The threat and promise of robots

Richard Pearson £140

Is the introduction of robots into industry increasing efficiency and so creating jobs, or is the human worker soon to become a thing of the past?

ALTHOUGH robots in one form or another have been around for many years, it is only in the second half of the 1980s that their widespread use has come into prospect. In terms of the application of basic electronics in products and processes, West Germany is the leader in Europe with Britain second, ahead of France. Although the rate of take up has been increasing over the past five years there is a long way to go — in 1985 only half of Britain's factories were using microelectronics.

But when it comes to robots, Britain seems to be lagging rather further behind its international competitors. Not only do Japan and the United States use more robots, but West Germany with an industrial base of similar size, has two and a half times as many robots in use. The rate of increase of use in Germany is also far greater and in 1985 the increase in the one year was as great as the total number installed in the whole of Britain in the previous years combined. France and Italy are also ahead in their use of robots, whereas Sweden with a far smaller industrial base has only slightly fewer robots than Britain.

The advance of robots in British industry

Year	Robot users	Robots
1981	100	371
1982	150	713
1983	220	1,152
1984	350	1,753
1985	560	2,623
1986	740	3,208

Source: *Robots in British Industry*, Policy Studies Institute, 1986.

Despite the recognized problems of definition, it has been estimated in a report from the Policy Studies Institute (PSI) that at the beginning of 1986 there were nearly 750 factories in Britain with robots, and between them they had about 3,200 robots, averaging about 4 per factory. While the total numbers have increased more than sevenfold since 1981 this has been from a low base — and the rate of increase in 1986 was lower than in the previous year (see table).

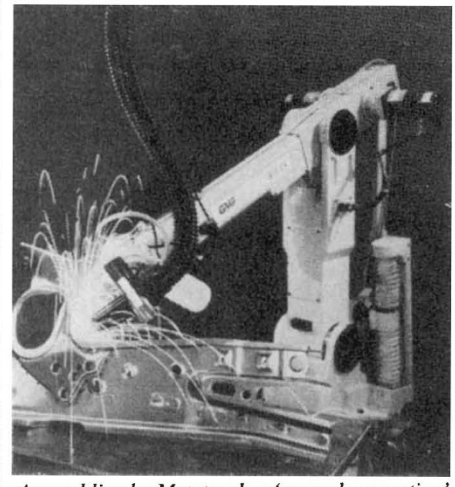
As might be expected, the robot users are to be found predominantly in the more sophisticated industries, particularly vehicles, aerospace and electronic engineering, with rather fewer in mechanical engineering. The robots are also much more common in large plants and in those using other forms of new technology. The larger companies' greater use of robots is put down in part to their greater wish to learn about the technology, as well as their greater financial resources and in-house expertise. Perhaps the most worrying finding is that robots are three times as common in overseas-owned companies as in British-owned ones. Although the final decisions to buy robots were normally taken by "head offices" or "company boards" the original ideas and motivation were more likely to come from plant management.

In 1982 the government established a Robotics Support Programme which initially included grants for feasibility studies, towards the purchase of robots, and for research and development work by robot manufactures. The scheme has been modified and renamed several times since, but grants are still available. Although the majority of users undertook feasibility studies before introducing robots, only one in four received a grant. One in six were not aware of the availability of the grants, for the rest the amount of money available was too small to be worth the trouble of applying. Rather more firms got grants towards the costs of the robots, half of those who were eligible, and for many the availability of these grants was an important, and often decisive factor in their investment decision.

The likelihood of opposition to new technology amongst employees — especially in its visible form as a robot — is often thought to be a barrier to its introduction. But this proved an unfounded fear amongst companies surveyed by the PSI, and shopfloor opposition was reported in only 2 per cent of the factories, with a similar percentage reporting opposition from top management. Before the robots were introduced 42 per cent of users reported their workforce to have favourable attitudes towards them, rising to 71 per cent after their introduction. Unfavourable attitudes, short of opposition, were reported in 9 per cent of cases before their introduction, falling to 4 per cent after. Four out of five users consulted their staff before introducing robots and this was closely related to the most positive of the attitudes reported. Half of the users said staff benefited from improved working conditions and safety.

A major concern for many is the impact on employment levels. This is not always easy to determine directly as the introduction is usually accompanied by other changes in products and factory organization, many of which may have been possible independently. In practice the study found that the majority of plants reported no change in employment levels as a result of the introduction of robots. However, one in four plants did report a reduction, this being especially true of the larger plants and those using robots over a longer period of time. The average loss in these plants was about 8 jobs each although there were compensating job gains in one in twelve plants. The PSI authors estimate there was a net overall loss of 700 jobs in all the plants using robots in Britain although direct redundancies were rare.

Looking to the future, 60 per cent of users expected to buy more robots in the next two years whereas it was in only a few plants that they said their existing robots had not been worthwhile. Overall, it is estimated that the robot population could grow from 3,200 in 1986 to between 4,200 and 7,200 in 1988, the lower figure reflecting the recent slowdown in growth and the higher figure being based on the optimistic outlook reported by the users themselves. The latter figure compares with recent growth in West Germany.



Arc welding by Metatorch, a 'second generation' robot manufactured by Meta Machines of Abingdon. (Science Photo Library.)

Clearly job losses in manufacturing are going to continue regardless; investing in new technologies is not going to be the major cause but its introduction can, however, improve competitiveness and help to stem the tide and must continue to be a key priority for companies, their workforces and government alike. □

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