ISFOC, Institute of Concentration Photovoltaic Systems, is a modern and leading R&D center focused on CPV technology, whose main objective is to foster its industrialization. Nowadays, ISFOC operates and maintains various demo plants from different technologies that contribute with valuable information to the whole CPV value chain. Besides, ISFOC offers several services to test the different power plant components at all levels thanks to his full-equipped laboratories, human team and the know-how acquired through the R&D tasks held on CPV Systems.

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ITECAM, Metal’s Technological Centre in Castilla-La Mancha region (Spain), was born with the purpose of increasing the business competitiveness and promoting the generation of new products and activities in the metal sector. ITECAM offers technological services, qualified training adapted and working in the development of R&D&I projects. All this is possible due to his human resource capacity of R+D+I as well as appropriate infrastructure and technological resources (laboratories of the last technology).

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The best procedure to determine the real capacities of a solar tracker is to test it with real test of loads, stiffness, watertightness, aging… ISFOC and ITECAM together are able to carry out the validation tests required by the IEC-62817 standard. This standard establishes test procedures for the key components of a solar tracker and for the complete tracker itself:

1. Tracker accuracy characterization.
2. Visual inspection
3. Functional validation tests
   - Tracking limits verification and limit switches verification
   - Automatic sun tracking after power cut off and sensor shadowing
   - Manual operation, emergency stop, maintenance mode and wind stow position
4. Performance tests
   - Peak power and daily energy consumption verification
   - Slow position: time required, energy and power consumption
5. Mechanical testing
   - Pointing repeatability test
   - Deflection under static load characterization
   - Torsional stiffness, mechanical drift, drive torque and backslash testing
   - Moment calculation under extreme wind loading
6. Environmental testing
   - Temperature cycle and dust circulation test
   - Operational temperature validation
   - Humidity freeze cycling test
   - Freeze spray test
7. Accelerated mechanical testing
8. Design qualification testing specific to electronic equipment
   - Visual inspection and Functioning test
   - Robust terminal test
   - IP and IK class test
   - Surge immunity test
   - Shipping vibration and Handling shock test
   - UV test
   - Thermal cycling, Humidity freeze and Damp heat test

The international standard IEC-62817 “PV systems - design qualification of solar trackers” rules the validation of PV solar trackers. This initial qualification is essential to ensure long term operation under reliable conditions. Apart from PV systems, this standard can also be applied, and it is advisable, to solar trackers used in Concentration Solar Power (CSP) installations, like parabolic through and solar power tower, to assure its reliability.

ISFOC and ITECAM have the ability of making the characterization works and validation tests described in the standard. Furthermore, both institutions have wide experience in R&D testing and projects in this field.