

LINE^X

turnkey solar cell production solution with highest level of automation



Capacity

	LINE ^X 1400	LINE ^X 1500	LINE ^X 1800	LINE ^X 2400	
Gross wafer throughput rate	1400	1500	1800	2400	wafers/hour
Target wafer to cell yield ¹	≥ 95	≥ 95	≥ 95	≥ 95	%
Target line uptime	≥ 85	≥ 90	≥ 90	≥ 90	%
Total capacity per year ²	35	40	50	70	MW
Total PV line required floor space ³	≈ 10 x 45	≈ 8 x 75	≈ 8 x 80	≈ 8 x 90	mtr

1) Target yields of > 95 % depends on wafer quality & operator skills. 2) Total capacity per year is based on multi crystalline wafer of 156x156 mm. 3) Excluding electrical cabinets and pump stands and work area.

General specifications

PV cell material	Multi and mono crystalline wafers
Wafer size	square/semi square
	125/156 mm
Thickness cells	180 - 400 μm
Target cell efficiency mono ⁴	16.5% - 16.8%
Target cell efficiency multi ⁴	15.5% - 15.8%

4) Depending on wafer quality and operator skill.

LINE^X: OTB Solar's turnkey solar cell production solution that can be customized by client specific configurations.

All processes are modified in such a way that there is one continuous product flow, which results in a considerable reduction of the required floor space, higher product quality, increased uptime and a reduction in the total cost of ownership.



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KEY BENEFITS

- High throughput and yield
- Fully automated turnkey solution
- Low Total Cost of Ownership
- Grey room production facility
- High production and process stability
- Compact footprint maximizing MW/m²

OTB SOLAR
empowering solar cell production

IN 1997 OTB SOLAR INTRODUCED THE WORLD'S FIRST COMPLETE INLINE SYSTEM FOR SOLAR CELL PRODUCTION: LINE^X. OVER THE YEARS OTB SOLAR KEPT ON FURTHER OPTIMIZING, AUTOMATING AND REDUCING PRODUCTION STEPS DUE TO NEW BREAKTHROUGH TECHNOLOGIES AND OTB'S CONTINUOUS COMMITMENT TO INNOVATION. RESULT IS TODAY'S COMPLETE AND VERSATILE SYSTEM WITH THE HIGHEST LEVEL OF AUTOMATION.

A flexible system

From raw wafer input to sorted cells, the LINE^X integrates all production steps in one complete system. Based on clients specifications we can integrate proprietary or different modules from other suppliers for the various production steps.

Advantages of the LINE^X

With the LINE^X OTB Solar is offering an inline production solution that incorporates process equipment and hand-

ling units with unique features. Automation is the key argument which results in the following advantages to attain the lowest cost of ownership possible:

Reduced wafer breakage

In a conventional production process, the loading and unloading between process steps is the largest contribution to wafer breakage. The OTB concept eliminates the unloading, loading and buffering of cassettes between the different process steps. The fully automated line is

designed for thin wafer handling on a horizontal belt transportation system, which eliminates interference and reduces the risk of breakage.

Reduced number of operator interfacing

In a conventional production facility, separate process equipment does require many different operators. By means of full automation, the number of operators is significantly reduced. The ease of operation also contributes to considerable cost reductions.

Improved product quality

The inline approach guarantees that every product is produced under exactly the same process/timing conditions. The system is equipped with a Data Logger, which collects data from Process and Handling equipment and indicates

the performance of the line. This reduces the variations over time periods, as seen in conventional processes.

Grey room production facility

A conventional production facility with identical capacities requires large (>2000sqm) clean room facilities. With the inline concept of OTB, the clean room is inside the production equipment, and the LINE^X can be fitted in a GREY room of approx. 600 sqm. Result is an elimination of clean room investment and running costs.

LINE^X product family

- **LINE^X 1400** up to 1400 wafers/hour, fully automated
- **LINE^X 1500** up to 1500 wafers/hour, fully automated
- **LINE^X 1800** up to 1800 wafers/hour, fully automated
- **LINE^X 2400** up to 2400 wafers/hour, fully automated

