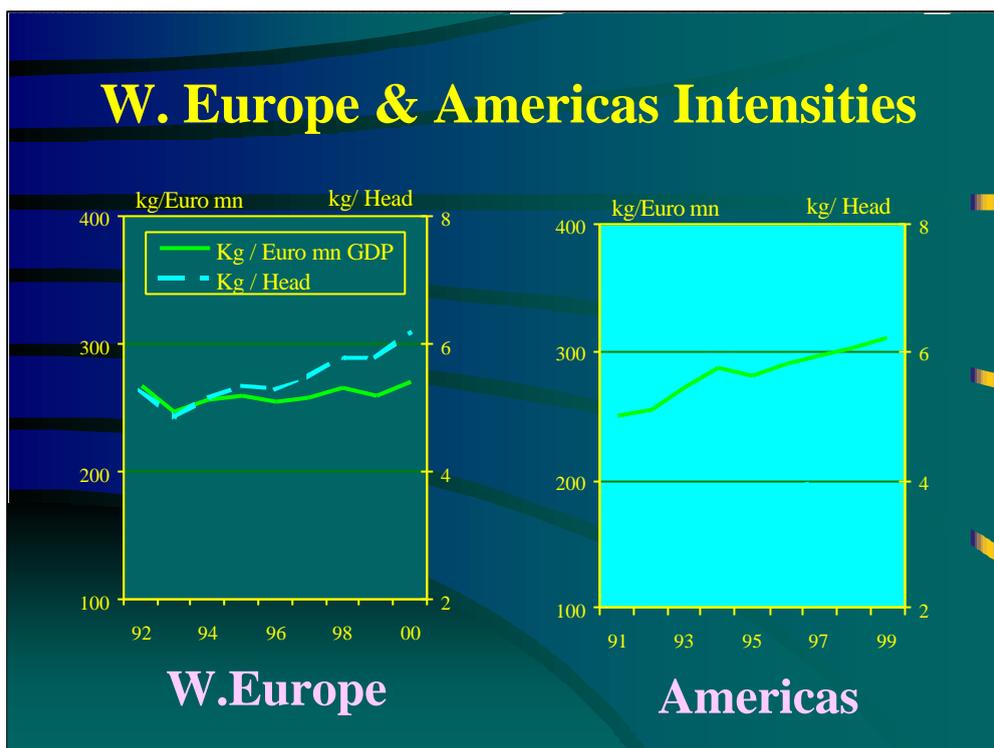
Although end market structure is a key concern for the cable maker, perhaps more important is the development of absolute volume. Here, the European industry has to face up to one salient fact – the market is growing only slowly. Despite relatively strong recent performance, trend growth in Western Europe's metallic cable consumption between 1992 and 2000 was just 1.7% p.a. on a volume basis. If we include fibre optic cable, the picture is slightly better. We estimate trend growth at 2.7% p.a., again on a volume basis. This rate of growth is substantially lower than the world average for wire and cable. Over the past decade, Western Europe's share of the global business has fallen from around one-quarter to around one-fifth.

## The Intensity of Use of Wire & Cable is Barely Rising



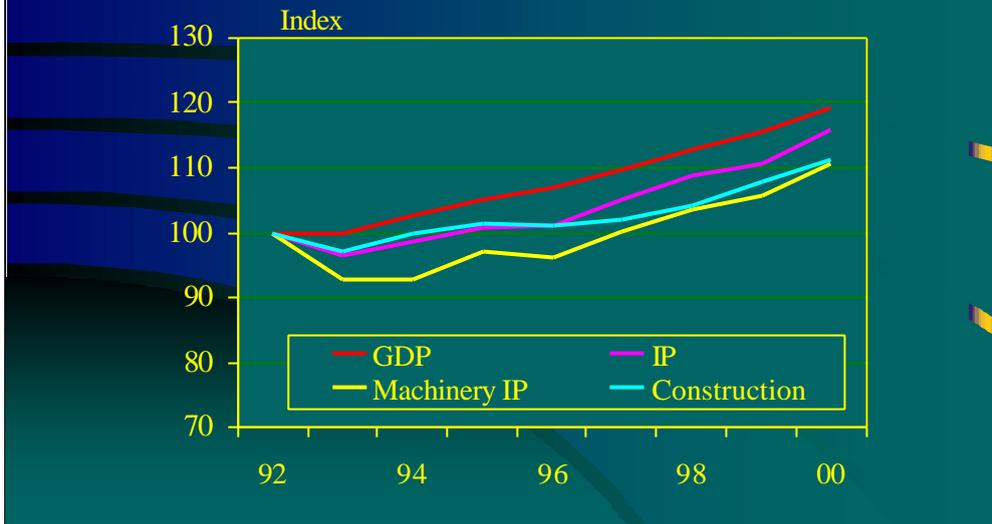
- At 270 kg conductor equivalent per million Euro GDP, cable consumption in 2000 was at virtually the same rate as in 1992.
- Trend growth in intensity of use by this measure is calculated at only 0.4% p.a.

So, why is Western Europe's market performance quite so sluggish? One obvious reason is slow growth in the underlying economy. Between 1992 and 2000, Western Europe's GDP rose by just 2.3% p.a., more than one percentage point behind the rest of the world. Although true, this is only half of the story. It is clear that, even accepting that the underlying economy has not been particularly kind, Western Europe's cable market has not performed very well. **Slide 13** shows that in 2000, with an estimated 270 kg conductor equivalent consumption of wire and cable per million Euros GDP, the rate of consumption was virtually the same as in 1992. Although 1992 appears to have been an exceptional year, the trend rate of growth in intensity of use by this measure, at 0.4% p.a., was very modest indeed.



It is instructive to make a comparison in the rate of cable use between the Americas and Western Europe (**Slide 14**). Two facts become immediately apparent when looking at the figures. Firstly, the intensity of use in Americas (until 2000) grew much more quickly than in Western Europe. (The Americas market achieved a 2.7% trend growth in use intensity between 1991 and 1999 compared to Western Europe's 0.4% between 1992 and 2000.) Secondly, the Americas achieved a significantly higher absolute intensity of use level (20% higher on a currency equivalent basis). Looking at just the United States and Canada, for which the comparison with Western Europe could be considered to be more meaningful, we still see a great disparity in the two markets. In the ICF Americas report, we identified a 1.9% p.a. rise in the intensity of use of wire and cable in the United States and Canada combined between 1991 and 1999, still many times higher than the figure recorded in Western Europe. The absolute figure recorded in 1999, at 311 kg per million US\$ GDP was 14% higher than that for Western Europe in 2000 on a currency equivalent basis.

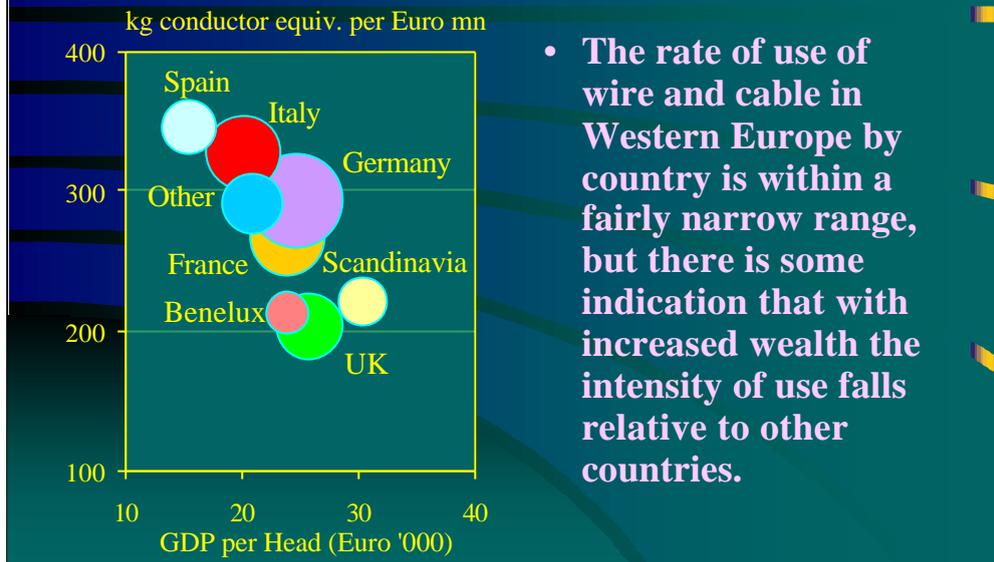
## Change in Economic Structure Does Not Help the Cable Market



The reasons for this disparity in the intensity of use are various, and relate to the performance of individual product/application market segments. We see as particularly poignant the shift in Western Europe's economic structure away from activities that consume large volumes of wire and cable. (**Slide 15**). The relatively sluggish performance of industrial production has limited market growth potential for wire and cable in Western Europe. Between 1992 and 2000, Industrial production (IP) grew at a trend rate of 2.1% p.a., compared to 2.3% p.a. for overall GDP. The poor economic background for this industry becomes most apparent when we look at the specific components of IP where most wire and cable is used. Between 1992 and 2000 the machinery sector grew at a trend rate of only 1.8% p.a. Even worse, construction grew at a trend rate of just 1.4% p.a. over the period. If the machinery sector can be taken to be inductive of the market for OEM wire and cable products and construction to represent the underlying premise market, it can be seen that, in the areas that matter most, the economy of Western Europe has been growing at a trend rate of little more than 1.5% p.a.

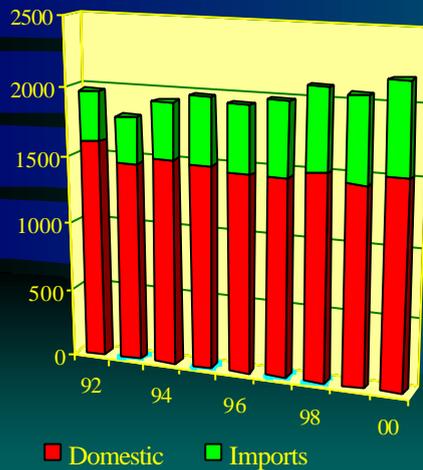
The background for the network segment, also, is far from encouraging. With the power and telecom networks largely in place well before the beginning of the 1990s, there was no counterbalancing stimulus to wire and cable market growth from the network sector. Indeed, the financial environment surrounding the incumbent utilities both before and after industry deregulation can be positively discouraging to investment, particularly in the power sector. In comparison with North America, Western Europe has not seen such a massive surge in investment in telecoms infrastructure, as deregulation has (so far) failed to deliver the type of competitive free-for-all that leads to virtually unrestrained spending in this sector.

## Wealth and Cable Use



The rate of use of wire and cable measured against GDP varies quite substantially between countries in Western Europe, largely reflecting the different structure of the economies (**Slide 16**). Spain with its relatively strong construction industry and respectable manufacturing performance records the highest rate of cable use, at 347 kg conductor equivalent per million Euros GDP in 2000. France and Italy also performed well by this measure, because of the size of their manufacturing industries and, in the case of France, a booming construction industry. A much lower intensity of use of wire and cable is apparent in the United Kingdom and most of the smaller countries of Western Europe.

## Imports as a Share of Consumption are Growing



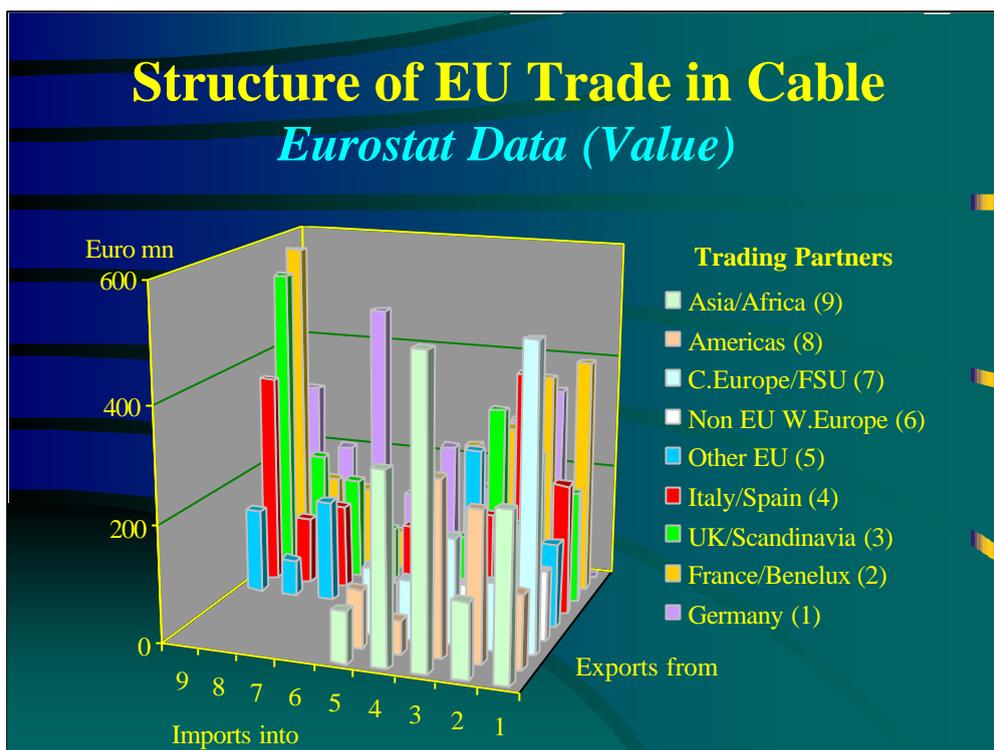
- Imports as a share of consumption of metallic cable grew from 18.6% in 1992 to 30.5% in 2000.
- Exports as a share of output grew by a similar amount.
- As trade grew, domestic supply to domestic buyers was static.

Low market growth, in itself tends to create a more competitive environment unless, as has occurred in some industries, monopolist power is imposed by just a few suppliers. (This certainly hasn't happened in cable.) In the natural course of events, companies expect their sales to increase year-by-year; certainly this is the expectation of shareholders. Also, investments in plant aimed at improving efficiency cause capacity to increase, even without the introduction of new lines. When the market itself fails to provide a sufficient outlet, competition naturally intensifies unless some sources of supply are withdrawn. We have seen some cable lines being closed, particularly in power cable and copper telecom cable, but, the number has been wholly insufficient to rebalance supply with demand and, in any case, it is not uncommon for lines to be relocated elsewhere, often remaining a direct competitive threat.

We estimate that the level of capacity utilisation across much of the cable industry, including utility power cable, standard low voltage energy products and copper telecom cable, at around 70%. Overall, this figure is probably not significantly different from a decade ago, when the pricing environment for cablemakers was much kinder. What has changed is that excess capacity has become more visible. As cablemakers are more able to use their plant to meet foreign orders and market dynamics now require them to do so, a higher amount of unused capacity is relevant in determining price for each order for cable. Price is often determined by the level to which the supplier that most wants to fill capacity is prepared to go.

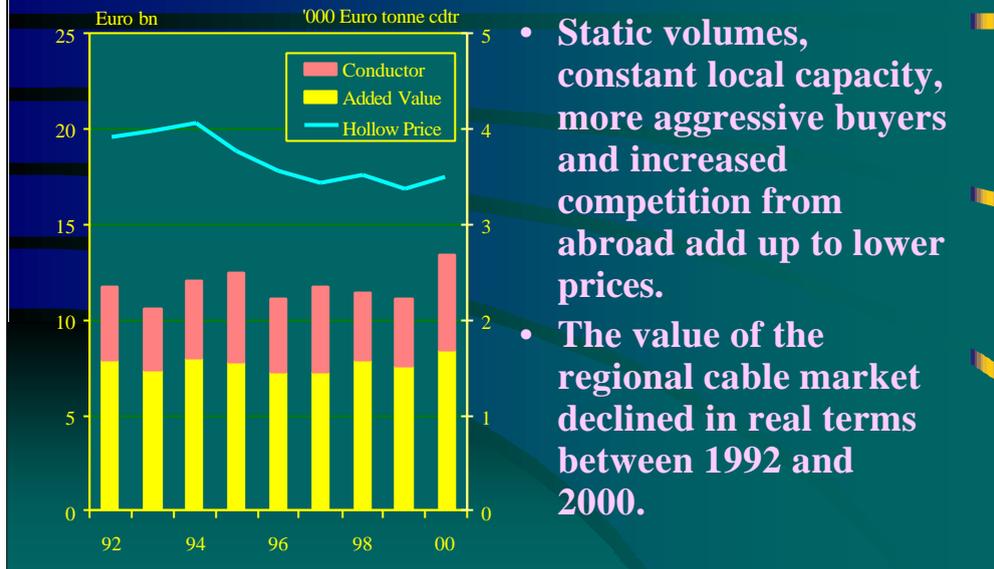
Whereas in the past it may have been sufficient to be a national supplier of cable to a national market, buyers are now more international in their outlook and, to survive, cablemakers must be also. Trade, therefore, has become a much more prominent feature in the profile of Western Europe's cable industry (**Slide 17**).

There are several reasons for the dramatic rise in the importance of trade. Firstly, intra- regional trade has naturally increased within the EU as a result of economic integration. Intra-regional trade became more commercially viable after tariff barriers were lifted and companies, both buyers and sellers, gradually became more used to exploiting opportunities within the region. Secondly, wire and cable products have gradually become more standardised. Although harmonised product designs have failed to gain the penetration originally intended, the tide of economic logic, which dictates that standard products that can be purchased from a wide range of suppliers are likely to be cheaper, has prevailed. Perhaps more important than all of this, however, is a change in the profile of buyers. OEM customers and the deregulated utilities have become more international and much more aggressive in their purchasing outlook, while the general market is falling into the hands of a handful of commercially astute international electrical wholesalers.



Although imports from countries within Western Europe have increased, even more damaging as far as the competitive structure of the industry is concerned are imports from third parties. Suppliers outside Western Europe, especially in Central Europe, have grown in size and their professionalism, becoming more capable of claiming a large slice of Western Europe's market. In **Slide 18** we give a snapshot of the structure of trade in wire and cable in 2000. The underlying figures are based on Eurostat data, and relate to European Union (EU) trade. The chart shows that trade falls into three components: 1) intra-regional trade 2) imports from outside the region, 3) exports outside the region. Intra-regional trade is still the largest component, claiming 40% of all trade. The remainder is fairly equally split, with imports from outside the region accounting for nearly 30% of all trade movements in wire and cable affecting European Union countries. This component in EU trade has increased quite dramatically in recent years. While trade movements both into and out of the EU have increased, imports have recently risen faster, net exports of metallic cable from the region falling from an estimated 156,000 tonnes of conductor in 1997 to 95,000 tonnes in 2000.

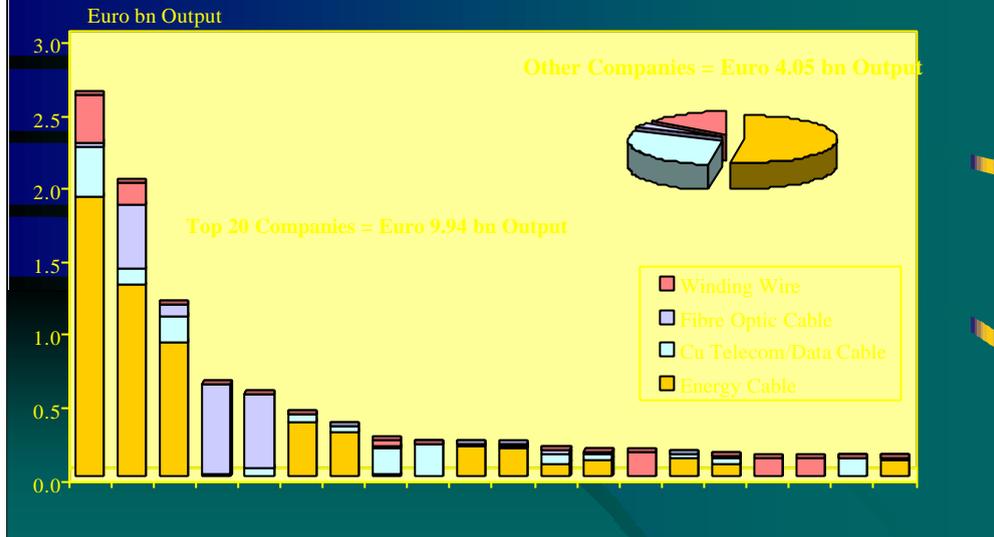
## Margins are Being Squeezed



The increased penetration of imports from outside the region, as indicated above, is only one of a series of factors leading to an increasingly competitive market in wire and cable in Western Europe. Whatever the underlying cause, the end result is clear. While volumes may be rising (if only slowly), revenues from wire and cable sales are virtually static. In **Slide 19** we show the development of revenues, hollow prices and hollow price margins from cable sales in Western Europe between 1992 and 2000. (Hollow prices mean cable values excluding the price of the conductor material.) The chart shows quite clearly that, bar a slight improvement in 2000, hollow price values are at best static, at worst actually declining. When it is considered that an increasing proportion of cable sales in Western Europe come from suppliers outside the region, it is clear that the value of sales by domestic suppliers to domestic customers is falling significantly over time.

## The Industry is Consolidating

### Top Twenty Company Output



Of course, some of the cable supplied from outside the region represent internal transfers by the larger of Western Europe's wire and cable companies. It is worth taking a quick look at the company structure of cable supply in Western Europe, and the role of the "pan-Europeans" within this structure. In **Slide 20** we show the role of the top twenty cable suppliers within Western Europe. We can see that there are just a few companies with a really large manufacturing presence in the region. The top three, together, account for 42% of output, the next four 14% and, after this, there is a long tail of companies that individually account for less than 2% of the total each. The top twenty companies, in total, have a 72% share.

The companies at the top of the ranking are all, to a greater or lesser extent, "pan-European", with a manufacturing presence in more than one country. This is true of all the top five suppliers, and a few of those lower down the ranking. It is interesting that most of the companies that have a multi-country manufacturing presence within Western Europe also produce cable on the region's fringes, in Central Europe and Turkey. This is a very significant factor in the market presence of Pirelli, Draka, NKT and Belden. Pan-European supply on this scale opens up the possibility of allocating the output of each product group to the lowest cost plant within the region, allowing a more efficient use of plant and increasing the overall level of capacity utilisation.

## Company Response to a Highly Competitive Market

- Focus
  - By Product
  - By Customer Type
  - By Location
- Corporate
  - Spin Off Cable
  - Divest Non Cable
- Decentralise
  - By Product
  - By Location
- Achieve Critical Mass
  - By Acquisition

For the largest companies making a wide range of cable products, this approach to cost reduction is probably the most important route to enhanced profitability. Absolute size does also offer the opportunity to spend significant sums on research on development, the benefit from this, potentially, being the creation of products with better margins (either through higher prices or lower costs of production).

There are, however, other very different and quite viable strategies. The listing given in **Slide 21** gives the full range and, if you happen to remember my presentation in Boston last year, this is the same list that applies to the Americas. Clearly, Western Europe's wire and cable market is dominated by companies that have got to their current position primarily through acquisition. Some of the acquisitions, as in the case of Pirelli, Draka and Corning, are quite recent. A key issue for them now is how to make absolute size work for them. There are also clear examples of product focus, for example Corning and Alcatel in fibre optic cable, or Avaya in LANs cable. We are even seeing examples of geographical specialisation. The Wilms Group in Germany, now Western Europe's sixth largest wire and cable company combines production from many bases within Germany with a focus on the German market and a very slim central management to achieve one of the more profitable companies within the region.

The European wire and cable industry is clearly in a state of flux. It is far from clear which business model will turn out to be most beneficial in the longer term. To some extent, it is in the hands of cable companies themselves to determine the best path as the industry's competitive structure evolves. But, to some degree, it is out of their hands. Through the 1990s we have a long history of divestiture and spin-off of cable operations from their much larger parent organisations. The most recent, and biggest, was that of Nexans earlier this year. In the not too distant future we may expect to see the same or similar happen to the energy cable business of Pirelli. If nothing else, perhaps as a matter of pride, we should be looking to show these former parents that wire and cable business is no poor relation that should simply be abandoned.