



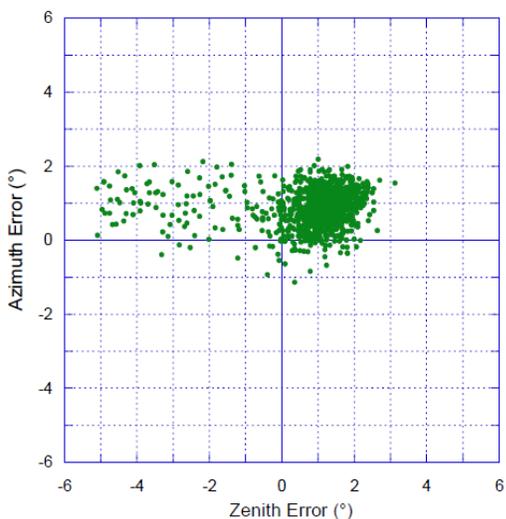
GEARLESS TRACKERS ZERO REFLECTION CHARACTERISTIC AND COMBUSTION-FREE WHITE PAPER

Zero reflection nature of the M18KD tracker

The dual-axis tracking technology utilized in the M18KD tracker performs constant tracking of the sun's position on both azimuth and zenith plane placing the solar modules mounted on its platform at a perpendicular position therefore forcing the modules to constantly absorb the Direct Irradiance and maximize their production.

The obvious result of the tracker's dual-axis tracking movement is the zero reflectivity of the sun's irradiance off the solar modules to any other direction except back to the source of the light. Mechatron's M18KD tracker is the only solar tracking device that operates at the highest possible accuracy (± 2 degrees) and low deviation (1.3 degrees) as seen from the test results conducted by the engineering firm PV Evolution labs on 9/8/2014 in the solar facility PV USA in Davis CA.

See the accompanying report document in paragraph "Performance Review" Figure 1 and Table 2.



The tracking accuracy was measured with the Trac-Stat SL-1 accuracy measurement tool over a period of 15 days in July 2014. Tracking data were acquired every 2 minutes during periods of direct normal irradiance (DNI) by installing the tracking device on the center of the D170 tracker's platform. The plot on the left outlines the accuracy error of ± 1 degree in both azimuth and elevation motion while the larger errors in the zenith motion were observed during the early morning and late evening hours due to the tracker's platform motion confinement to 60 degrees.

The statistics of the accuracy test are outlined in the table below.

Tracking Accuracy Statistics		
Statistic	Zenith Error (°)	Azimuth Error (°)
Average	0.69	0.72
Standard Deviation	1.34	0.47
Median	1.06	0.81
Maximum	2.26	1.66
Minimum	-4.87	-0.50

Table 2 Tracking error statistics

Safe non-combustive design

The M18KD series of trackers is comprised of over 150 distinct components comprising the two main sections of the machine, the base and the platform. Both sections are mainly made off steel galvanized components, hydraulic and pneumatic parts, electrical and electronics components and hydraulic high pressure lines. The tracker has no flammable or combustible parts and none of its itemized components pose a threat of fire, explosion or burst.

The list below outlines each major component’s type and characteristic

Base carrier	Galvanized steel
Base pyramid	Galvanized steel
Base grabber brake and cylinders	Galvanized steel and hydraulic cylinder
Base main brake and cylinder	Galvanized steel, hydraulic cylinder and nitrogen tank
Hydraulic pvc 4000psi lines	Hydraulic
Power control unit including 0.5hp motor, pump, oil tank	hydraulic
Platform main arm	Galvanized steel
Platform support hardware like beams, purlins, cross purlins	Galvanized steel