Extending the Ehingen Plant for Future Mobile Crane Manufacturing Needs

Talk by Josef Hauser,
General Manager, Liebherr-Werk Ehingen GmbH,
to representatives of the European specialist press
during the Information Tour in Ehingen on May 10, 2001

Ladies and Gentlemen,

Although my remarks are mainly concerned with the present and future of Liebherr-Werk Ehingen GmbH, I would like to begin with a look back into the past.

The background to this plant extension

In the 1960s, the site on which this plant now stands was agricultural land. At the end of 1970, the company's first full business year, the site measured 162,000 square metres, there were 372 employees and the annual turnover was 8.7 million Marks.

Ten years later the site area had grown to 207,000 square metres and the workforce to 1,100 people. In 1980, turnover was in the region of 294 million Marks. Another ten years on, in 1990, the site occupied 230,000 square metres but the workforce had grown at an even faster rate, to 1,572 employees, who generated a turnover of 778 million Marks.

Immediately before the latest plant extension, which I would to describe to you now, Liebherr's Ehingen site was 331,000 million square metres in area. In 1998, turnover reached 1.3 billion Marks, earned by a team of 1,683 employees.

These production and turnover figures from various stages in our history are clear evidence of the above-average rate at which our company has grown. Output has in fact doubled within the last four years.

One of the most decisive factors in this most welcome trend was the worldwide growth in sales of our all-terrain cranes. By 1997, we were already obliged to consider expanding the plant quite considerably. Despite a variety of optimisation measures, the available buildings simply did not provide us with the space we needed to tackle future tasks, and we found ourselves more and more up against our capacity limits.

The space we had at our disposal clearly made it necessary for us to expand in a northerly direction. This called for a prolonged approval process, since the proposed site area included a dry valley which had to be filled to a depth of 28 metres at some points.

The official approval procedure was completed in an exceptionally short time, thanks to the cooperative attitude of the public authorities concerned. The public in the region and beyond also accepted the model character of our plant expansion as a desirable economic promotion measure.

Before we were able to start construction work, we first had to purchase a plot of land measuring 210,000 square metres, bringing the total site area to 535,000 sq. m. Preparation of the site involved more than a million cubic metres of earthmoving work, including 570,000 cu. m. removed and 480,000 cu. m. filled.

Choice of the new building concept

When a project of this kind is planned, increased capacity is of course accompanied by the desire to boost productivity and make the company more competitive. Among the targets are a reduction in costs per unit and optimised throughput times. We tackled this in two ways, by holding fast to well-proven principles but also by adopting the very latest findings in factory planning wherever they were appropriate. We attached particular importance to remaining sufficient flexible in view of the changes that are bound to occur.

In the past eighteen months we have built a new production building which, together with the administrative and welfare rooms associated with

it, covers a total area of 44,000 square metres. The assembly shop itself is 372 metres long, 100 metres wide and up to 25 metres high.

The new assembly shop is entirely devoted to this one purpose. It is where the cranes' main components, the chassis and the slewing platform, are assembled, after which the boom is brought in from another part of the plant to complete the crane.

The building next to the main assembly hall is where the integrated 'internal suppliers' of items such as the crane and vehicle cabs are located.

The assembly sequence in the new building

The successful assembly-line principle has been retained. There are two such lines – which we refer to as 'chains' – in parallel inside the new assembly building, one for the slewing platforms and one for the vehicle chassis.

All the assembly 'chains' are synchronised so that the correct slewing platform reaches its chassis at the correct moment. Pre-assembly points are located parallel to the chains, and used to build up such items as winches, sliding outrigger posts and other mechanical assemblies and supply them to the final assembly line. A similar principle is used for the crane operator's and vehicle cabs.

The slewing platform and the vehicle's chassis, the two main elements of the crane, are brought together on the last third of the assembly line with the pre-assembled boom, so that the crane is complete.

The new building has the space we need to plan ergonomic work-areas for each specific purpose. The employees themselves can design their work stations so that the best possible working sequence is obtained. Inside the new building, the spacious, open atmosphere has a positive effect on employee motivation, and it goes without saying that we have incorporated the latest industrial safety and environmental protection standards into our new assembly shop concept.

Material logistics and work organisation

The assembly processes I have just described naturally call for advanced material logistics, although these are not always visible but take place ‘behind the scenes’. The principle is for production material to reach the assembly lines without having to pass through an intermediate store. For example, axles are delivered just as they are needed and reach the preassembly points without spending any time in a buffer store. The same applies to other major components too, such as engines, transmissions etc. They are all supplied to the plant in accordance with actual demand. To control this procedure the entire assembly shop is divided up into addressable work areas to which the material is delivered. This would be inconceivable without a powerful PPS system and the necessary data processing infrastructure. Our internal departments, incidentally are integrated into the same material flow procedures as the outside suppliers and have to reach the same standards of quality and punctual delivery.

Our assembly structure is based on an in-house manufacturing depth of between 15 and 20 percent, depending on the type of crane. About another 15 percent of the components come from other Liebherr Group companies, in particular engines, hydraulic components, transmissions and electronics.

Altogether, a vast of flow of materials passes through Production every year – about 80,000 tons in all. Every working day, between 80 and 100 trucks discharge their loads here in Ehingen.

Apart from the general organisational and logistic conditions that have been set up, we have naturally invested in new mechanical handling and assembly equipment as well. For example, there are 24 large indoor cranes, 65 gantry cranes and 24 wall-mounted slewing cranes.

The robots we use to install the axles are an entirely new, state-of-the-art design, particularly as far as their control technology is concerned. The dame applies to their sliding-arm guides and the rotating device for the vehicle’s chassis frame.

Sometimes quite small design details represent a genuine improvement. All the work areas in the new production shop are equipped with overhead

energy supplies, for instance, and air-cushion transport systems will soon be installed to make movements of heavy components easier.

Apart from organisational and technical matters such as these, we must never forget the importance of employee motivation and the workforce's readiness to play an active part in putting these ongoing improvements into effect. These are also decisive success factors for the company. A thriving, dynamic company is particularly dependent on its creative, well-trained personnel. Training and the acquisition of additional qualifications are important matters, and we encourage them wherever appropriate.

A continuous improvement process means that all the company's employees are called upon to contribute their own knowledge and experience so that our work processes can be optimised. We are working intensively to achieve this.

Our plans for the future

You may be wondering what we intend to do with the unoccupied space in the existing buildings. First of all, they give us a fine opportunity to optimise our work processes in other areas too. For instance, the complete boom construction facility is being moved to the former final assembly shop. This will open up new perspectives for this work area. It will be easier to assemble and test the longer booms in these more spacious conditions. This in turn will release further space that will be taken over by our sheet metalworking and mechanical production departments. All these moves will eliminate the restricted working conditions with which have had to contend until now.

These internal optimisation processes are to be accompanied by further investment. The concrete is already being poured for the foundations of a new repair shop. The move is planned to take place in December this year, after which we shall be able to offer our customers an even better standard of after-sales service. When they purchase a new machine from us they can be sure of being offered all the services that they expect from a competent partner, whether it be trading in existing machines, maintenance and reconditioning work or repairs after an accident. However, our reconditioning and repair work is restricted to cranes made by Liebherr.

This summer we shall start construction work on a roofed-over despatch building, intended for the handing over of cranes to our customers and for easier loading of items of equipment which they have purchased. This construction work should be completed before the end of 2001.

Two further extensions are planned for 2002. One of them is an enlargement of the pre-delivery assembly area, the other is an addition to the administrative block with a view to providing the development staff with urgently needed extra space.

Summary

Ladies and Gentlemen,

We are confident that Liebherr-Werk Ehingen GmbH now has production facilities that not only conform to the very highest standards but also put us in a position to face the challenges of the future and use them as an opportunity for further progress.

Thank you for your kind attention.