

The sun rises in the North!

SAVOSOLAR 

**Aluminium absorber comparison:
Performance, production and costs**

SMEThermal

29.1.2013

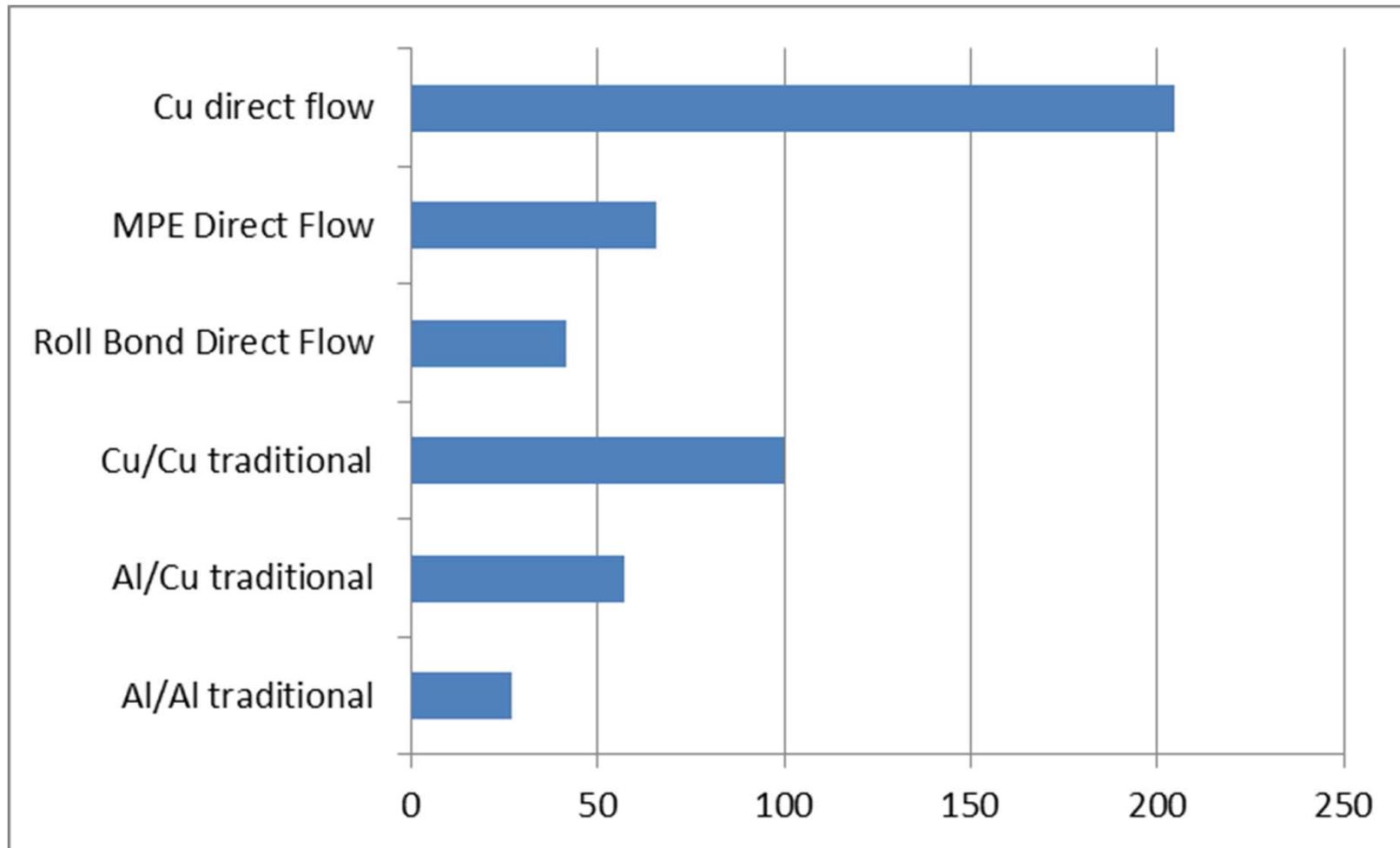
Jari Varjotie, CEO

Solid foundation for growth



- Founded December 2009, operations started on April 2010
- Based on strong R&D and vacuum coating competence
- World class team with extensive experience in international operations and consisting of six different nationalities
- Existing industrial scale of operations
 - Facilities and equipment
 - Quality system ISO9000 certified
 - Solar Keymark received for two collector types
- Deliveries so far in nine European countries and in South Africa and Japan

Why Aluminium => Cost Reduction



Material Cost Index: Materials for 2,2 m² aperture area absorber; Cu/Cu traditional = 100

Why Al Direct Flow Absorbers => Superior Efficiency

- Direct flow absorbers are having the highest possible fin factor which with a good absorbance coating leads to the most effective absorber.
- Absorber is the heart of a collector and any high end collector needs the best possible absorber which is a direct flow absorber.
- The Direct flow absorbers can effectively been manufactured from Al in form of MPE absorbers from Hydro HyLife MPE profiles or by Roll Bonding used by CGA Technology (European Partnership with Savosolar)

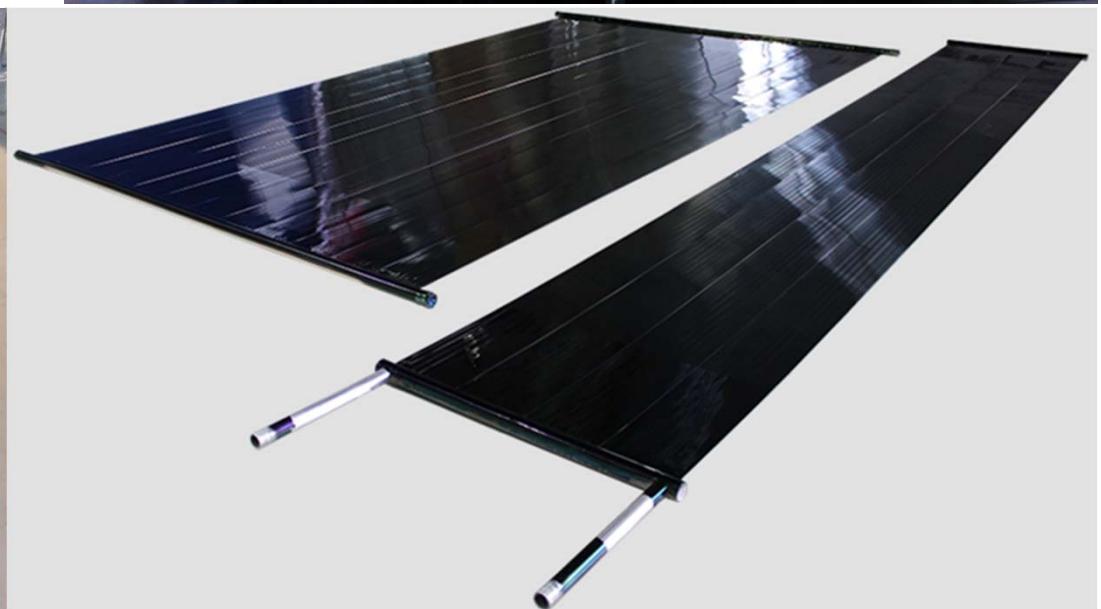
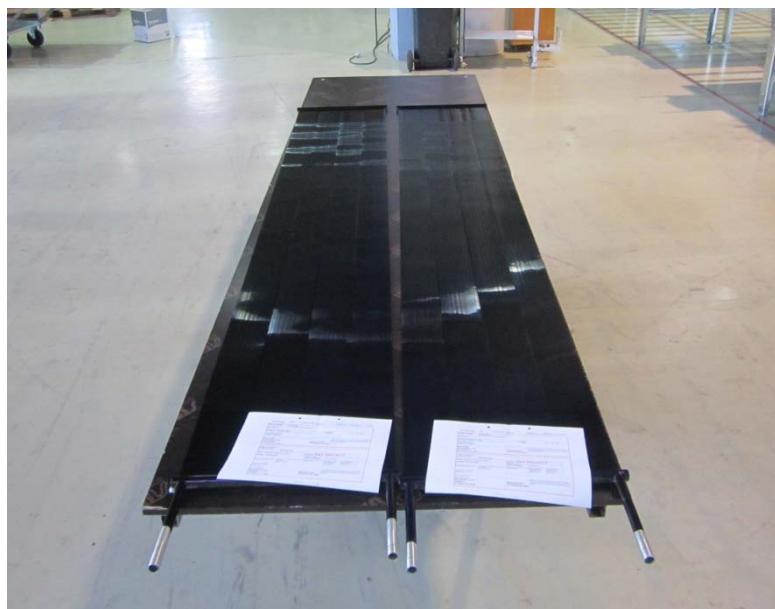
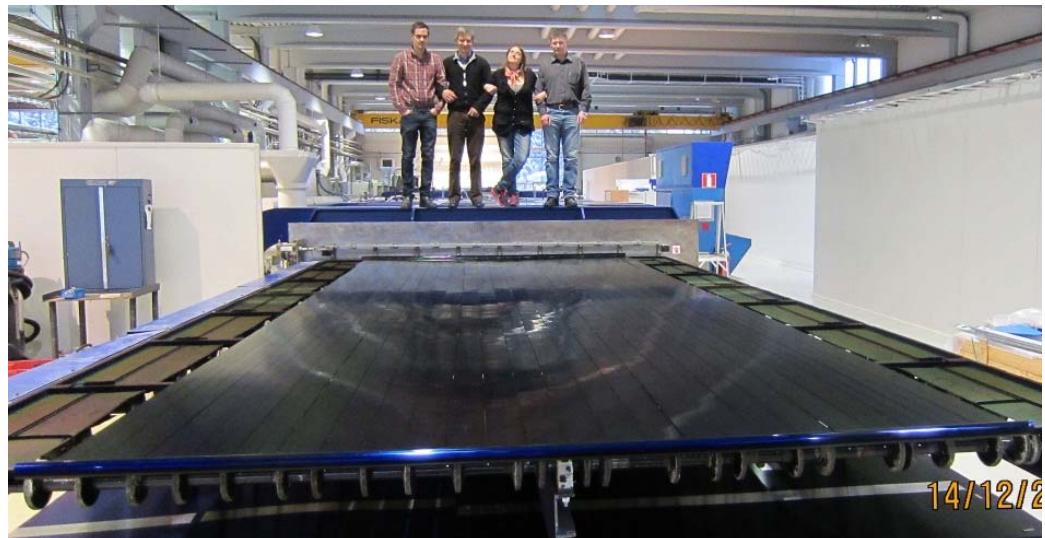
HyLife™

– a trademark of Hydro



MPE Direct Flow Absorbers

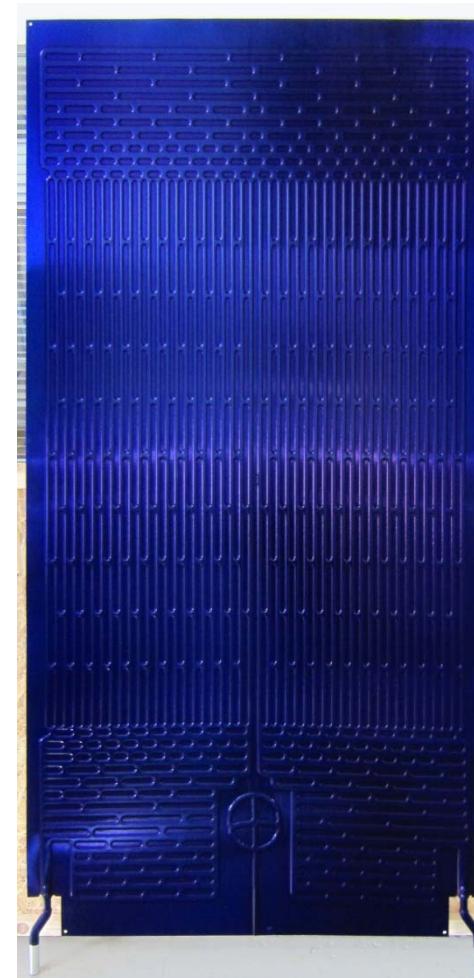
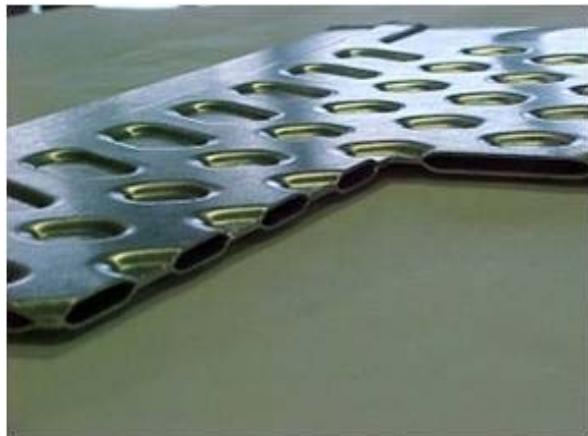
All sizes up to 18 m²
for all applications



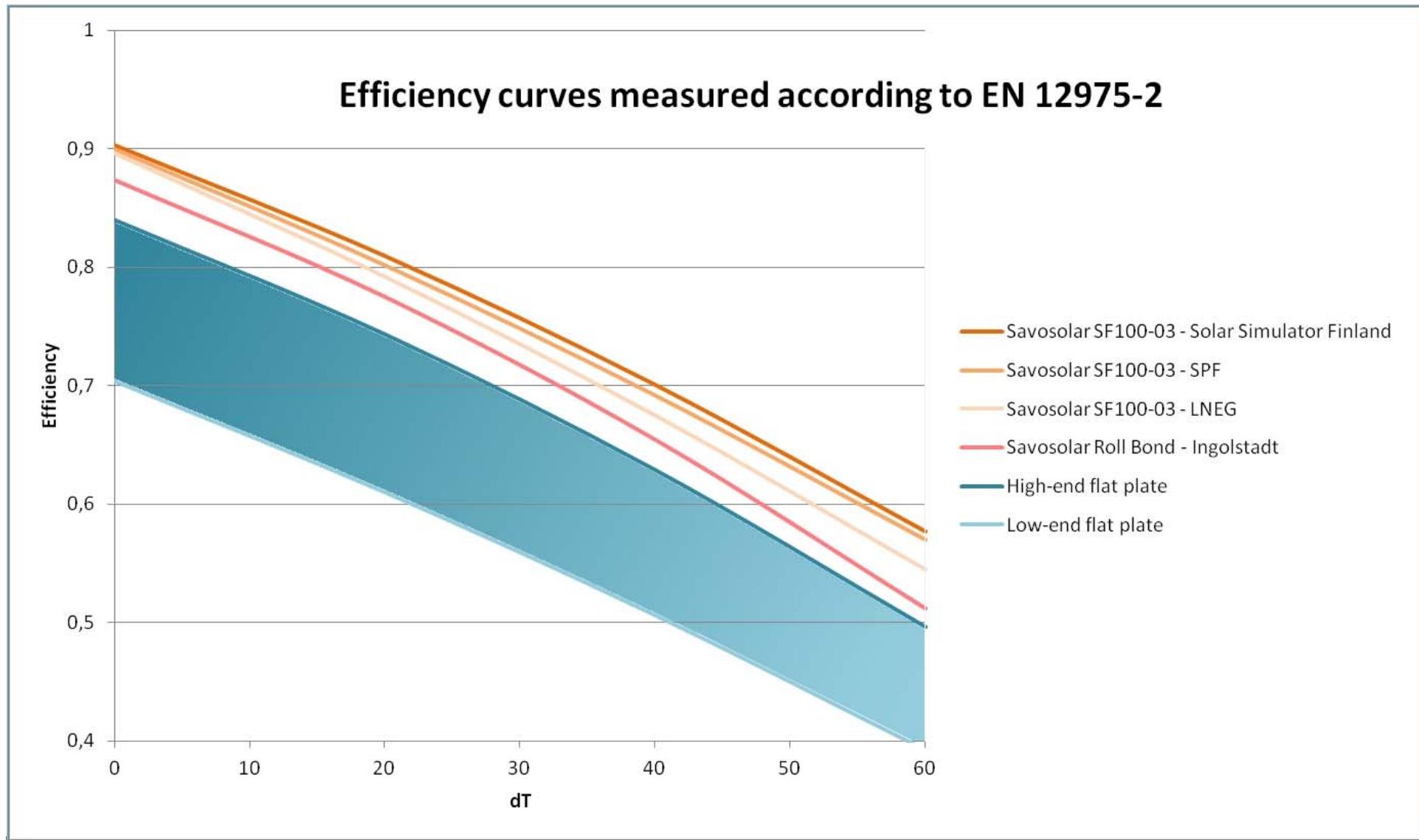
Roll Bond Absorbers



- Maximum size 1 x 3,6 meters
- Thickness: 1,5 mm
- Double side inflated.
- Taylor made design according to the Customer needs
- Possibility to have non rectangular geometry.
- European Project Bionicol with ISE Fraunhofer Institute (www.bionicol.eu)

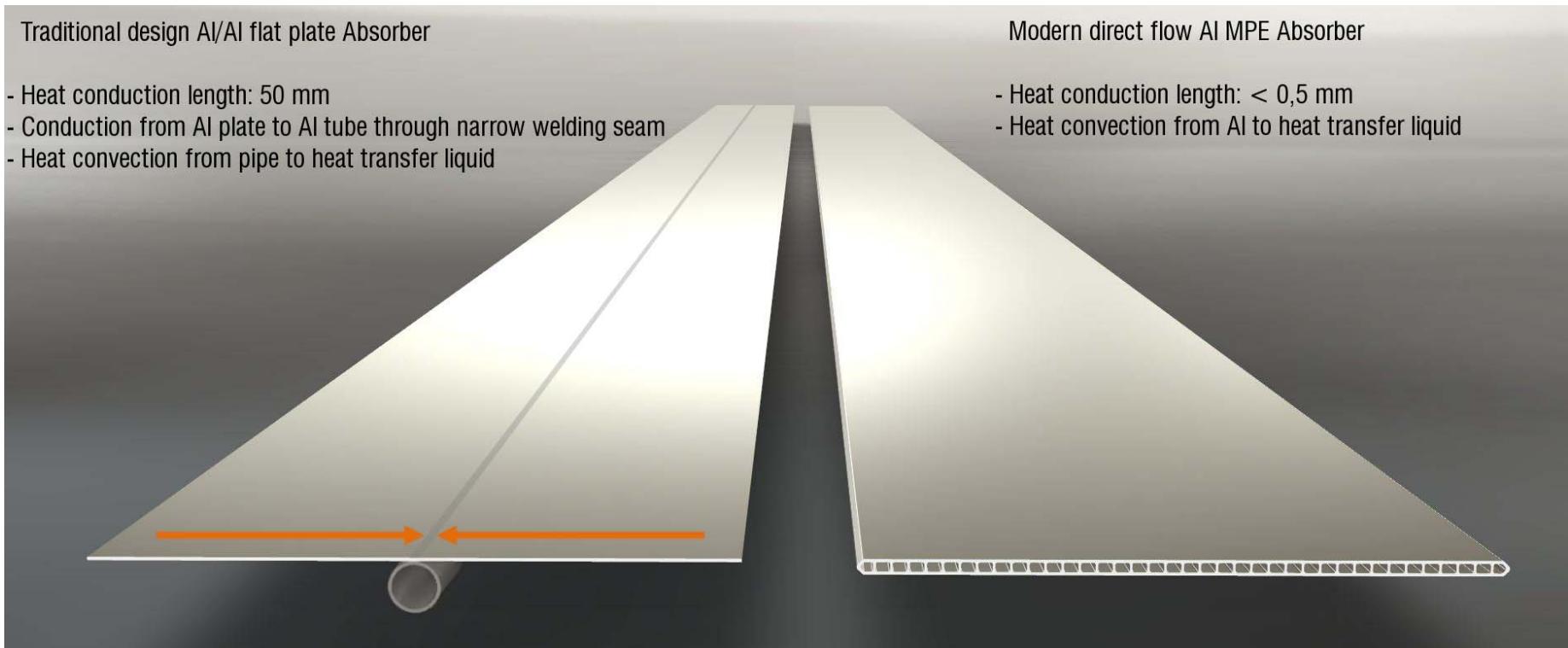


Why AI Direct Flow Absorbers -> Superior Efficiency



High Efficiency due to the Direct Flow

Comparison of the flow structure in an traditional plate/tube absorber and a modern direct flow MPE absorber from Hydro HyLife alloy

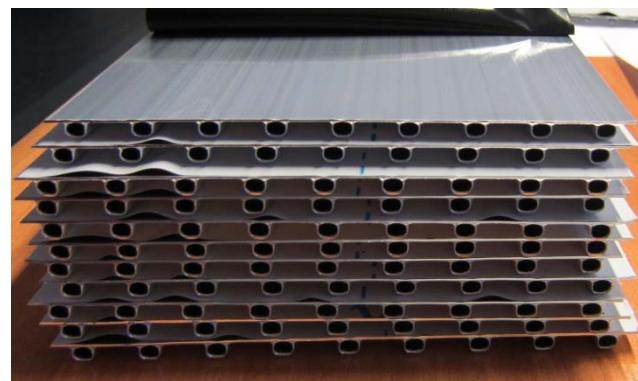


The MPE Profiles

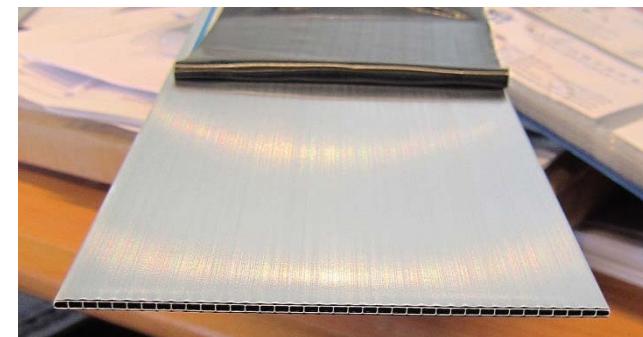
- MPE 1 first Savosolar profile, mechanical properties after oven brazing not good enough
- MPE 2 was designed for oven brazing but has also been used for flame brazing and currently in use in the Solar Key Marked SF 100-03 collector
- MPE 3 has been designed for laser welding, can be flame brazed, too



MPE 1



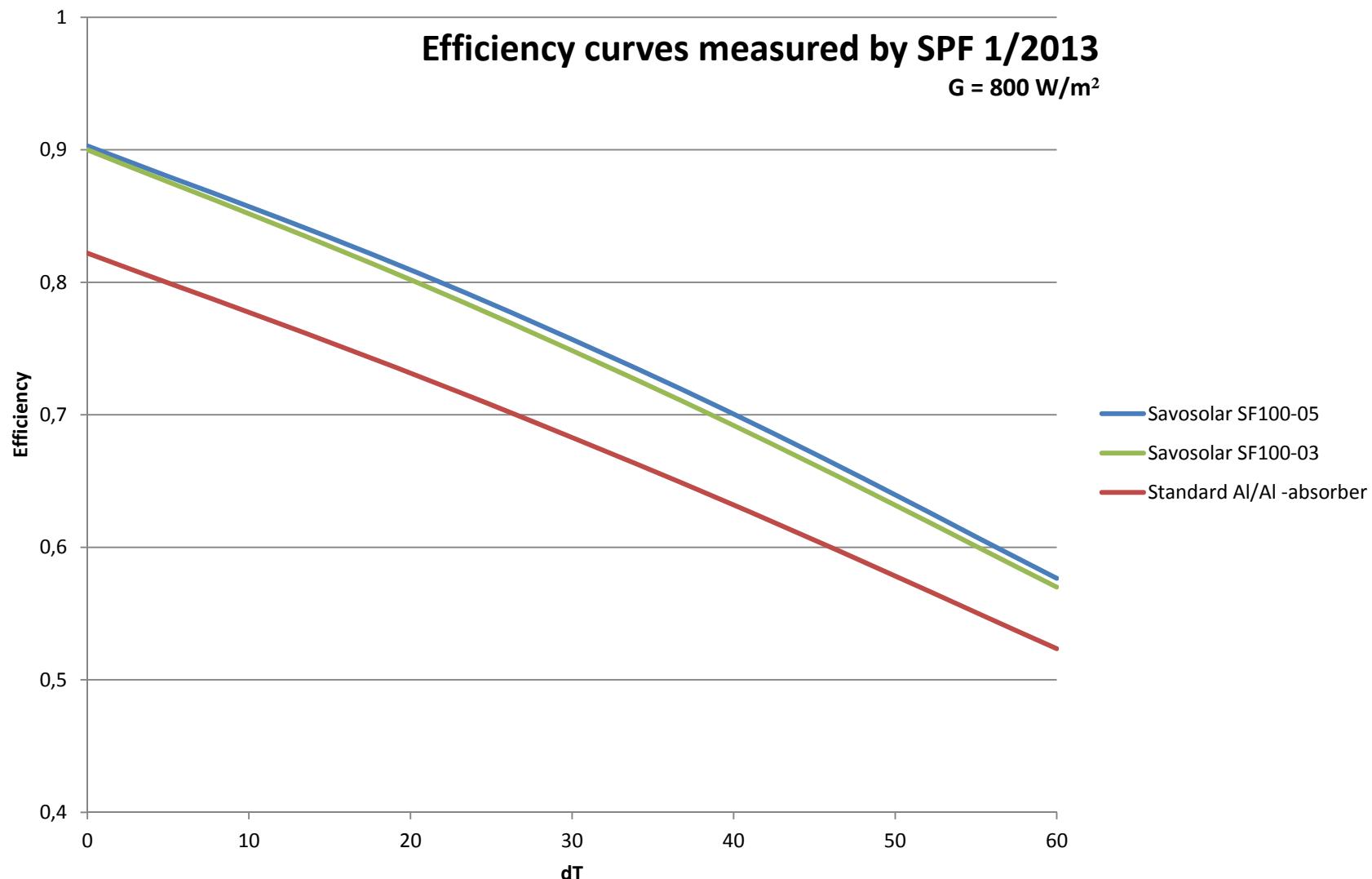
MPE 2



MPE 3

- The aluminium alloy is special HyLife solar alloy from Hydro Aluminium
- New profiles can be customized according to customer needs

SPF efficiency comparison

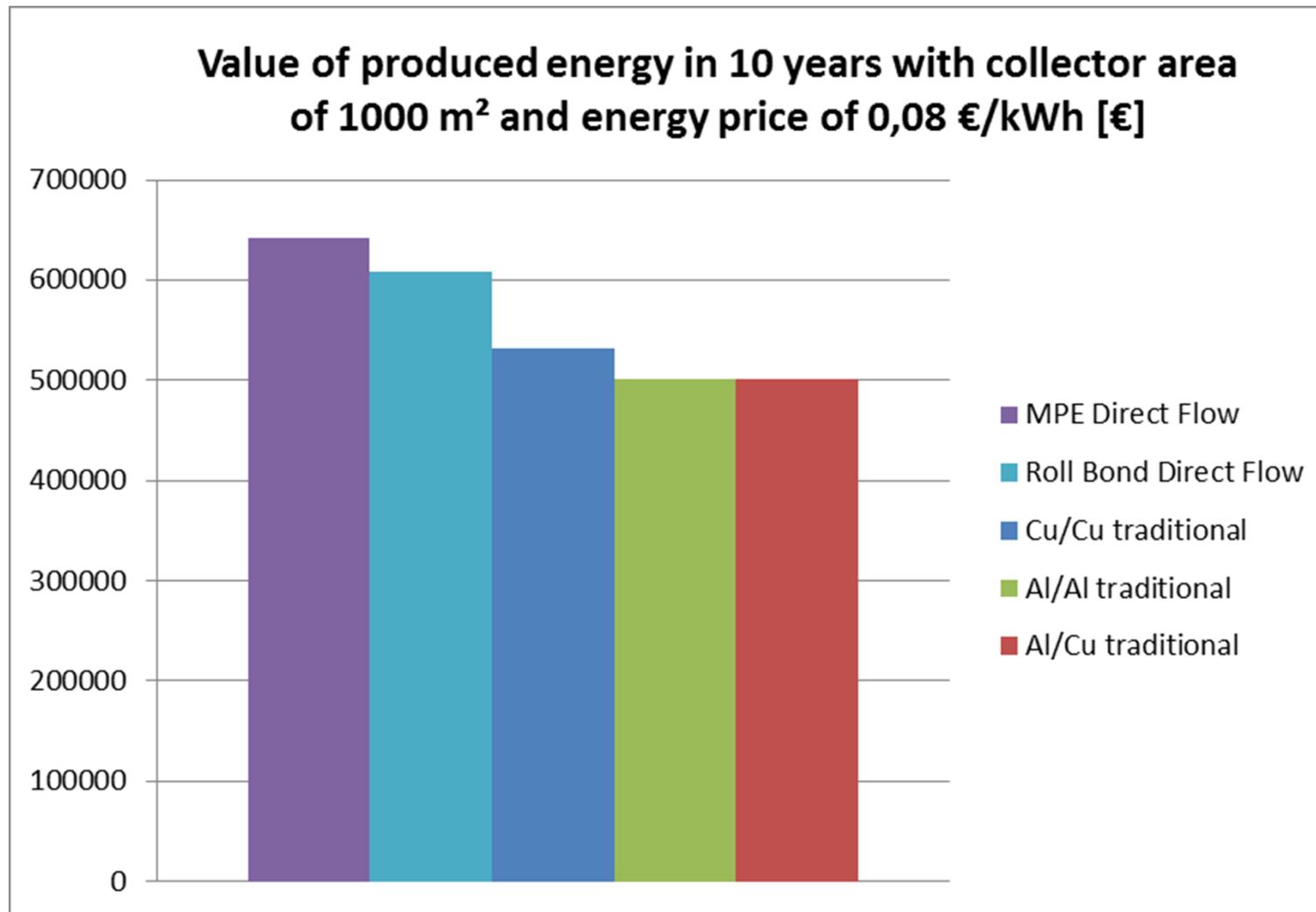


MPE & Roll Bond Absorber Comparison

Criteria	MPE	Roll bond
High solar yield (kWh/m ² under standard test conditions)	++	+
High corrosion resistance	+	+
Resistance to internal pressure	+	-
Pressure drop	-	+
Low weight	+	-
Investment cost for inhouse-machinery	-	+
Stagnation-proof behavior	+	+

Comparison only between MPE and Roll Bond absorbers

Energy Value Comparison



A photograph of a sunset or sunrise over a dark, hilly landscape. The sky is filled with warm orange and yellow hues, with some wispy clouds visible. The sun is a large, bright white circle at the horizon.

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Thank You!

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