

LIQUID SOLAR LAMINATION

The new production process without EVA

Liquid solar lamination sets out to revolutionize the production of PV modules. It offers a proven alternative to EVA-films and vacuum incubation. Cell protection is achieved by means of a liquid sealing agent which is applied without vacuum at only 80°C / 176°F for 2 minutes! The sealing agent is completely transparent and can be used for all cell types: front-contact, back-contact or thin-film.

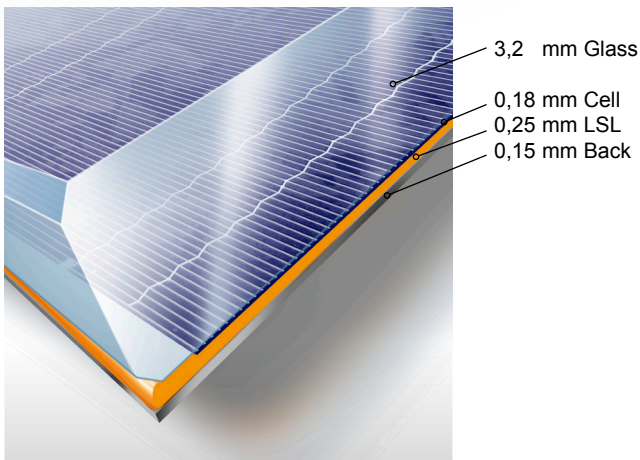
For all new and existing production lines

The fully patented solution can be incorporated in existing production lines to reduce running costs and energy input. It can also be the core of new production lines that require less space, less workforce and far less resources.

Superior module quality

The new production process of liquid solar also improves the finished product. PV modules with liquid solar lamination are more stable in Damp-Heat-Tests, are less prone to cell-cracks during production and tend not to delaminate. This means a longer service life with higher solar yields.

In short: liquid solar reduces costs, speeds up production and improves module quality.

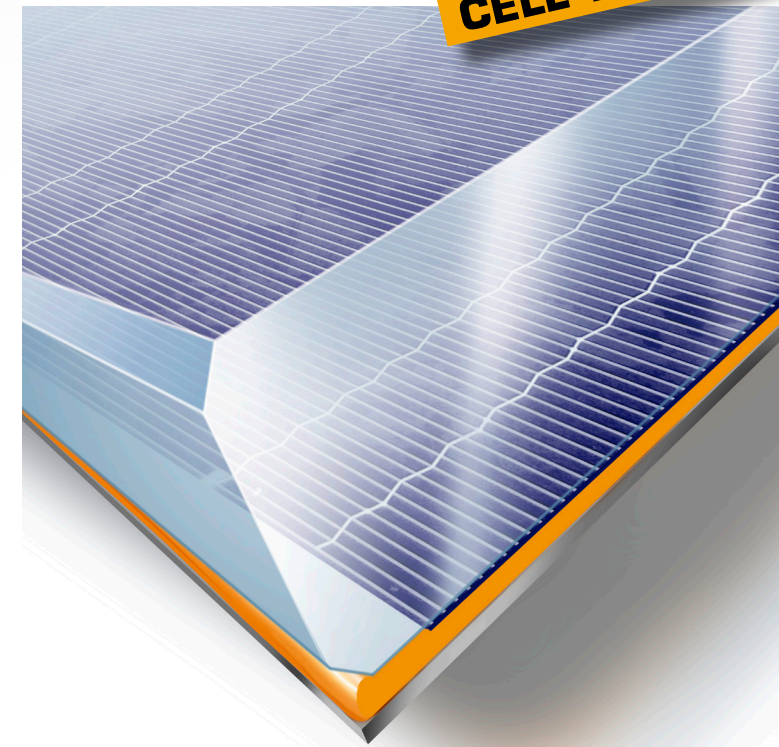


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LIQUID SOLAR LAMINATION

The first real Innovation in 30 Years of Laminating PV-Modules

**FOR ALL
CELL TYPES**

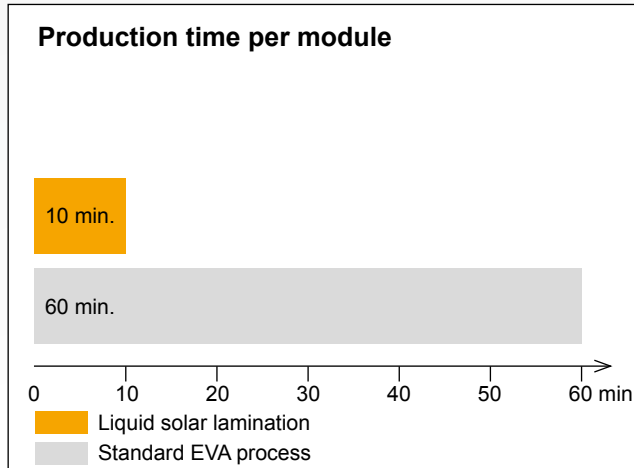


FASTER

Time is money and if you want to speed things up in a production line, you usually have to multiply stations.

This is where liquid solar lamination steps in. Liquid solar lamination offers a production innovation that completely eradicates the vacuum incubation processes and does away with EVA-films altogether.

Production time in a single station production line is cut from about 60 Min./module to about 10 min/module. At far less investment costs for the lamination station.

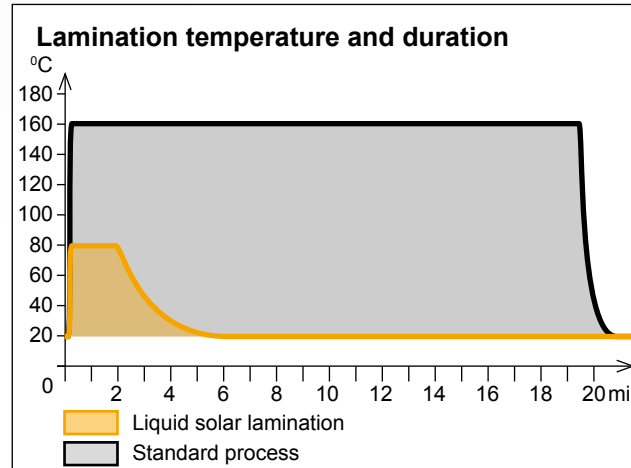


- Less investment
- Very little work force required
- More output

MORE EFFICIENT

Efficiency is essential for any production line. At present, the vacuum incubation to bake in a module takes 20 minutes at 160°C/320°F – plus warming and cooling. Liquid lamination takes only two minutes at half the temperature, warming is incorporated in-line before.

Liquid lamination is about 10 times faster than vacuum incubation. The output efficiency of any production line can be improved simply by exchanging the lamination process. And, what is even more important, liquid lamination uses far less energy to heat, uses no vacuum and does not require any cooling.

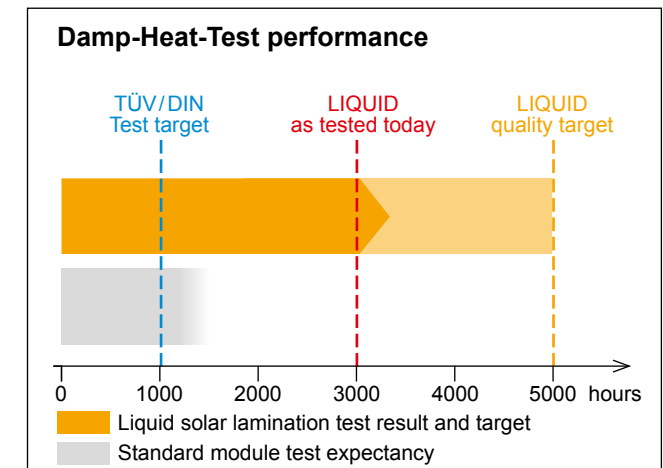


- Faster lamination
- Less energy required
- No vacuum

BETTER QUALITY

Up until now there was no alternative to EVA lamination. That meant, that cells were prone to micro-cracks due to high pressure during production. Also, delamination over the years could be a problem.

This is now all in the past. The liquid lamination process offers far improved module production with very little cell and module failure. The finished module is more stable over its service life and thus produces more solar power. To prove this test modules with liquid lamination have passed over 3,000 hours continuous Damp-Heat-Tests and our goal is the 5,000 hours mark. Standard modules start to fail around the 1,500 hours mark!



- Lamination without pressure or stress
- Less failures and better quality control
- Better module quality