

## EU Engineering Competitive Update

July 2006

In August 2005 we forecasted, on the basis of partial 2004 data, that the EU15 Engineering<sup>1</sup> production would grow by 3% in nominal terms during the whole of 2004 and guessed that the industry could grow by between 1 and 4% in 2005. In July 2006, with figures for the whole 2005 in the hand, we record that the EU15 output of engineering equipment grew by 3% in 2004 and by 4% last year, thus verifying our prognoses. It is particularly encouraging that actual growth in 2005 has reached the upper limit of the industry's predicted growth potential.

At the end of last year's update we expressed the hope of being able to include in future annual updates the ten countries which joined the EU in 2004. We are glad to be able to present already this year aggregated data on both old and new EU Member States at the levels of the Engineering Industry and of the Mechanical Engineering and Electrical Engineering sectors. We pay special attention in this year's update to Engineering in the new EU countries, initiating the analysis of the competitive situation of Engineering in those countries and making for the first time an output forecast for the whole EU. This is a significant leap forwards in the Commission's capacity to adapt its policy toward the Engineering Industry to the reality of the enlarged Union. In coming years we intend to deepen our analysis of Engineering in those countries to the sub-sector level, as data become available.

### Engineering Industry

EU25 Engineering manufactured in 2005 machines and equipment worth € 650,428 million, generated a value-added of € 212,078 M, invested € 19.811 M, gave direct employment to 4,2 million people working in over 33 thousand manufacturing companies with 20 or more employees and booked a gross operating rate of +8.5%.

The Industry initiated in year 2000 an upward cycle with a healthy 12% output hike in nominal terms. Then production stagnated unexpectedly in 2001-2003. Luckily the past two years the upward trend has resumed with a 4% average growth for 2004-2005.

The EU remains the world's largest producer and exporter of engineering equipment, well ahead of its main competitors in this market – USA and Japan. EU25 engineering export reached in 2005 the € 200 billion threshold, doubling US export of € 101 Bn and trebling Japanese export of € 95 Bn. The relative trade balance of the EU in engineering equipment has evolved very satisfactorily during the past three years, from 14.9 in 2003, over 16.8 in 2004 up to 17.8 last year, the highest value recorded since the beginning of the available time series in 1995. During this period EU export has increased by 24% in current prices, outperforming USA's 21% and long ahead Japan's 18%. This

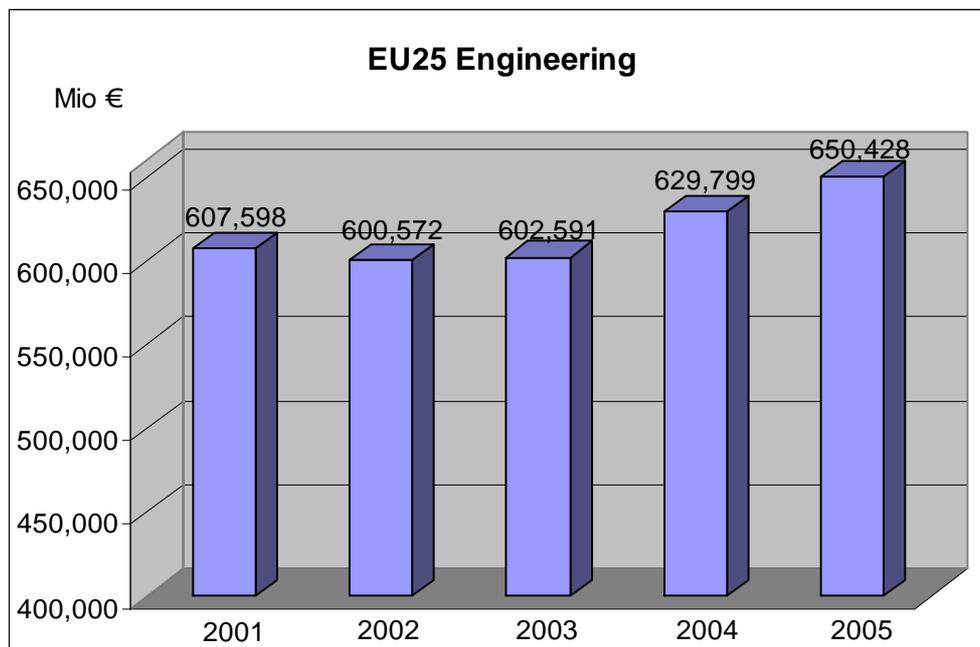
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<sup>1</sup> By Engineering Industry is understood here Mechanical and Electrical Engineering. Mechanical Engineering is the largest sector of this Industry. Mechanical and Electrical Engineering together constitute the core of Engineering.

underscores that the EU's global dominance in Engineering is strengthening more and more.

Engineering production is growing much faster in the new than in the old EU countries: in the past ten years (1996-2005) output of machines and equipment has expanded in current prices by 247% in the new Member States but by only 33% in the old ones. Focusing on the most recent development, whilst output has increased last year by 2.6% in the EU15, in the EU10 the increase has been 4.1%. The new Member States have produced in 2005 € 39,716 M, exported 7,835 M, imported 7,975 and consumed € 42,644 million worth of engineering equipment. The new Members account thus for 9% of EU engineering production.

New EU countries' sales of engineering products to the old ones, € 27,269 million in 2005, amount to 3.4 times the value of their exports outside the EU. As much as 69% of the production of the new countries is destined to the old EU countries. This shows how vital the West European market is to engineering companies in the new EU countries. New Members buy € 30,259 M engineering goods from the old Member States, i.e. 71% of their consumption. Both trade flows together show how integrated Engineering has become in the old and new Member States. On the other hand, whereas CMEA countries traded mostly among themselves, as EU countries they now trade among themselves a modest € 3,776 M in engineering goods, covering only 9% of their consumption. This shows that the traditional trade ties between neighbouring Central and Eastern European countries have not been reestablished since their overhaul to market economy.



4,950 engineering companies with 20 or more employees in the ten new EU countries employed last year 764 thousand people who generated € 12,389 million added value. This means that the annual value added of the average EU10 engineering worker is 16 thousand euros. By comparison that of his EU15 colleague is 50 thousand. Beyond the obvious conclusion about the huge productivity gap between Western European and Eastern European Engineering, these figures also say something about shallow vertical integration of engineering production and oversized workforce in new EU countries.

Engineering companies in the new EU countries are much more profitable than in West Europe. In 2005 the average gross operating rate of engineering firms in EU15 was 8% and 12% in EU10. This is explained to a large extent by the much lower wages and taxes in the new than in the old Member States. Whilst the yearly labour cost of the average Eastern European engineering worker was € 9,661 in 2005, his Western European colleague costs to his company 42,484 euros. The labour cost to production ratio is 0.25 and the labour cost to value added ratio 0.75 in EU15 engineering companies whilst the corresponding ratios in EU10 companies are 0.19 and 0.60.

Comparing the performance of individual EU countries in 2004-2005, Poland soars high above all the others with an impressive 22% swell of its Engineering Industry, i.e. 2  $\frac{3}{4}$  times faster than the EU as a whole. The outstanding growth rate of Polish Engineering in this period is attributed to ever growing demand from Western European countries, economic reforms and investments in the Automotive and Defence industries. The second best is also a new Member State, Estonia, with an 18% growth, although Estonian engineering is tiny (€ 346 M) by absolute size. Among old EU countries, Austria, who boasted the fastest growing Engineering Industry in previous annual updates, remains the leader in this group of countries with a 7% output rise in 2005. On the other hand, Denmark and Spain, who in the past years were second only to Austria, recorded last year slight output decreases. Other EU countries where engineering production fell slightly are Italy, Ireland and Portugal.

In absolute numbers Germany remains by far the biggest producer of engineering equipment in the EU, with € 243,424 million. German Engineering grew in 2005 by 4.6%, slightly over the EU average. Adding the new EU Members to the tally, sinks the German share of total EU output by only 2  $\frac{1}{2}$  percentage points from 40% to 37 $\frac{1}{2}$ , due to the sheer size of Engineering in that country. Long after Germany come Italy (15% of EU output), France (11 $\frac{1}{2}$ %) and the UK (8%). The three Baltic States record tiny outputs (<€500M) and Engineering in Cyprus and Malta is negligible.

### Mechanical Sector

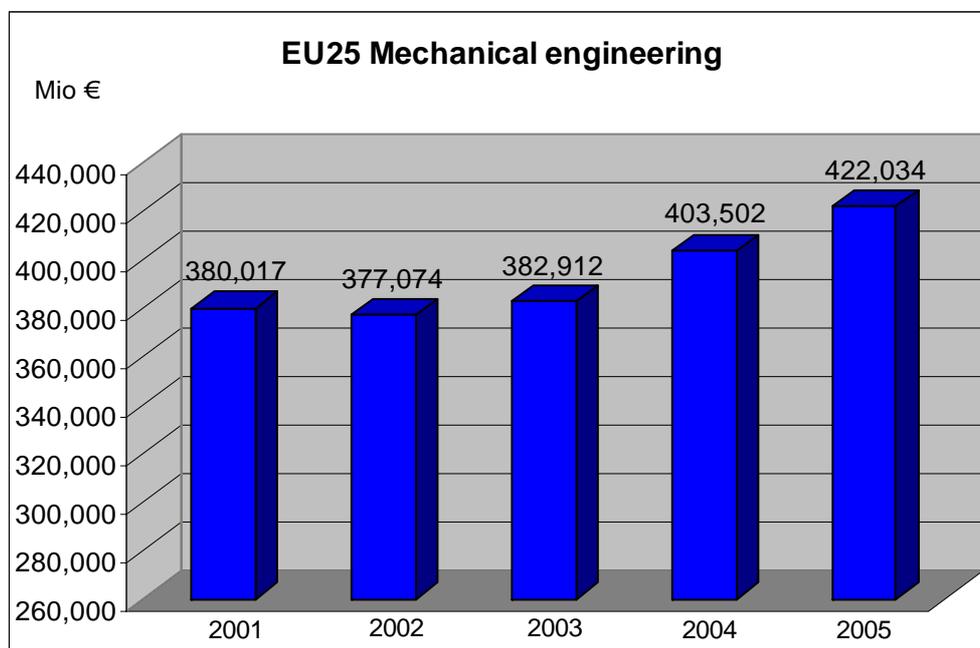
Europe is more specialised in Mechanical than in Electrical Engineering. Last year EU output of mechanical equipment amounted to € 422,034 million, which accounts for 65% of total Engineering. The EU's specialisation index in Mechanical Engineering rose slowly but steadily throughout the 1990s and till 2003 but that trend has inflected in the past two years. The index of the old Member States has dropped from 0.68 in 2003 to 0.66 in 2005. Unlike the old EU countries, the new EU countries are less specialised in Mechanical than in Electrical Engineering. Mechanical Engineering represents only 43% of their total Engineering production. Nevertheless, it is still fair to say that the EU as a

whole is more competitive in the production of mechanical than of electrical equipment. Taking year 2000 as base, the productivity index of EU25 Mechanical Engineering in 2005 was 111 and that of Electrical Engineering 109.

During the period 1996-2005 the EU25 Mechanical Engineering has grown by an annual average of 4.0% in nominal terms. Between 2004 and 2005 the Sector's output has increased by 4.6%. Mechanical Engineering is growing much faster in the new EU countries than in the old countries: whilst the annual growth rate of the Sector in 1996-2005 has been 3.8% in EU15, the EU10 has grown by an annual 9.8% average.

Germany has produced in 2005 machines and other mechanical equipment for € 165,571 million, accounting for 39% of EU output. This means that Germany is more specialised and dominating in Mechanical Engineering than in Engineering in general. The followers in mechanical production are the same as for Engineering in general: Italy with 16%, France with 11% and the UK with 8½% of total EU production. Among the new Member States, the biggest mechanical manufacturer is Poland with € 6,458 M, which stands for 1½% of EU25 output, and the Czech Republic with 5,621 M. Relative to the size of the whole national economy, Czech is the EU country most specialised in Mechanical Engineering, surpassing even Germany on this account.

Poland has been the fastest grower in 2005 in Mechanical Engineering, by an even higher rate than in general Engineering, 37%. The second best performance in this Sector last year, +15%, has been recorded by the Czech Republic. At the other end, Ireland, which is not specialised in making machines, has lost 5% and Denmark 4%.



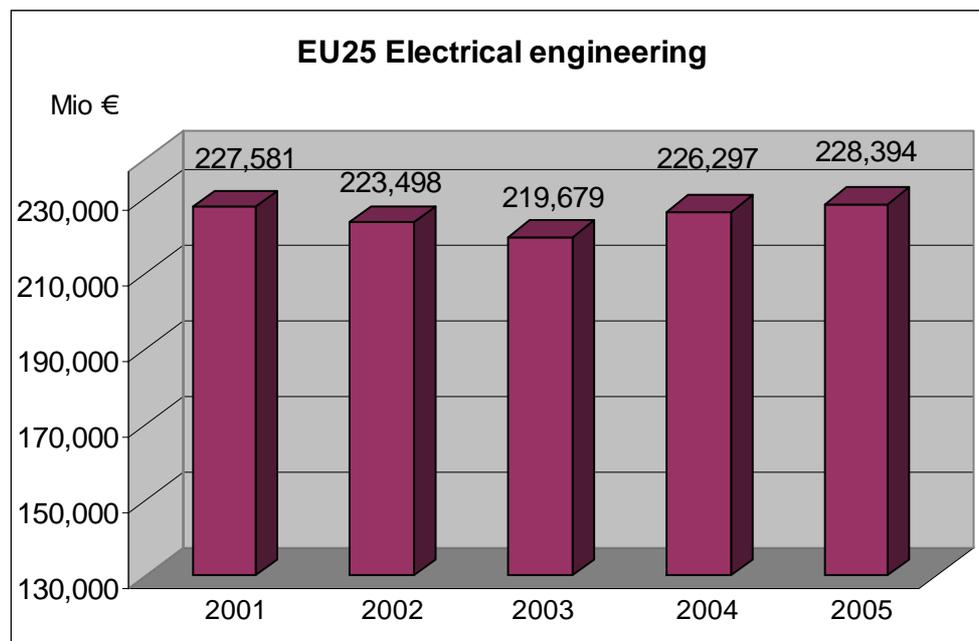
Like in previous years, Lifting and Handling Equipment remains the largest mechanical Sub-sector in EU15 with an output of € 48,937 M in 2005 (12% of EU Mechanical

Engineering output). Other major sub-sectors are Machine Tools (%), and Industrial Cooling and Ventilation Equipment, representing 9% EU Mechanical output each. Last year all mechanical sub-sectors achieved a positive growth except Equipment for Metallurgy, which recorded a decrease by 3%. European manufacturers of metallurgical equipment could not maintain their temporary recovery in 2002-2003, falling back in line with this Sub-sector's long-term declining trend. The mechanical sub-sectors with the highest growth in 2005 are Construction, Mining and Quarrying Equipment, respectively Bearings and Gears each with +10%. The former continues an intensive upward trend since 2002. It is rejoicing that the recovery of the European Bearings and Gears Sub-sector now seems consolidated.

### Electrical Sector

Last year EU25 output of electrical equipment and appliances amounted to € 228,394 M (35% of EU Engineering production). During the period 1996-2005 the Sector has grown by an average annual 3.2% in current terms. This average hides continuous growth until 2001, recession in 2002-2003 and recovery in 2004-2005. Limiting ourselves to the last period, there was a promising 3% output increase in 2003 but growth has slowed to 1% last year.

EU25 Electrical Engineering employs directly 1,619 thousand people. The Sector's payroll increased very slightly in the second half of the 1990's from 1,660 x000 in 1995 to 1,727 x000 in 2000. Employment planned out in 2001 and has been falling slowly but steadily ever since. 23 thousand net jobs were lost in 2002, 58 thousand in 2003, two thousand in 2004 and 25 thousand last year.



Germany is the largest EU producer in electrical equipment too, though less dominant than in machinery. In 2005 that country has manufactured electrical equipment for € 77,853 million, or 37% of EU25 electrical engineering output. Last year Italy has overtaken France as second European manufacturer of electrical products: Italy recorded an output of € 31,230 million, good for 14% of the EU total, whilst France stayed at 27,550 M, accounting for 12% of EU output. The UK accounts for 8%. Among new EU countries, Poland is the largest producer of electrical goods with an output of € 6,570 M in 2005. Number two in this country group, Hungary, features a lower output than Poland in absolute terms - € 5,610 M, but relative to the size of its economy Hungary is more specialised in Electrical Engineering, and in particular in lighting equipment and lamps. Another new EU country who is very specialised in manufacturing of electrical goods, in particular household appliances is Slovenia, albeit it cannot display a large sector output in absolute size (€ 2,250 M) due to the small size of its economy.

Over 60% of the total EU Electrical Engineering output falls under the three sub-sectors Electricity Distribution and Control Equipment with € 56,077 million in 2005, accounting for 27% of EU15 output, Electric motors, Generators and Transformers (€ 40,463 M; 20%), and Electric Domestic Appliances (€ 30,309 M; 15%). The last one is different to all other Electrical Engineering sub-sectors in that household appliances are consumer goods. The produce of the other sub-sectors is electrotechnical equipment for professional users or electrical products for mixed professional use and consumer consumption.

Only two Electrotechnical Sub-sectors offer expansion opportunities in Europe in the long term: Electric Motors, Generators and Transformers, and Other Electrical Equipment. In the period 1999-2005 the former grew by 27% in current terms and the latter by 22%. Within the Sub-sector Electric Motors, Generators and Transformers, the EU has done best in large generators and transformers and electric motors for special purposes, while the European position in small, standard motors is being eroded. At the other extreme the Sub-sectors Wire and Cables (-8%), Accumulators and Batteries (-5½%) and Lighting Equipment (-5%) and have performed worst during that period. In both accumulators and batteries and in lighting equipment there is a progressive delocalisation of Western European production to Eastern Europe and Asia. Production of insulated wires and cables is intensive in raw material (copper) that is imported into Europe, and in energy and relatively intensive in labour. Except for new battery types, the produce of these three sub-sectors are low-tech commodities.

## Outlook

The fact that Engineering Industries supply products to be used in the production processes of all Sectors of the Economy means that their performance relies heavily on the investment intensity in those Sectors. As the level of investment in an Economy is closely linked over time to growth in Gross Domestic Product, it is only reasonable to assume that strong economic growth will boost the sales of engineering equipment. And since engineering industries are global players, the state and short-term future development of the world's economy is of particular importance to them.

We are currently experiencing an upward cycle in the world economy. In its latest analysis of global growth in April this year, the International Monetary Fund forecasts that the world economy will expand by 4.9% this year, despite setbacks caused by recent natural disasters and fears over the surging price of oil. This prediction marks an upward revision of the previous IMF estimate at the beginning of the year of 4.3% global growth in 2006.

According to the 2006 International Business Outlook of VDMA, the German Mechanical Engineering Association, machinery sales worldwide are expected to increase this year by 6% in real terms.

Since 69% of the engineering equipment manufactured in the EU is sold in the EU, the economic outlook of the European market is of particular relevance for the sales predictions of European engineering companies. According to the European Commission's spring 2006 economic forecast, economic growth is projected to rebound in 2006 to 2.3% in the European Union and to 2.1% in the euro area, up from 1.6% and 1.3% in 2005. The main impulses for the on-going growth stem from a robust increase in investment, continued strong world growth and an improved outlook in Germany.

Since engineering goods constitute the main category of capital goods, the Commission's 5.1% forecast for investment in capital goods in 2006 is more directly relevant for the short-term outlook of engineering suppliers to the EU market. 2006 sales of engineering products on this market should therefore lie closer to 5 than to 2%.

However, two threats loom on world demand for engineering equipment in 2006: the general oil price threat flagged by the IMF and the risk of a steel price hike that would affect in particular the Engineering Industry as main user of steel products.

The price of oil does not affect much the production cost of engineering products but it decisively affects the level of demand in key end-user sectors of engineering products (Automotive, Utilities, etc.) and the general demand level of the economy. At the time of publication the oil price is a record \$ 78 a barrel. A further aggravation of the Middle East conflict could easily kick the barrel price to unthinkable heights, triggering a collapse in shares and investment, what would in turn cut orders for engineering goods.

The price of steel affects directly the production cost of engineering equipment. Steel prices have remained very high since 2003. The European Engineering Industry fears that Mittal Steel's acquisition of Arcelor will create a virtual monopoly of European steel supply, driving steel prices higher up. At the same time, however, steel supply is becoming more globalised.

Taking the mentioned factors into account, we forecast a 4% growth in EU Engineering for the whole 2006, if no unexpected major crises in the world economy take place during the 2<sup>nd</sup> half of this year.

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