

Emerging competences and economic activities in the electro-mechanical engineering sector in the EU

Policy summary – Key points

The electro-mechanical sector produces a range of capital goods, including engines, turbines, lifting gear, generators, transformers, switch-gear, batteries, cables and lighting and machinery of various kinds, largely as inputs to other sectors. It accounts for over 20% of the EU's total exports of goods, and has increased its share of global markets over the past decade (while the US and Japan have lost out to China and Asia). It accounts for a particularly large share of output and employment in Southern Germany, Northern Italy and the South-East of the Czech Republic.

The sector employed some 5.5 million people in the EU in 2005 (3.8 million in machinery and equipment and 1.7 million in electrical equipment and apparatus). Employment has tended to decline over time, in part due to gains in productivity and the continuing shift towards capital intensive production methods. The sector is affected much more than others by cyclical downturns because of the postponable nature of investment goods. On past experience, there could, therefore, be job losses of between 300,000 and 450,000 over the two years 2008-2010, and more if the recession turns out to be as deep as many fear, with no certainty that the losses will be made good in the subsequent economic recovery.

In terms of the structure of employment, there is an ongoing shift from manual (skilled and unskilled) workers to managers, professionals and technicians, with computer and electronic skills and know-how becoming increasingly important.

The industry is highly competitive but faces market challenges, notably the prospect of China and other Asian economies developing their own capital goods industries, adopting the same advanced technologies, materials and work practices as in Europe. It also faces human resource challenges: to attract its share of highly skilled engineers and scientists in competition with other sectors which might offer more certain career prospects; to build new hybrid competences for middle-level staff that embrace modern management and technology; to retain older skilled workers and to avoid the temptation of offering early retirement as a means of reducing wage costs; and to attract more women into the industry by ensuring that working arrangements as well as rates of pay are comparable to those in other sectors.

The challenge over the coming decade is for the industry to build on its strengths and for national authorities and education and training systems, preferably in cooperation, to ensure a suitable supply of qualified and well-educated workers with the appropriate combination of theoretical and practical skills. In particular, there is a need for the industry and government alike to work closely with education establishments to promote science and engineering in schools, to ensure greater diversity of both tertiary and upper secondary-level qualifications, to develop more hybrid competences in management and technology as well as more specialised engineering skills, to provide the opportunity for practical work experience; to promote a continuous modernisation of apprenticeship schemes, with increasing emphasis on ICT, and to support progress towards a European-wide certification of qualifications.

The next year or two will be difficult ones for the industry, in which the ongoing need for investment in both physical and human capital to maintain and improve competitiveness will be constrained by a shortage of funds and where the importance of retaining a skilled workforce will run up against the need to contain costs. Given the strategic importance of the industry for the EU economy, the challenge for the Union and Member States is to determine the appropriate nature and level of support without resorting to protectionism and distorting competition.