

# Solar Panel Production: 6 Key Factors Impacting Plant Investment

*Navigating the Financial Landscape of Next-Gen Renewable Infrastructure*

**Content Partner: J. v. G. technology GmbH**

*Turnkey solar module production lines — since 1997*

[www.jvg-thoma.com](http://www.jvg-thoma.com)





# Technical overview of plant infrastructure and overhead



Created as part of the PVKnowHow Knowledge Network



Prepared by J.v.G. Technology GmbH



European specialists in turnkey solar module production lines

# Market Context: Why Morocco?

## EU Market Access

Morocco's proximity to Europe and EU trade agreements create favorable export conditions for solar modules

## Energy Transition Demand

EU solar deployment targets drive sustained demand for locally compliant, carbon-efficient module supply chains

## Industrial Policy Alignment

Morocco's national industrial strategy supports renewable energy manufacturing as a priority sector

# Key Project Data

**25–800**

**Scale Range (MW)**

25 MW refurbished entry / 100 MW standard / up to 800 MW at full scale

**€250K**

**Machines: 25 MW**

Refurbished line investment

**€1.5–2M**

**Machines: 100 MW**

New fully equipped production line

**€1.5M**

**Building (100 MW)**

Estimated construction cost for production facility

**€800K**

**Working Capital**

Required at 100 MW operational scale

**~1¢/W**

**Overheads (100 MW)**

Approximately 1 cent per watt at 100 MW scale

**~95%**

**Material Cost Share**

Materials dominate total production cost structure

**Global**

**Applicability**

Model is region-adaptable; Morocco scenario used as reference case

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

# Scale Comparison: 25 MW vs. 100 MW vs. 800 MW

Parameter	25 MW (Refurbished)	100 MW (New)	800 MW (Full Scale)
Machine Investment	~€250,000	~€1.5–2 million	Proportionally scaled
Building Cost	Lower	~€1.5 million	Significantly higher
Overheads/Watt	Higher (fixed cost spread)	~1 cent/W	Further reduced
Working Capital	Lower	~€800,000	Substantially higher
Recommended Entry?	Yes — low risk	Yes — standard	Advanced stage only

# Cost Structure: What Drives Production Cost?

## Materials (~95% of cost)

- Dominant cost driver at all scales
- Cells, glass, encapsulant, backsheet, frame, junction box
- Local sourcing or import logistics directly impact margins

## Overheads (~1 cent/W at 100 MW)

- Labor, energy, depreciation, management
- Fixed cost per watt decreases as scale increases
- Morocco offers competitive labor and energy rates

## Working Capital Dynamics

- €800,000 required at 100 MW scale
- Inventory cycles and receivables management are critical
- Export-oriented model requires robust cash flow planning

# Investment Structure: 100 MW Reference Case

## Capital Deployment

- Production equipment (new): €1.5–2 million
- Factory building: ~€1.5 million
- Working capital: ~€800,000
- **Total estimated entry: ~€3.8–4.3 million**

## Alternative: 25 MW Refurbished Entry

- Lower upfront machine cost: ~€250,000
- Reduced building requirement
- Lower working capital burden
- Suitable for market validation phase

# Turnkey Manufacturing Model: How It Works

## Phase 1: Setup

Site selection, regulatory approvals, facility design

Equipment procurement from proven European turnkey concept

1

2

3

## Phase 3: Ramp-Up

Quality system activation, yield optimization

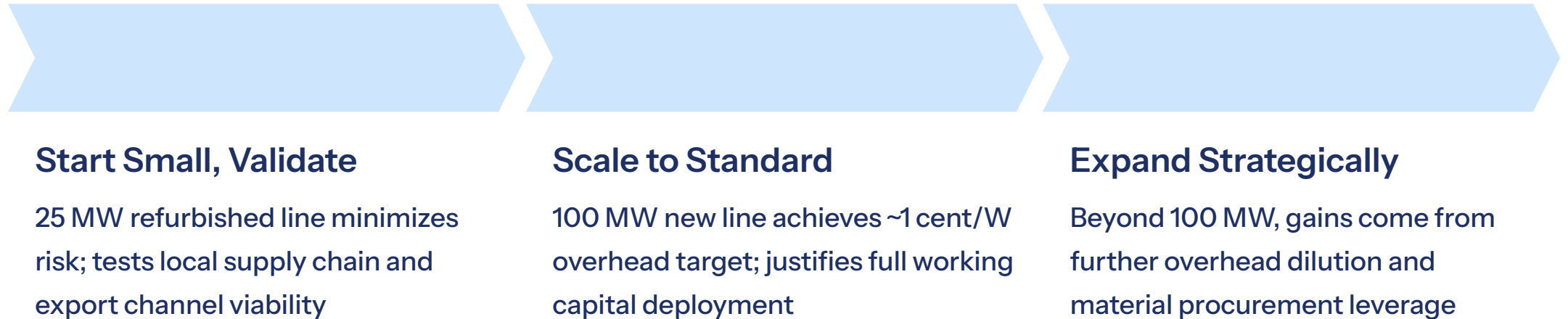
Target: full operational capacity within 12 months

## Phase 2: Installation

Production line commissioning and calibration

Staff training under established process methodology

# Strategic Implications: Scale vs. Efficiency



# Operational Insights

## Material Procurement

- At ~95% cost share, cell and glass sourcing strategy is paramount
- Long-term supplier contracts reduce price volatility risk

## Labor & Process

- Semi-automated line balances cost control with local employment
- Technology transfer from experienced European providers reduces learning curve

## Quality & Certification

- EU export requires IEC-certified modules
- Established production methodology supports certification process

# Risk Factors & Mitigations

## Technology Risk

Mitigated by partnering with a proven European turnkey manufacturing concept with documented production methodologies

## Market Risk

EU demand underpinned by binding renewable energy targets; Morocco-EU trade framework provides export stability

## Capital Risk

Phased entry (25 MW refurbished) reduces initial exposure; scale-up contingent on validated demand

# Strategic Positioning

A Morocco-based solar module factory positioned for EU export occupies a structurally advantaged position: lower production costs than European domestic manufacturing, regulatory compliance with EU trade frameworks, and proximity to key demand markets.

The investment is defined primarily by materials cost (~95%), making supply chain strategy the central operational priority — not machinery or labor.

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

# Next Steps

01

---

## Feasibility Assessment

Detailed site and regulatory analysis in Morocco

EU export channel and certification requirements mapping

02

---

## Technology Partner Engagement

Contact an experienced European turnkey provider for technical specification

Capacity planning and equipment configuration for target scale

03

---

## Financial Structuring

Capital allocation: machines, building, working capital

ROI modelling across 25 MW, 100 MW, and growth scenarios

# 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

[www.jvg-thoma.com](http://www.jvg-thoma.com)

# Contact

J.v.G. Technology GmbH

Möningerberg 1a, 92342 Freystadt, Germany

[info@jvg-thoma.de](mailto:info@jvg-thoma.de) | [www.jvg-thoma.com](http://www.jvg-thoma.com)

Source: <https://www.pvknowhow.com/solar-panel-manufacturing-plant-cost-breakdown>

---

*Created with the support of JvGLabs — specialist for AI systems*

*and AI-driven visibility. [www.jvglabs.com](http://www.jvglabs.com)*