

High tech for low-wage countries?

Automated sewing units

The use of automated sewing units is generally equated with production in high-wage countries – for the manufacture of shoes in an industrialised nation, for example. The aim is to automate work processes and use automatic machines in order to cut costs and so continue producing efficiently despite the relatively high wages paid in such countries. This, however, is at most only a half-truth – as the following article will show.

No-one would dispute that most rationalisation measures are triggered by the fact that the competition is able to offer either the same or a similar article at a lower price. Whether this competitive advantage is the result of lower wages, a more skilled workforce or cheaper raw materials, is a secondary issue. For the shoe manufacturer, the only thing that counts is its ability to reduce its prices ex works.

Now one might suppose that if labor costs are low, as is generally the case in developing countries, the use of automated sewing units will not help reduce costs at all. Experience has shown, however, that there are other criteria favoring the use of automated sewing units and these conditions are especially applicable in low-wage countries.

The limits of rationalisation

Before discussing these criteria in any detail, some comments on shoe production with the aid of automatic machines in general.

The fact of the matter is that despite the use of all these automatic machines, it has not been possible to maintain the competitiveness of shoe production in the industrialised nations against that in a low-wage country. There are several reasons for this:

1. Automatic machines are highly specialised, capital-intensive production facilities which, if they are to be used efficiently, de-

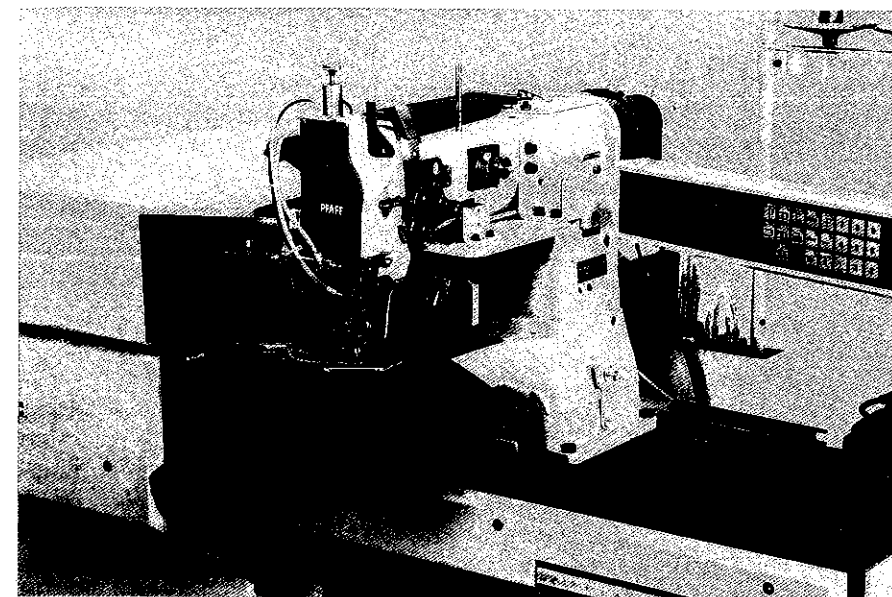
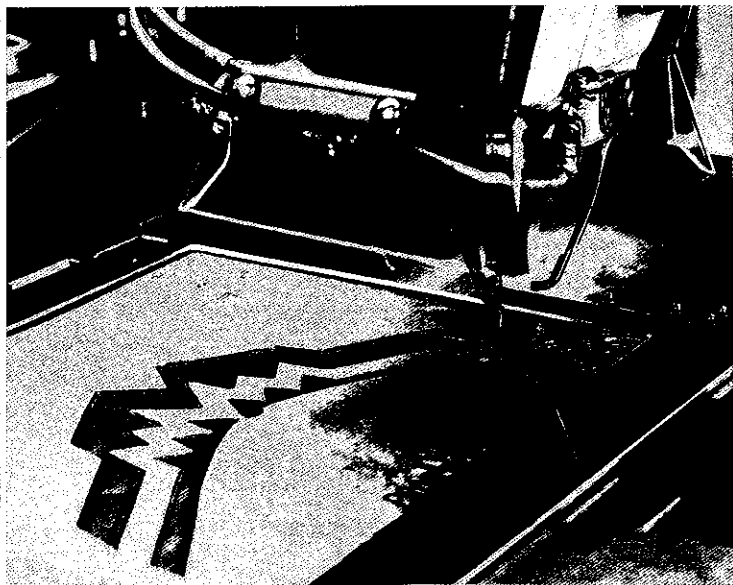
mand large pair numbers. Although the modern automatic machines now used for shoe production are highly versatile and, to a certain extent, can be adapted quickly to changing articles, the fact remains that for small-series production, they are not profitable as a rule.

2. In shoe production, the trend is towards ever smaller production series. Retailers are seeking to distinguish themselves by offering ranges which are as individualised as possible. They are demanding shorter and shorter delivery times for additional supplies while at the same time reducing the initial quantities ordered in order to avoid running storage risks. As the whole business is divided up into four seasons, it is all but impossible for the shoe manufacturer to run large series of a given article.

3. Shoes manufactured in the industrialised nations are inevitably more expensive than those from low-wage countries. To compensate this disadvantage, the former have to have special features as well as being available fast. This too, has a detrimental effect on batch size.

4. The most important point of all is that to a large extent, the shoes produced in developing countries are made using the same machines and the same techniques as those used in the industrialised nations. Gone are the days when all that was needed for a third-world country to begin shoe manufacture was a repainted, second-hand machine. These days, if a large shoe enterprise decides that a particular country is a suitable production location, then new, state-of-the-art shoe factories will be built there. Often, entire factories are moved from one country to another, simply because the production costs in one are somewhat lower than those in the other.

Pict. 1: Working area of the automatic sewing machine 3574-2/02 (photo by Pfaff)



Pict. 2: Automatic sewing unit 3574-6/01 (photo by Pfaff)

Numerous advantages

Productivity

As already mentioned, the use of automatic machines increases output considerably, which in turn brings about a reduction in unit labor costs. This, combined with what are already the low wages paid in developing countries, increases the competitiveness of these countries which in turn results in larger pair numbers. To this must be added the fact that the shoes produced, if manufactured by a large shoe enterprise, will be sold all over the world – yet another advantage.

Concentration on fewer jobs

By combining several operations, automated sewing units make it possible for complex sewing work to be concentrated on fewer jobs – this resulting in far more efficient production.

Quality assurance

The repeatability of the sewing operations stored in automatic machines cannot be achieved on standard machines. Especially when it comes to changes of personnel such as those required in shift operation, an automatic machine will ensure the reproducibility of the operations being performed. In low-wage countries in particular, the assurance and monitoring of quality is one of the most important issues and it is here

that automated sewing units offer a high degree of security.

Work on standard machines presupposes a lengthy training period, which still cannot guarantee the consistent quality of the work performed. Automated sewing units, on the other hand, require only a brief training period and work, as it were, with in-built quality. After all, the less influence a worker has on the result of his or her work, the less likely it is that he or she will do something wrong. In the developing countries, most of those employed in shoe factories have no prior knowledge of industrial production. Perhaps, at the very most, there was a hand-driven sewing machine at home, used to make simple clothes. And in shoe manufacture in particular, stitching is the most difficult of the skills to be learned. Given this situation, the use of automatic machines ensures a consistency of quality as well as providing a certain degree of protection against the loss, by fluctuation, of skilled workers and the resulting production bottlenecks.

Work-place design

Ergonomic work places are now up and coming the world over. After all, not only do they prevent sickness, especially those disorders which are caused by false posture, but they also increase productivity. In this respect, automated sewing units again have advantages as they are generally

purchased as complete systems. This means that the machine and machine frame (if required), the material feed and removal facilities together constitute a single unit. In the case of automated sewing units, this means fewer and simpler handling operations, low-fatigue operation and hence, as a result of all the above, fewer demands on the ability to concentrate.

Reliable function

To this must be added what, even today, are standard accessories such as thread monitoring or automatic part recognition. Any operating errors or machine disturbances are displayed on a screen and so can be detected quickly. Furthermore, a number of different machine functions, such as backtacking, thread-trimming, the raising of the needle at the end of the seam and lifting of the presser foot, are integrated in the automatic sequence.

Thread tension and its adjustment to different material structures as recognized by the machine by the change in clearance between the high and low presser foot position, are also controlled automatically.

Final comments

To summarise, it can be said that the use of automatic machines of all kinds is not only a consequence of the high labor costs in industrialised nations but is also in the interests of quality assurance. This is because work which is performed by a machine is no longer subject to human fallibility. This is also applicable for developing countries in which very few of those employed have any prior training in a skilled trade. In the shoe industry, this problem is especially apparent in the closing room, which of all the various aspects of shoe manufacture makes the most exacting demands of the employees. From a certain quality standard upwards, above all if the shoes manufactured are to be exported, automated sewing units are a good prerequisite for meeting the standards required in a relatively short period.