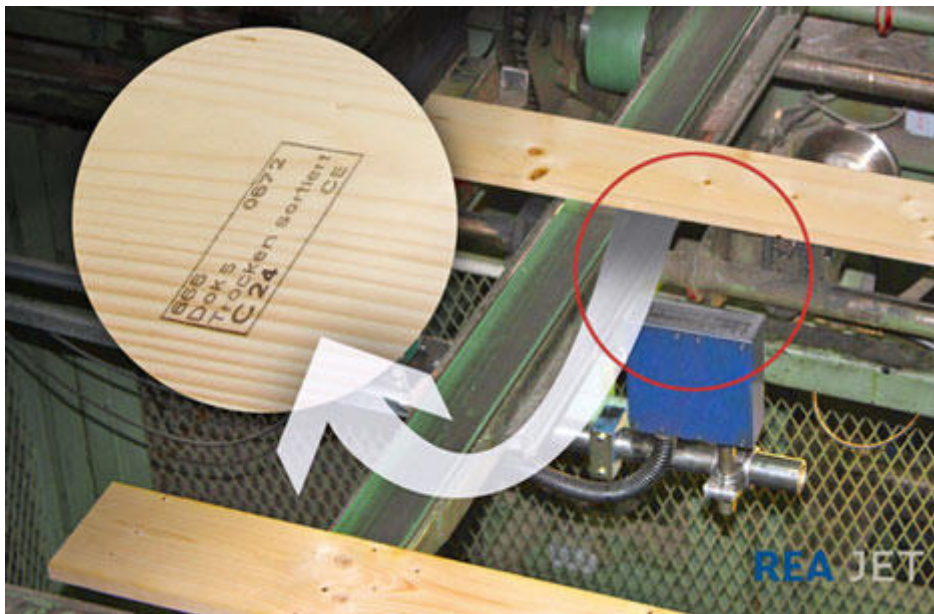


## CE marking on wood in high resolution

As of September 1, 2009 every manufacturer that sells lumber will be subject to increased accountability. This is because the new CE mark will require extensive coding and marking for the free movement of goods throughout Europe – and it will be required for each piece of wood. The article indicates which requirements are placed on printing systems in the sawmill and woodworking industry.



The coding and marking of products with logos, texts, and codes forms an integral part of almost all branches of the industry. This includes sawmill work and woodworking. However, up until now little information has been printed on the products. But that will change this autumn. As of September 1, the new CE mark for the free movement of goods throughout Europe requires that manufactured products meet the requirements of the applicable EU regulations. The requirements of the individual countries will be brought under a common standard. Though this appears to be a positive development at first glance, there are long-term implications for this branch of the industry. For example, each individual piece of construction lumber must be labeled with information on tensile strength (bending stress in N/mm<sup>2</sup>). Furthermore, numbers are also required for the certification office, the supplier, and other information (e.g., dry sort).

The reason for this is that different countries have different regulations in place for the use of lumber. Thus structural engineers will designate a specific tensile strength class in their designs, which then has to be implemented by carpenters. While C24 is the general standard in Germany, C16, for example, is the mandated quality class for exports coming into many of the significant neighboring European countries. In some countries it is also becoming more common to see a mixture of wood quality requirements in packages from the customer, meaning the same cross section with different tensile strength. To ensure financial feasibility in implementing the new CE marking in the sawmill and woodworking industry, the marking of lumber must be automated in production as much as possible.

With around 1,500 employees, the Klenk company in Oberrot is one of the largest wood processing companies in Europe. The lumber it produces is supplied to the construction industry, to home improvement stores, and to the packaging industry. It ranges from construction and profiled lumber to plywood and pallet blocks. All types of wood originate from domestic and perpetually cultivated woodlands – which consist of such trees as the spruce, fir, march pine, and Douglas fir. How will the new CE marking affect companies such as this one, which has an export share of around 40 percent?

### **100 ml printing height with 42 lines**

The automatic coding and marking of lumber will place several demands on the printing system. One of the most important of these is high resolution, since with the new regulation a wide range of information has to be printed on surfaces which can sometimes be quite small in parts. Furthermore, it must be quick and flexible to ensure a proper printing effect on lumber of varying tensile strength. The systems that have been used at Klenk in the past are no longer able to meet these requirements. So that it can continue producing efficiently, the company has invested in five new coding and marking systems from REA Elektronik.

These coding and marking systems from the GK 768/256 series were specially designed for printing on absorbent surfaces. With 256 selectable channels, they can print up to 42 lines simultaneously at a print height of 100 ml max. They handle all the current linear barcodes and the 2D Data Matrix code – ECC200. In addition, the standard version includes an Ethernet port and they can also be directly connected to a network via TCP/IP if necessary. The REA-JET Print Commander, a PC-based software, is used for program control. Here all the important functions are combined under a single user interface in the standard Windows operating system. The user has access to up to 100 variables per print head, which means texts, logos, and barcodes on up to 999 storage spaces which can be printed at a max. product speed of 200 m/min.

Considering that Klenk's requirements call for "only" around 15 different printing contents and a conveyor speed of 30 - 40 m/min, this clearly falls within the capabilities of the system. But the resolution is where this system really shines. That's because the 256 available channels are not only a requirement for the legibility of the information in small print, but also for one of the special applications - the rotation of the printed image by 90 degrees. This means the GK 768/256 print head can also be used to print "crossways". This has the considerable advantage of allowing users to print all the required information where necessary on the lateral edges of the lumber at a width of only 30 mm while maintaining excellent quality.

How did Klenk solve the problem of coding and marking with different print contents in the production process? To begin with, the question of detecting wood quality had to be addressed. Although these days almost everything is automated, this process is not one of them. Here experience is the key. This is because the stability of a piece of wood is determined by such factors as the variation in the fiber along the longitudinal axis, as well as the diameters and positions of knots. As Jürgen Dietrich, a product manager, explains: "In stamping a specific strength class the "zero edge" of the lumber that does not satisfy the desired quality gets manually displaced to some extent. So later when they are being transported they are no longer detected by a light sensor and are automatically assigned to another sorting."

## **Overhead printing**

One special requirement for the coding and marking systems in this application consists of printing lumber from the bottom. This is because even with a slight distortion the top of the wood can touch the print head, as the clearance is only 3-4 mm. On the other hand, the bottom edge must not fall below a specific threshold due to the conveyor chain. This version is the worst possible position for a print head. For that reason printing almost always occurs from the top or from the side. Therefore the application at Klenk is very demanding in terms of speed and the minimal spread of the ink drops. Only then is it possible to achieve clean print results with minimal smudging of the nozzle plate on account of the gravitational force. "And this system is capable of that," says Jürgen Dietrich. "Even in this position it allows for smooth coding and marking and the nozzle plates don't have to be cleaned either."

In addition to technical expertise, REA Elektronik also offers users another advantage. The software, ink systems, and electronic components of coding and marking systems are all developed or manufactured in house - and this enables customer-specific applications to be developed. This might involve the customization of software for a special application or a special long tube for ink supply, as with Klenk. One of the recent programs developed at REA is the software DataCon, which supports linking to different databases. The advantage it offers is that all text elements, logos, and codes which it stores can be automatically included in the print layouts.

**Contact Sarah on 01292 611647 for further info**