

# Qscan

Your solution for optimization  
of solar field performance  
& maintenance strategies



## QScan – Increase your profit, reduce your risk

CSP Services is a global leader in performance assessments of Concentrating Solar Power (CSP) plants. With **QScan** we introduce a completely new service to the CSP market. It combines our vast experience with state-of-the-art drone technology, advanced digital image analysis and big data management for the quickest possible inspection of your solar field.

**QScan** is an industrially proven, extended version of the award-winning QFly technology, licensed from the German Aerospace Center (DLR). We offer two services that can be adapted according to your needs.

- ▶ Shape Assessment analyses collector tracking, alignment and geometry
- ▶ Thermal Assessment checks receiver state and thermal losses in the solar field





## Key benefits of QScan



**Quick survey**  
of solar field conditions with immense time savings compared to traditional ground measurements



**Short payback time**  
ensured by low costs for service compared to potential of increased income



**Minimized interference with solar field operation**  
through non-contact optical measurement and automated flight routes



**Higher revenues**  
through improved plant performance, availability and reliability



**Increased lifetime**  
by optimized plant operation and predictive maintenance



**Regular solar field monitoring**  
in an easy and operator-independent way



**Maintenance optimization**  
enabled by full coverage of optical and thermal solar field data



**Independent third-party assessment**  
to supervise subcontractors, perform acceptance tests and technical evaluations in case of warranty claims and disputes



**Root cause analysis**  
of underperformance with detailed solar field data



**Concise report**  
presents comprehensive numerical and graphical results and shows opportunities for improvements

# QScan - Optimize plant performance and lifetime

The exceptional know-how of CSP Services in optical and thermal measurements combined with advanced digital image analysis, big data processing and 3D modeling is applied in our versatile **QScan** software for a precise and comprehensive data analysis.

## Shape Assessment

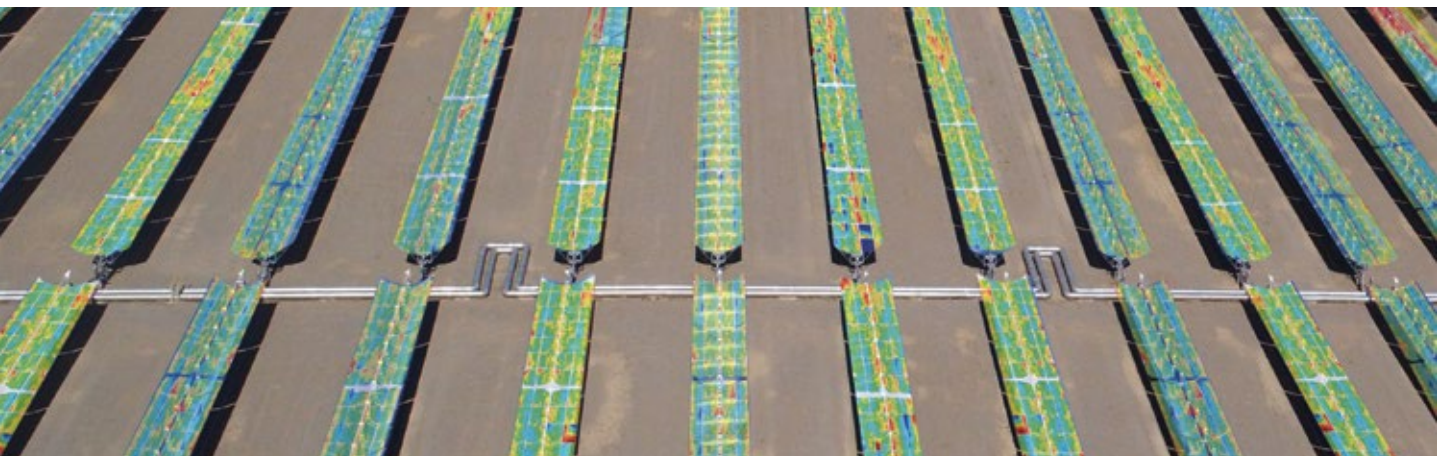
### Screening Mode

Quick and comprehensive overview of solar field performance

### Detailed Mode

Solar field "X-Ray" by close-up flights to provide precise details about specific areas

+	Solar Intercept	++
++	Collector Tracking	+
++	Module Alignment	+
++	Collector Torsion	+
+	Concentrator Shape	++
++	Mirror Breakage	+
++	Receiver Breakage	+
-	Receiver Alignment	++





## Thermal Assessment

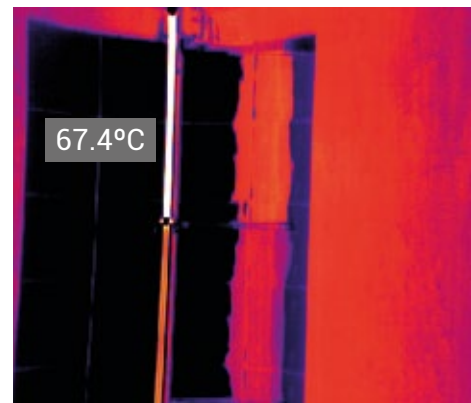
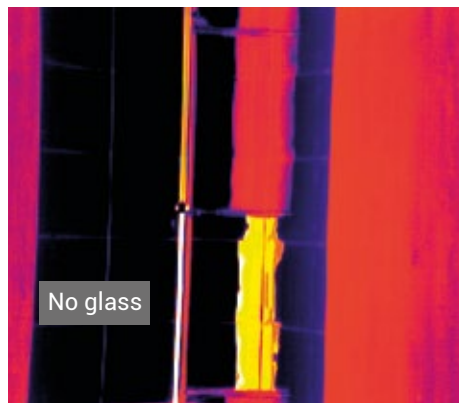
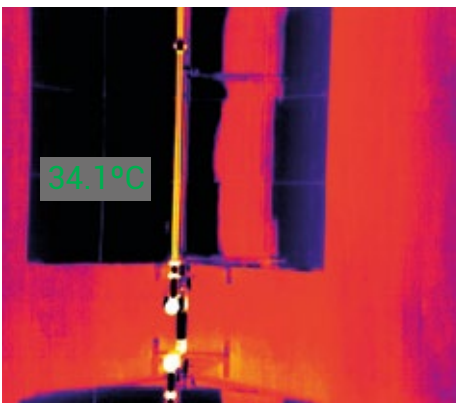
### Screening Mode

Quick overall check of solar field thermal conditions

### Detailed Mode

In-depth check of receivers with high-fidelity thermal imaging

+	Glass Tube Temperature	++
+	Thermal Loss	++
-	Receiver Analysis	++

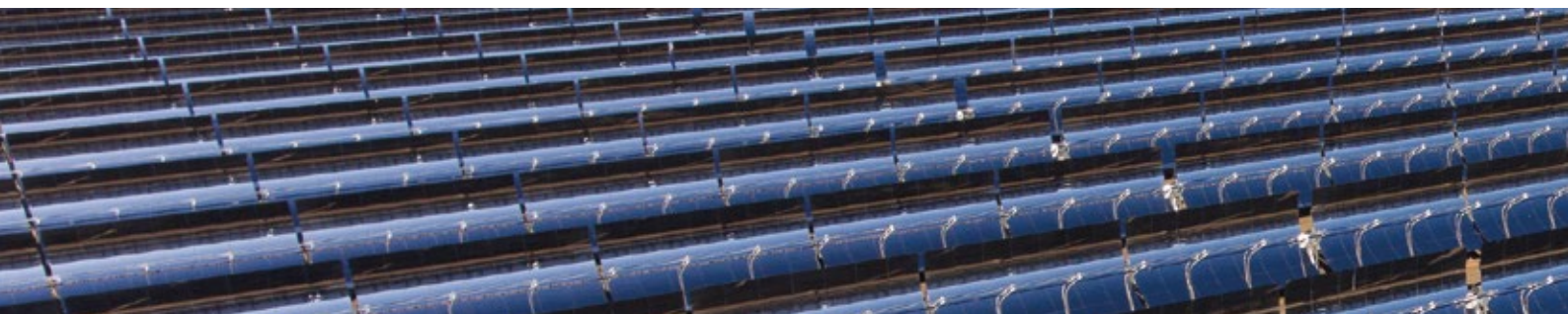
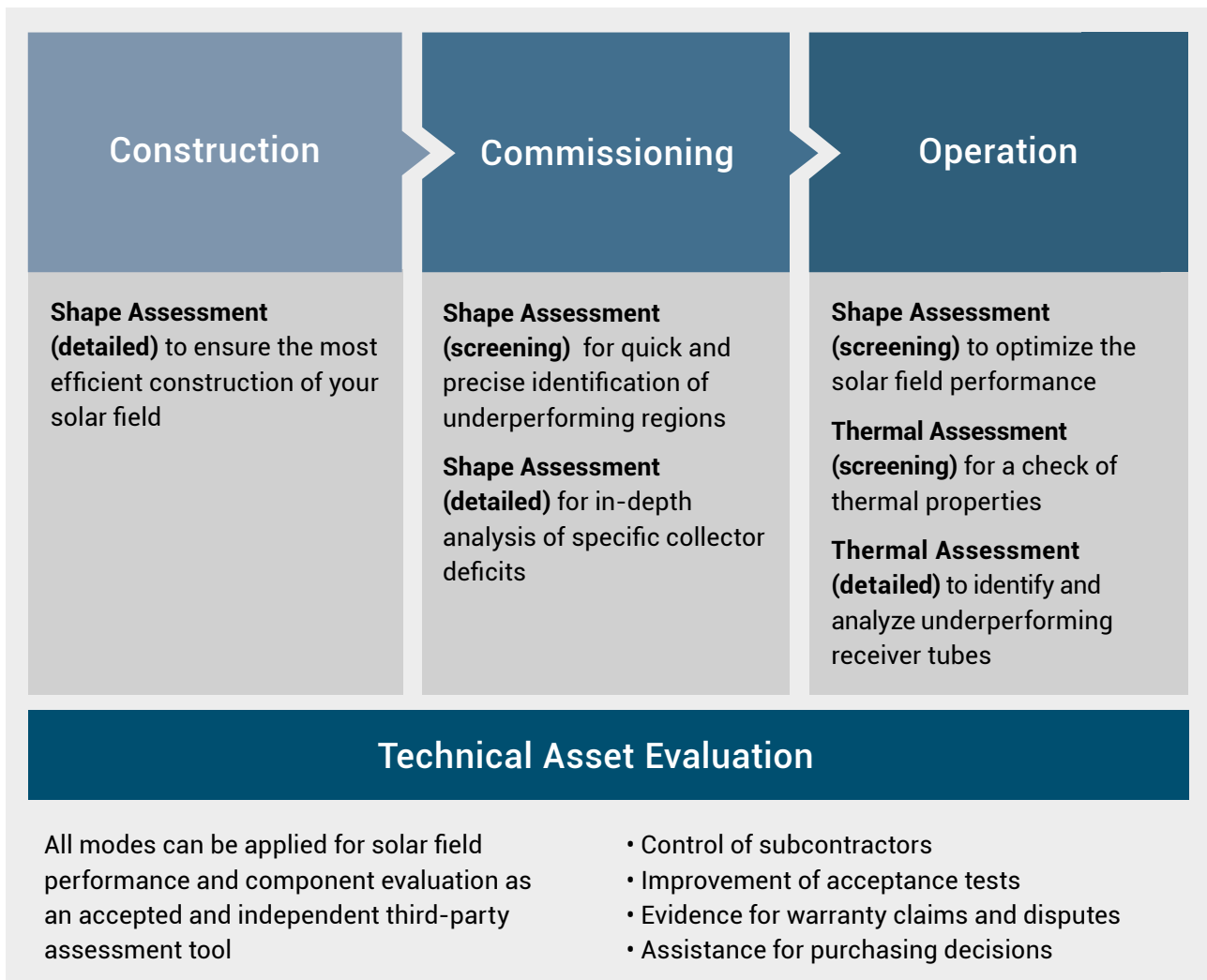


Results are presented in a concise and customized report providing reliable numerical and statistical data together with a comprehensive analysis.

Our standard expert review includes guidelines and recommendations for measures. Specific action plans can be implemented in order to maximize the long term profitability of your project.

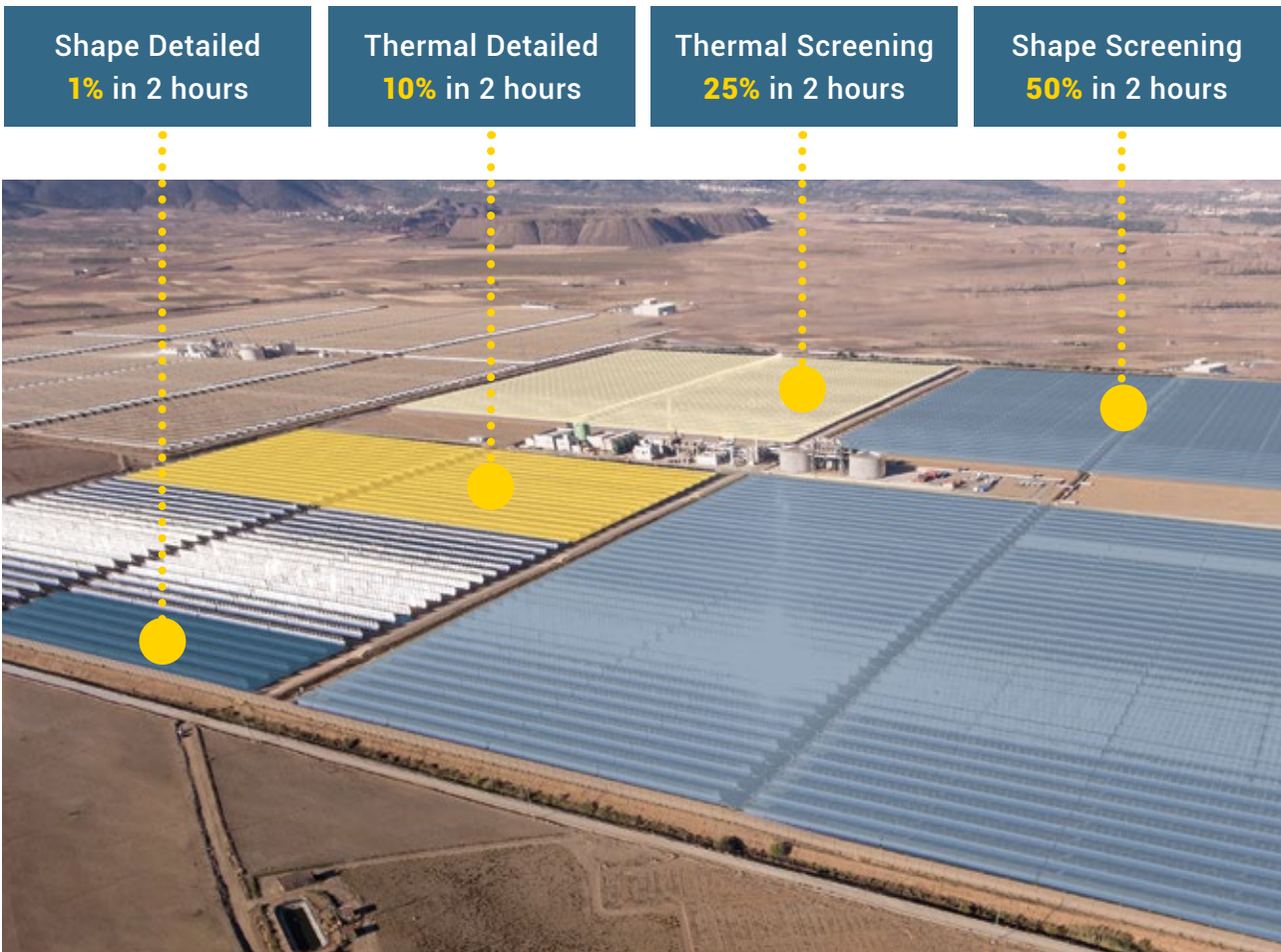
## QScan – One service, many applications

QScan ensures the best installation of your solar field, detects poorly performing areas, provides an independent technical evaluation in case of disputes and supports modern condition-based and predictive maintenance strategies to avoid unscheduled outages.



## QScan - Minimum interference with plant operation

QScan's customized flight paths are designed and optimized for acquiring high resolution images from all relevant angles. The aerial assessment is much quicker than regular ground measurements. It can be performed during regular plant operation guaranteeing a minimized interference at significantly reduced costs.



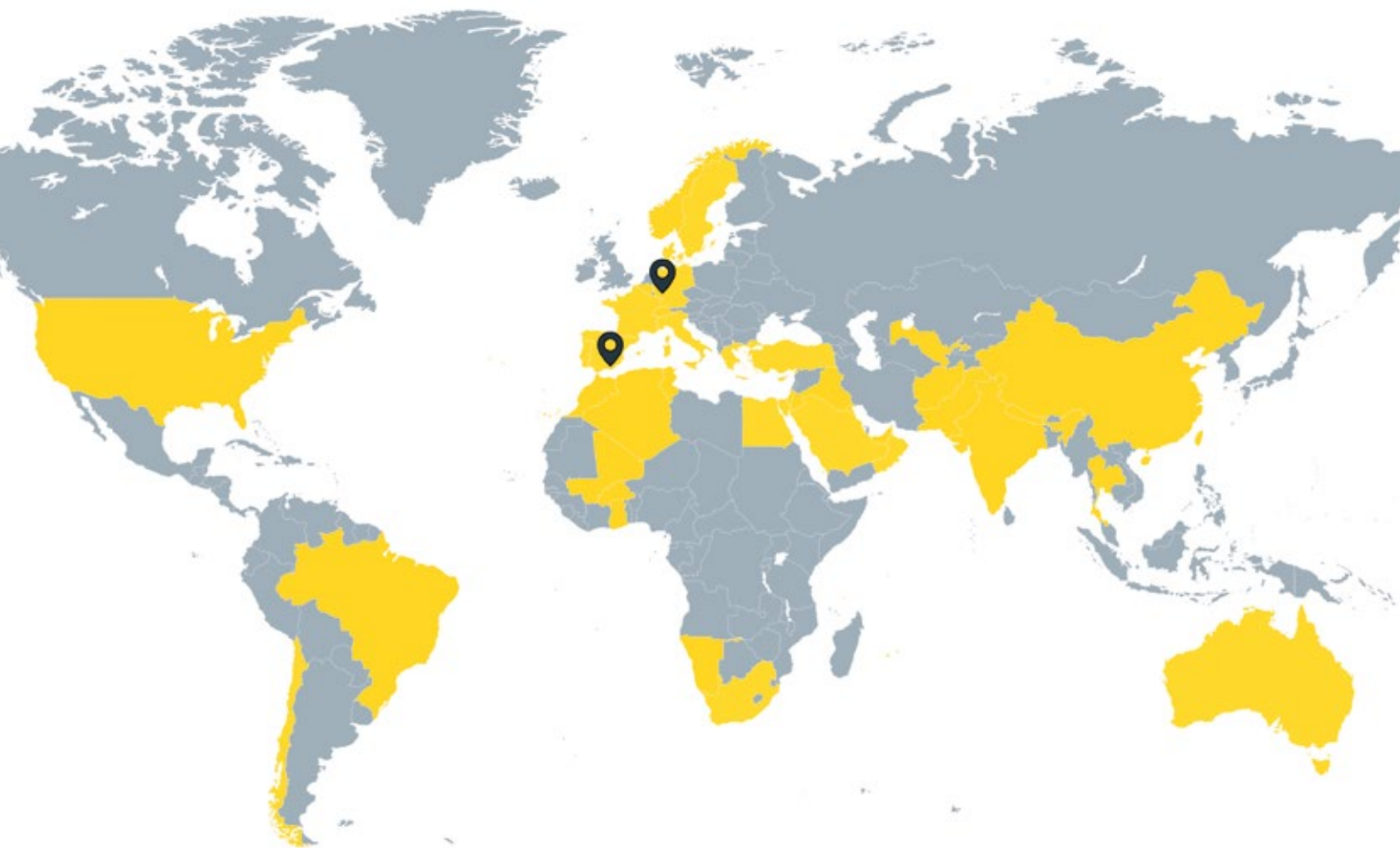
*Typical 50MW parabolic trough solar field with 7 hours thermal storage*





CSP Services is world leader in optical and geometrical performance assessments of CSP solar fields with a proven track record of more than 500 successful projects. This results in a contribution to more than 90% of all globally installed CSP solar fields since the company's foundation in 2007.

Using the synergies between our different services we are able to secure the highest quality standards of your CSP plants from the first day of planning, through implementation and commissioning up to operation and maintenance.



📍 Offices Cologne/ Almería  
▶ Project sites



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