cspservices
concentrating solar power services

QDec

Quality Control of the Shape of Solar Concentrators

System

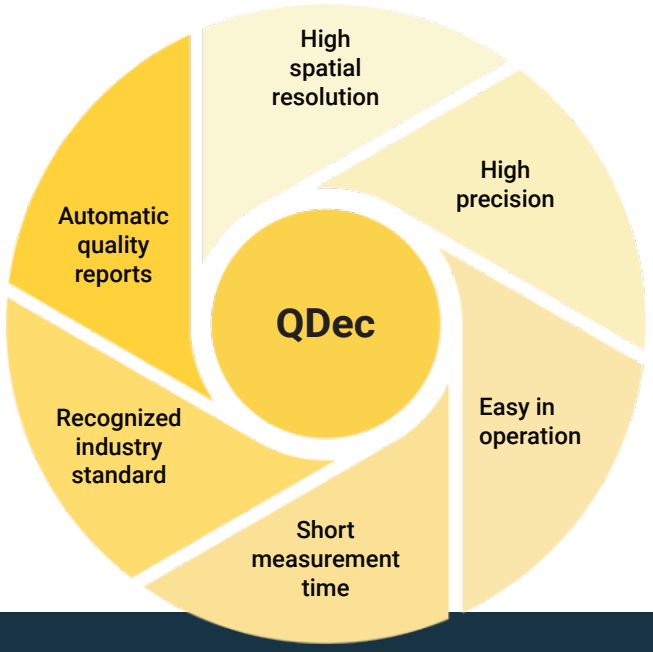
QDec is an optical measurement system for **checking the shape accuracy of solar reflector panels and concentrators**. **QDec** has become the standard tool for measuring solar reflector panels worldwide. It is suitable for quality control in industrial production and R&D environments.

QDec uses a non-contact optical and digital imaging processing technique based on deflectometric measurements. It precisely quantifies the relevant geometric quality parameters for CSP modules in production control and quality assurance. **QDec** provides **high-resolution** and **high-precision** measurement results of the shape deviations of **curved or flat** reflector panels. The software has a graphical user interface that allows convenient operation of the system, automatic data evaluation, display of results, and automated quality reports.

QDec can check the optical quality of **individual reflector panels, entire heliostats, dishes, and parabolic trough modules**.

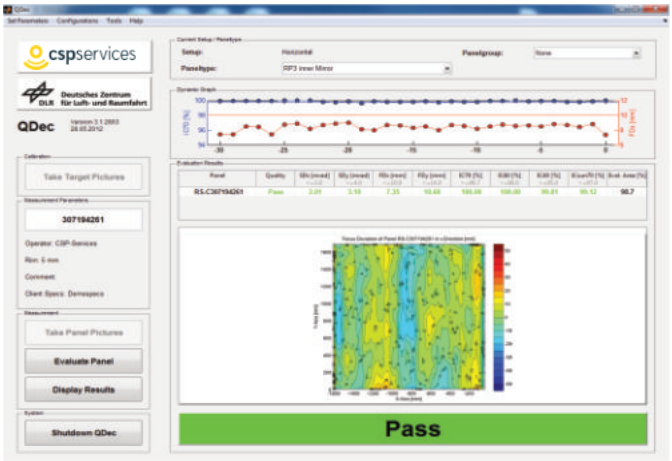
Key Benefits

QDec offers a wide range of features tailored to CSP applications, such as calculation of **focus deviation, ray tracing simulation, display of local intercept** and **flux distribution, reverse ray tracing** for detection and evaluation of local panel deviations, and more.



Setup

The system includes a control cabinet with high-end components for industrial working environments. **QDec** integrates easily with different reflector panel geometries, measurement orientations, and customer needs. It is suitable for **inline process monitoring** in glass bending lines.



Features	QDec Offline	QDec Inline
Measurement time	< 30 s	< 5 s
Evaluation time	< 30 s	< 10 s
Number of measurement points (standard / increased)	≈ 500´000 / ≈ 2´000´000	
Measurement uncertainty local spot / global value (RMS)	< 0.3 mrad / < 0.1 mrad	
Numerical output	SDx, SDy, FDx, FDy, IC, ICsun, etc.	
Graphical output	Local slope deviation (x/y), local focus deviation, local intercept factor, local height deviation, local curvature x/y, standard quality report (pdf)	Local focus deviation
Output database formats	Standard: .csv optional: .xls / SQL	
Optional output (with increase of evaluation time)	Flux distribution, reverse ray tracing, matrix data in ASCII file (.csv)	Graphical output of local slope deviation (x/y), local focus deviation, local intercept factor, local height deviation, standard report (pdf), flux distribution, reverse ray tracing, matrix data in ASCII file (.csv)

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Cologne
CSP Services GmbH
Friedrich-Ebert-Ufer 30
51143 Cologne, Germany

Phone +49 2203 959 0030

Almería
CSP Services España, S.L.
Paseo de Almería, 73
04001 Almería, Spain

Phone +34 950 85 25 63

Find us online
www.cspservices.de
info@cspservices.de