Refurbished Solar Production Lines: An Industrial Overview

Equipment Cost, Technical Readiness, and Strategic Entry Logic

Content Partner: J. v. G. technology GmbH

Turnkey solar module production lines — since 1997

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A Technical Overview of Available Used Solar Production Machinery

Created as part of the PVKnowHow Knowledge Network

Prepared by J.v.G. Technology GmbH

European specialists in turnkey solar module production lines

Market Need: Lower-CAPEX Entry into Solar Manufacturing

High Barrier to Entry

New fully equipped production lines (100 MW) require €1.5–2M in machine investment alone — plus building and working capital

Demand for Scalable Paths

Investors and national programs require lower-risk, lower-CAPEX options to validate production before full-scale commitment

Refurbished Equipment as a Solution

Reconditioned production lines offer a practical, documented pathway to enter solar manufacturing at substantially reduced capital cost

Why Equipment Cost Matters

Machine Cost vs. Total Investment

- 25 MW refurbished line: ~€250,000 in machines
- 100 MW new line: ~€1.5–2 million in machines
- Building (100 MW): ~€1.5 million additional
- Working capital (100 MW): ~€800,000

Cost Structure Reality

- Materials represent ~95% of total production cost
- Machine investment is a one-time, finite CAPEX item
- Overheads reach ~1 cent/W at 100 MW scale
- Lower equipment CAPEX directly reduces break-even threshold

Source: PVKnowHow / J.v.G. Technology GmbH — composite scenario based on real consulting data

What Refurbished Machines Are

Definition

- Previously operated production equipment, systematically reconditioned to functional specification
- Not surplus or idle inventory — machines are evaluated, serviced, and re-commissioned

Technical State

- New software installed on all machines
- 12-month warranty provided
- Capable of producing panels up to 540 W output

Line Capacity

- Available configuration: up to 85 MW
- Staffing requirement: 7–9 workers for complete line operation
- Delivery and setup: 2–4 months from order

Refurbished vs. Used: Key Distinctions

Criterion	Refurbished Equipment	Used / As-Is Equipment
Technical inspection	Systematic — documented	Variable — often undocumented
Software	New software on all machines	Original / outdated software
Warranty	12 months provided	Typically none
Production readiness	Commissioned and tested	Unknown — requires validation
Risk profile	Controlled, predictable	Higher operational uncertainty

The Refurbishment Process

1

Step 1: Assessment

Full technical inspection of each machine unit

Performance benchmarking against original specifications

2

Step 2: Reconditioning

Mechanical overhaul, component replacement where required

New software installation across all machines

3

Step 3: Validation

Production testing to confirm output capability (up to 540 W panels)

12-month warranty activated upon delivery

4

Step 4: Deployment

Line shipped and installed within 2–4 months

On-site commissioning and staff integration support

Strategic Use Cases

1

Market Entry

Lower CAPEX allows new entrants to begin production, develop operational expertise, and validate local supply chain before scaling

2

Capacity Expansion

Established manufacturers add incremental MW without full new-line investment; bridge capacity during peak demand periods

3

Pilot & R&D Production

Controlled environment for product development, certification testing, or regional compliance trials at reduced financial exposure

85 MW Refurbished Line: Key Project Data

System Overview

- Type: Refurbished solar production line
- Capacity: Up to 85 MW
- Module output: Panels up to 540 W

Technical Readiness

- Software: New software on all machines
- Warranty: 12 months
- Availability: 2–4 months from order

Operational Parameters

- Staffing: 7–9 workers for complete line
- Source: PVKnowHow / J.v.G. Technology GmbH

Operational Parameters at a Glance

85 MW

Line Capacity

Maximum rated output of the refurbished production line

540 W

Module Output

Maximum panel wattage achievable on this line

7–9

Workers Required

Full staffing for complete line operation

2–4 mo

Availability

Time from order to operational line delivery and setup

12 mo

Warranty Period

Coverage provided on all refurbished machines after delivery

New

Software Status

All machines updated with current software prior to shipment

~95%

Material Cost Share

Materials dominate total production cost at operational scale

~1¢/W

Overhead Target

Overhead per watt achievable at 100 MW operational scale

Source: PVKnowHow / J.v.G. Technology GmbH — composite scenario based on real consulting data

Investment Logic: Refurbished vs. New Line

Parameter	25 MW (Refurbished)	100 MW (New)	800 MW (Full Scale)
Machine Investment	~€250,000	~€1.5–2 million	Proportionally scaled
Building Cost	Lower (rental viable)	~€1.5 million	Significantly higher
Overhead / Watt	Higher (fixed cost spread)	~1 cent/W	Further reduced
Working Capital	Lower	~€800,000	Substantially higher
Suitable Stage	Market entry / validation	Standard operational scale	Advanced expansion only

Conclusion: Refurbished Lines as an Industrial Tool

Reduced Financial Exposure

- Machine CAPEX substantially lower than new-line equivalents
- Enables phased investment aligned with validated demand
- 12-month warranty mitigates post-delivery technical risk

Technical Credibility

- New software, tested output, documented reconditioning
- Up to 85 MW capacity with panels up to 540 W
- Operational in 2–4 months; runs with 7–9 workers

Strategic Fit

- Appropriate for market entry, capacity bridging, or pilot production
- Supply chain strategy (materials ~95% of cost) remains the primary operational priority at any scale

This overview represents a composite scenario derived from real consulting experience. All figures are realistic but simplified for strategic planning purposes. Source: PVKnowHow / J.v.G. Technology GmbH

About the Content Partner

J. v. G. technology GmbH — The DESERT Company

Founded in 1997 in Bavaria, Germany. Family-owned engineering company specializing in turnkey solar module production lines.

More than 90 factory projects delivered worldwide.
On-site team training included — no prior manufacturing experience required.

Key areas:

Turnkey PV manufacturing lines | DESERT Technology® | TÜV-certified module designs | Factory planning to production

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