

QDec-Line

In-Line Optical Quality Control For Parabolic Trough Collectors



System

QDec-Line is an optical measurement system for fast and simple quality control of fully assembled parabolic trough collector modules.

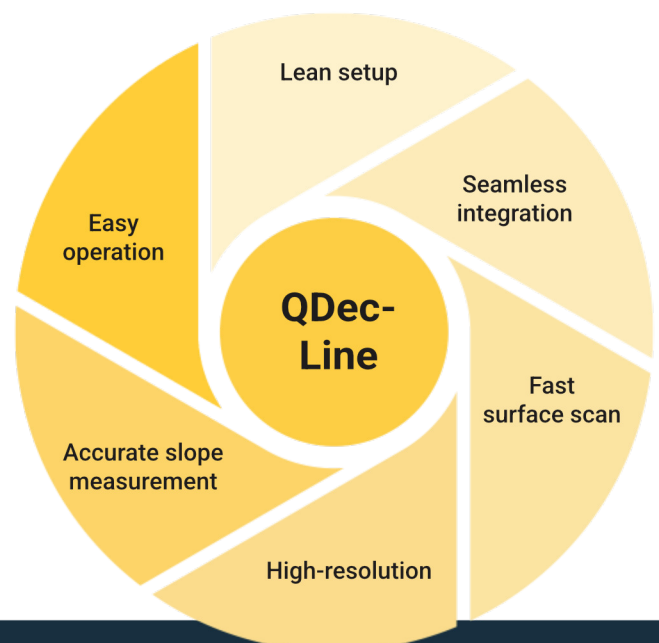
Designed for direct integration into the production line, it replaces the large target screen of conventional deflectometry with a reference line that scans the collector. This line can be an illuminated stripe that is attached to the existing gantry crane.

As the line moves across the collector aperture, synchronized industrial cameras record its reflection in the mirror surface. The deflections provide quantitative information about the optical and the geometrical quality of the concentrator.

Measurements are performed under standard factory lighting – without a dedicated darkroom or a target screen.

Key Benefits

QDec-Line combines flexible integration and scalable geometry to meet the requirements of different production lines and parabolic trough designs. The proven QDec evaluation permits a reliable optical quality control directly in the manufacturing process.



QDec-Line – guarantee high-performing collectors!

Setup

1

System Setup

Installation of an illuminated line below an existing gantry crane, or a separate scanning system

2

Signal Generation

The crane/system moves across the collector aperture and creates a reference line

3

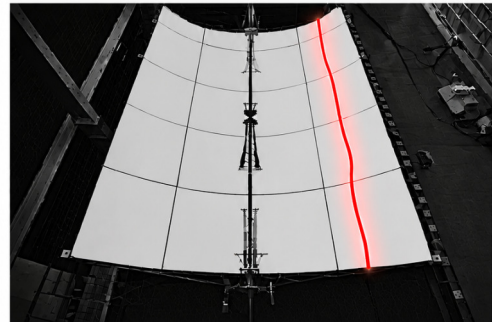
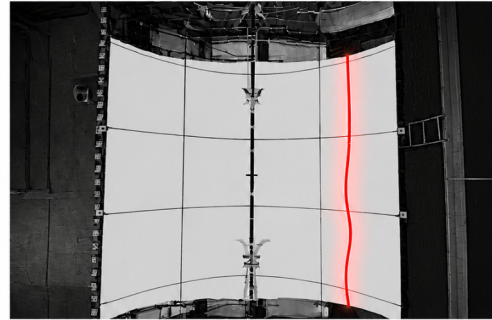
Signal Recording

Synchronized cameras record the reference line itself and its deflected reflections

4

Evaluation

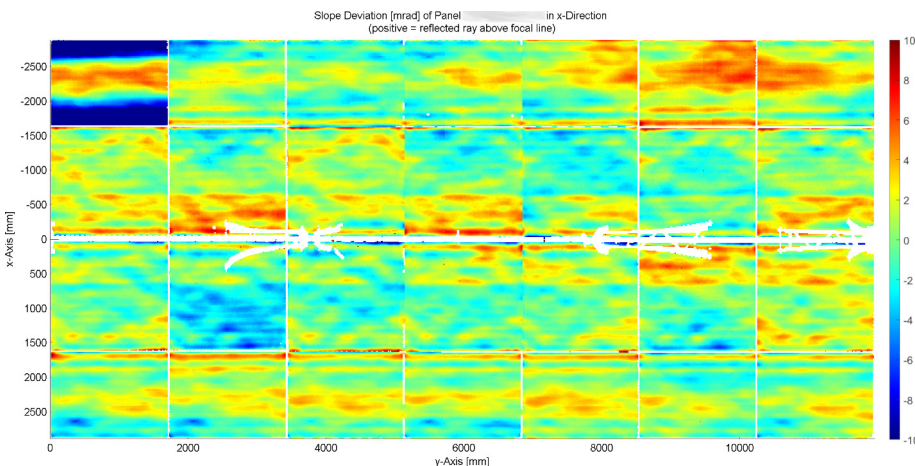
By proven QDec software:
Slope, shape and intercept value of the collector



Scan the full collector aperture under standard factory conditions.
Flexible setup: gantry crane, scanning system or projected laser line.

Measurement Results

Optical quality



High-resolution slope deviation maps
Local intercept factor
Collector shape and height profile
Statistical quality indicators

Ready-to-use output



QDec Measurement Summary

Measurement Information			
Panel:	DemoModule-001	Quality:	no specifications
Paneltype:	EuroTrough	Setup:	Horizontal
Negl. Rim:	0 mm	Comment:	
Meas. Date:	25.06.2026 - 14:55:54	Operator:	CSP-Services
System:	QDec_2026-000	Location:	
Result Overview			
Value	Measurement	Specification	Description
SDx	3.05 mrad		Slope deviation in x-direction (rms)
FDx	14.11 mm		Focus deviation in x-direction (rms)
IC70	98.55 %		Intercept laser on tube of 70mm
IC60	98.25 %		Intercept laser on tube of 60mm
IC40	94.59 %		Intercept laser on tube of 40mm
ICsun70	97.43 %		Intercept sun on tube of 70mm
Evaluated surface of panel: 96.2 %			
Result Graphs			
Measurement System Information			
Config File:	RFP3_Module		
Evaluation Date:	25.06.2026 - 14:55:54	QDec Version: 3.1.5443 (22.05.2026)	
PDF Filename:	...Output_DemoModule-001_DemoModule-001_Rim0_Result_250625145554.pdf		