

SOL01: Utility-Scale Solar Manufacturing

Technical Analysis Report | February 01, 2026

1. Data Overview

Subject: First Solar (FSLR)
Analysis Period: 2016-02-03 to 2026-01-30 (~10.0 years)
Total Observations: 13,760 rows across 4 datasets
Stock Data: 2,513 daily OHLCV observations
Data Sources: Yahoo Finance API (yfinance), synthetic operational metrics

2. Methodology

2.1 Metrics Computed

- Manufacturing capacity utilization
- Module shipment volumes (GW)
- Average selling price trends (\$/W)
- Module efficiency progression (%)
- Gross margin analysis
- Backlog and pipeline tracking
- Project deployment by region

2.2 Risk Analytics (CFA Standards)

- Sharpe Ratio:** (Return - Rf) / Volatility (Rf = 0 for relative comparison)
- Sortino Ratio:** Return / Downside Deviation
- Value at Risk (VaR):** Historical 95% and 99% confidence levels
- Maximum Drawdown:** Largest peak-to-trough decline in cumulative returns

2.3 Technical Indicators

- Moving Averages:** SMA/EMA (20, 50, 200 day)
- Volatility:** Rolling standard deviation (20, 60, 252 day)
- Momentum:** RSI-14, Price momentum (20-252 day)

3. Risk Metrics Summary

Ticker	Total Return	Ann. Return	Volatility	Sharpe	Max DD
FSLR	239.2%	13.0%	50.2%	0.26	-64.0%

4. Detailed Risk Profile

Return Distribution

Metric	Value
Positive Days	50.1%
Best Day	26.48%
Worst Day	-17.89%
Sortino Ratio	0.40

Value at Risk

Confidence	Daily VaR
95%	-4.44%
99%	-8.48%

VaR indicates expected maximum daily loss at given confidence level.

5. Data Quality Assessment

Completeness: All trading days covered for analysis period
Adjustments: Prices adjusted for splits and dividends
Validation: Stock data cross-referenced with Yahoo Finance

Processing: Pandas DataFrame operations with NumPy calculations

Disclaimer: Operational metrics are synthetic/illustrative for portfolio demonstration

6. Key Observations

- Solar sector exhibits higher volatility than broad market indices
 - Strong correlation with energy sector and interest rate movements
 - Policy sensitivity (IRA, tax credits) impacts valuation multiples
 - Technology improvements driving efficiency gains and cost reductions
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Data Source: Yahoo Finance (stock), Synthetic (operational) | Report Code: SOL01

Portfolio Sample - Demonstrates data engineering methodology, not investment advice

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