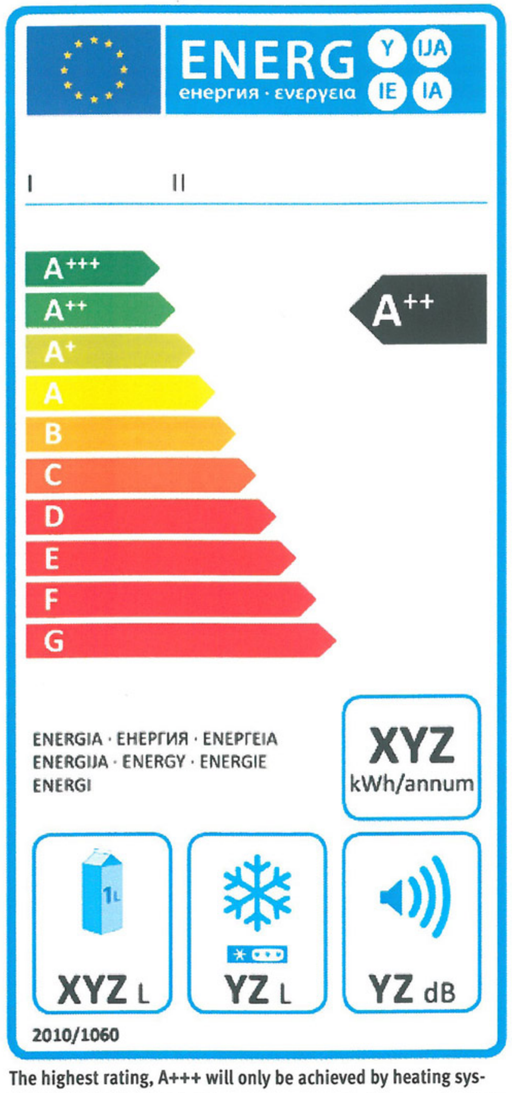
Standards and labels

It is important to develop new technologies, reduce prices and bring improved products onto the market, but it is also complicated. As was shown at the international flagship conference of the solar thermal industry, SMEThermal, limit values and labels can be just as vital.

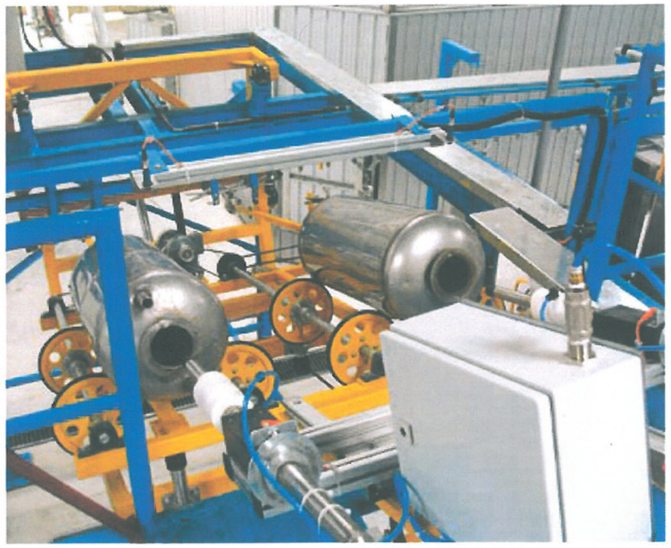


The highest rating, A+++ will only be achieved by heating systems that use solar energy. Photo: European Commission

The enamel industry is just one sector facing great challenges in the jungle of industrial standards. In the course of implementation of the European chemicals regulation REACH, the suppliers of the raw materials for enamelling have eliminated the carcinogenic ingredient nickel oxide from their recipes, as Development Manager Dieter Patou from the Belgian coating manufacturer Pemco Brugge BVBA reports. Cobalt and manganese compounds are used instead. No limit value for cobalt is quoted in the European drinking water regulations, whereas for manganese, the threshold to be observed is 50 µg/L, and for nickel 20 µg/L. Last August, however, the German Federal Environment Agency (UBA) presented a new draft which aims to impose significantly stricter limits. For both cobalt and manganese, a limit of 5 µg/L is proposed, a value which can hardly be observed for enamelled storage tanks.

Patou has identified another limit value from the German DIN 4753-3 standard as being particularly critical. This standard defines requirements to be met by enamel corrosion protection, for example that the weight loss for an enamel layer exposed to boiling water in a standard test must not exceed 5 µg/m². "This value is set too narrow," says Patou. "It needs to be raised to 8.5 µg/m²." As long as the stricter limit value applies, it is practically impossible to get a water storage tank certified in Germany. And that naturally affects also all those manufacturers elsewhere who would like to enter the German market.

Enamel is the standard form of corrosion protection for drinking water storage tanks in many European countries. Even outside Europe, the interest in enamel is growing. After all, the alternative of stainless steel is not compatible with every drinking water. A high chloride content, in particular, is deadly for stainless steel. In many cases, it is also simply the poor quality of the stainless steel and the contamination with ordinary steels. According to Brigitte Riester-Alt, Marketing Manager for E.I.C. Group Enamel Industrial Coatings GmbH from Germany, this



Automatic flooding machine: German manufacturer E.I.C. offers production lines for enamelling. Photo: E.I.C.

explains why stainless steel tanks often already display the first leaks after two years. Riester-Alt also dismisses protective coatings using polytetrafluorethylene or other polymers as unsuitable for hygiene reasons.

E.I.C. has been supplying manufacturing lines for the enamelling process for 30 years. Everything happens fully automatically, from pretreatment of the steel, via the dry or wet application of the coating, through to firing in the kiln. Throughout the process, the company pays great attention to ensuring the minimum possible loss of base material and the lowest possible energy consumption for the burners. As such a line means a considerable investment, the comparison with stainless steel tanks only becomes positive where greater numbers are involved. The lower material costs then start to take effect. Riester-Alt quotes 300,000 storage tanks per year as a typical manufacturing capacity.

One argument in favour of stainless steel is the reduced investment outlay. German supplier weil engineering GmbH offers laser welding systems for tank manufacture, both as turnkey solutions and for step-by-step integration into an existing manufacturing set-up.

The laser welding systems are designed to butt-weld stainless steel parts. For European Sales Manager Richard Petersen, the most important advantage of laser welding compared to other welding technologies is that less energy is introduced into the material, and there is consequently less deformation.

Weil also uses a laser to weld ordinary steel. In such applications, however, the tolerances are greater and so it is possible to work with folded edges rather than butt welding. The fully automatic lines from weil here incorporate another clever feature: given the wide tolerance range for the tank covers, the system measures each cover plate and then produces an exactly matching cylinder before welding the two together.

[redacted] built itself a machine that can laser-weld fin absorbers.

cated in an industrial area of Inofyta a half-hour's drive north of Athens, invested € 1.2 million in automated harp register soldering machinery and a laser welding system. "Without a laser welding system for manufacturing aluminium absorbers, it is no longer possible to compete on the international market," explains [redacted].

Actually, the company had been planning to open a new, larger plant at a new location soon but had to delay the plan due to the financial crisis. It did not, however, delay the development of a collector with a deep-drawn aluminium basin as a housing. The company produced the collector to meet demand from some of its customers. [redacted] The company, founded in 1984, supplies 90 % of its products to solar thermal providers; 45 % are exports.

Greek exporters oriented toward international standards

Greece's manufacturers offer a broad spectrum of collectors and systems. They include copper and aluminium absorbers, painted black or with highly selective vacuum coatings. Most carry not only thermosiphonic systems but complete combination systems as well. In order to compete on the international market, Greek companies strive for Solar Keymark certification; some even undergo testing for the American SRCC standard. In order to compete globally they have to keep production costs low.

Flexible production is of primary importance, which is why many Greek manufacturers – while using automated absorber manufacturing – still assemble collectors manually. "It is very difficult for us to automate the complete production line. If we would have one or two collector frame sizes it would be possible. But we have to work with many different sizes, with many different profiles and many different colours," explains [redacted] That requires an extensive materials warehouse. "To have all that different raw material in stock makes our life difficult, but keeps us alive," [redacted]

Company increases its machinery

[redacted] automatically solders harp registers and connects them to the absorber plate with a laser welding machine. Unlike [redacted]

Greece's Sole can show a long list of projects across the globe. The latest is the system on the world's tallest building in Dubai. Sole supplied the collectors. Photo: Sole