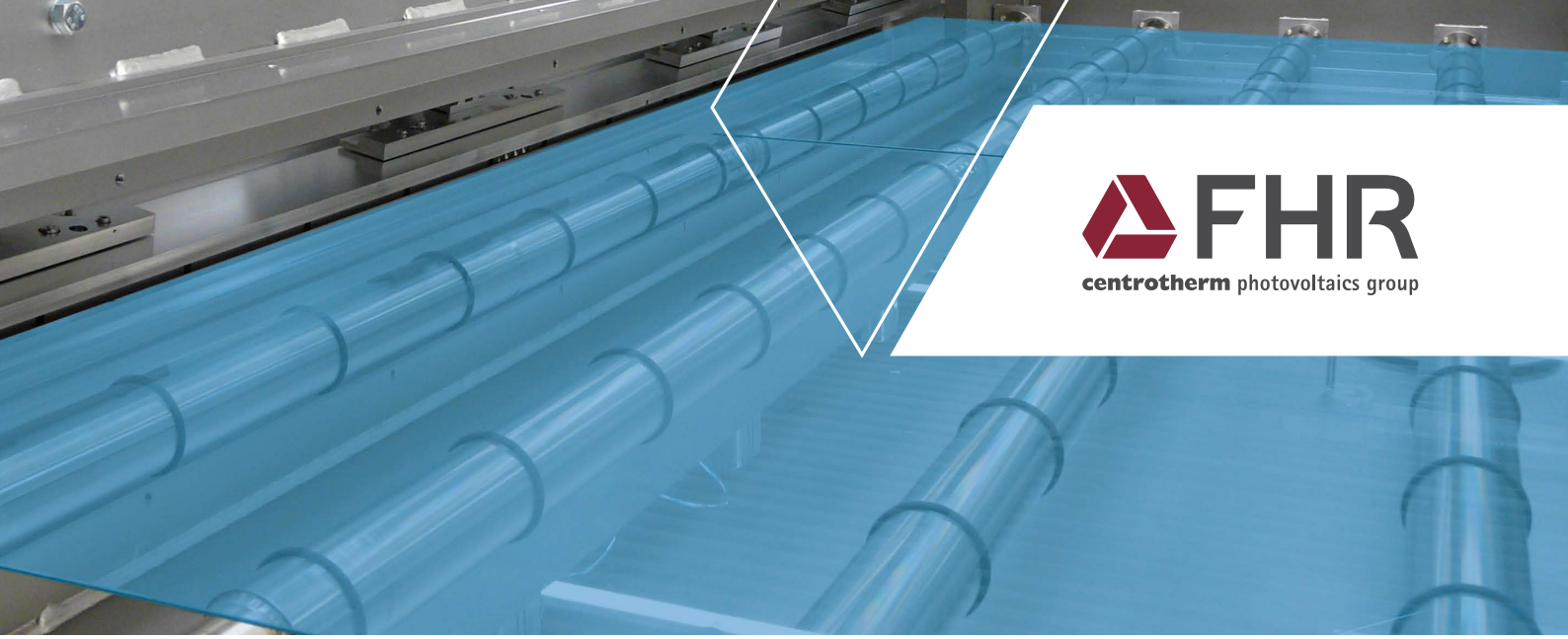


centrotherm photovoltaics group

# FHR Line2500$^{TCO}$

## *Magnetron sputter system for the deposition of transparent conductive oxides (TCO)*

### Description of system

The magnetron sputter system FHR.Line.2500-TCO is based on the inline platform FHR.Line.2500-PVD and has been specially designed for the deposition of transparent conductive oxides (TCO) onto large-area flat glass plates. The sputter system is laid out as an inline system with process stations positioned one after the other. Coating is performed continuously in a single passage with cyclic loading of the substrates. The FHR.Line.2500-TCO is optimized for the highest substrate throughput rates and guarantees maximum productivity.

### Process

- Sputter deposition of ZnO:Al (aluminum-doped zinc oxide),
- Sputter deposition of ITO (tin-doped indium oxide)

### Advantages for customers

- Low investment costs and operating costs
- Overall length of the plant kept very short thanks to the use of proprietary FHR sputter technology (minimized footprint)
- Excellent layer uniformity with minimized protrusion of the target thanks to the unique FHR cathode design
- Extended production interval (2 to 3 weeks) thanks to the use of tubular targets with specially adapted magnetron environment
- Excellent target yield (tubular targets up to 80 %)
- No restrictions in terms of the integration of third-party sputter sources
- Simplified maintenance of the chamber sealing faces through innovative supporting of the vacuum chambers
- Reduced time outlay for modification or upgrades thanks to the modular design of the sputter system

# FHR Line2500 TCO

## *Magnetron sputter system for the deposition of transparent conductive oxides (TCO)*

### Key data

**Dimensions**

| length | width | height |
|---|---|---|
| 24,260 mm | 9000 mm | 2200 mm |

**Weight**

| |
|---|
| approx. 100,000 kg |

**FHR.Line.2500-TCO**

| | |
|---|---|
| Substrate size | flat glass up to GEN 8 (target length: 2500 mm) |
| Throughput (typical cycle time) | < 60 s per substrate |
| Substrate temperature | RT to 300 °C (max.) |
| Uniformity of the layer thickness | +/- 3 % |
| Effective production time (up-time) | > 85 % |

### Special features

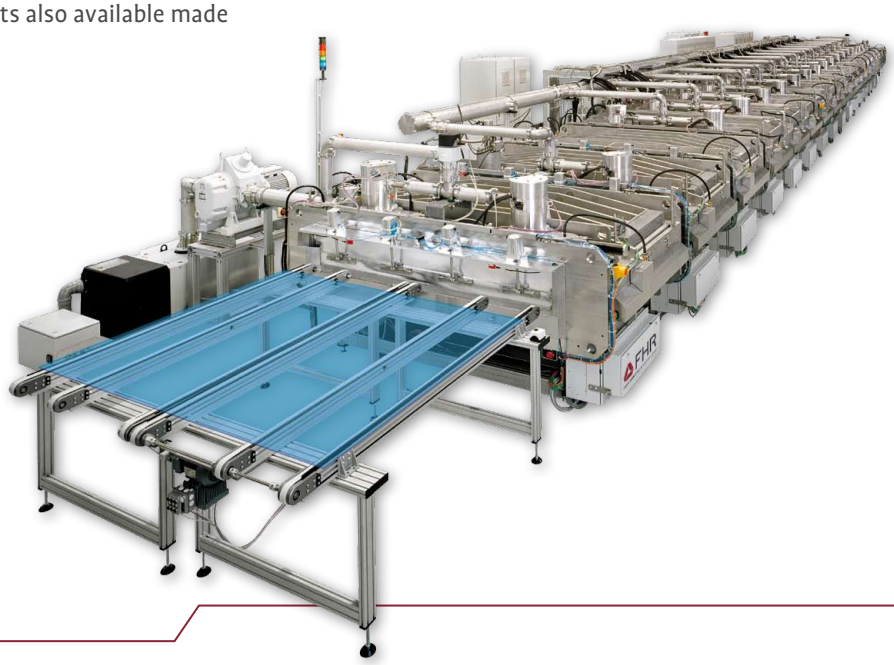
- Linear substrate transport with horizontal substrate positioning
- Integrated substrate heating
- Various different source types can be used (tubular targets, planar targets)
- Vacuum chambers and built-in components made of stainless steel

### Options

- Customer-specific adaptation to suit the individual productivity requirements and layer system
- Individual combination of pre/post-treatment steps
- Optional conditioning for downtime shortening
- Vacuum chambers and built-in components also available made of construction steel

### Typical applications

- Deposition of contact layers for thin-film solar cells
- Coating of architectural glass („heat reflectors“)
- Deposition of functional layers for display technology and OLEDs



Thin-film equipment. Customized.

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