Product Certificate Number	**20776-CER-E1**
Applicant	NCLAVE Renewable S.L.U. Av. De Burgos 114, 2º. 28050. Madrid, Spain Trina Solar Co. Ltd. No. 2 Tianhe Road, Trina PV Industrial Park, New District Changzhou, Jiangsu. China. 213031.
Model	AGILE
Type of unit	Horizontal single axis tracker
Technical Data	See page 2 and 3
Standard	**IEC 62817: 2014 + A1:2017** Photovoltaic system – Design qualification of solar trackers.

Having assessed the report number: 20776-TR-A1 performed by CERE based on the requirements of the EN ISO/IEC 17025: 2017.

The above-mentioned unit complies with the requirements of the:

IEC 62817: 2014 + A1:2017 Photovoltaic system – Design qualification of solar trackers.

This certification is according the CERE internal process PET-CERE-09 Rev 31 based on the requirements of the EN ISO/IEC 17065:2012. For this certification process the conformity assessment activities were based on:

- Audit of quality system according ISO 9001 with certificate number: ES105154 issued by a certification body accredited according EN ISO/IEC 17021.
- Inspection of the manufacturing process.

This certificate cancels and supersedes the certificate 20776-CER issued on April 23, 2021.

Madrid, August 11, 2021. This certificate is valid until April 23, 2026.

Miguel Martinez
Certification Manager

Technical data

Characteristic	Data
Manufacturer	NCLAVE RENEWABLE S.L.
Model Number	AGILE
Type of Tracker	HSAT horizontal single axis tracker. 1P
Payload characteristics	
Minimum/maximum mass supported	Until 2000 kg per line
Payload centre of mass restrictions	Without restrictions
Maximum payload surface area	200 m2/per line
Nominal payload surface area	183 m2/per line
Maximum dynamic torques allowed while moving	9 kN m Slewing drive
Maximum static torques allowed while in stow position	40 kN m Slewing drive
Installation Characteristics	
Allowable foundation	Direct ram / micropyle
Foundation tolerance in primary axis	Axial: ±3º N-S Lateral: ±1,5º E-W or ±1,25cm between base end and top end Spin: ±5º Height: ±30mm
Foundation tolerance in secondary axis	+- 3º N-S
Installation effort	910 h//MW – 214 h//MW
Electrical characteristics	
Tracker control unit (model/manufacturer)	H5 Sistemas Digitales de Control 2002
Includes backup power	YES
Daily energy consumption	123,32 Wh (60,84 Wh per 12h tracking) (battery discharge during the test 2%) (62,48 Wh per 12h non-tracking) (battery charge during the test 2%)
Stow energy consumption	4,73 Wh (battery discharge during the test 10%)
Input power requirements	24 Vdc, 6A
Peak power consumption tracking	24,53 W
Peak power consumption non-tracking	12,46 W
Peak power consumption stow positioning	19,97 W

Tracker control unit (model/manufacturer)	TCU01-A	TCU01-B	TCU01-C
	Trina Solar Co. LTD.		
Includes backup power	YES	YES	NO
Daily energy consumption	1019,02 Wh (766,46 Wh for 12h tracking)* (252,56 Wh for 12h non-tracking)**	345,18 Wh (202,91 Wh for 12h tracking)* (142,27 Wh for 12h non-tracking)**	250,64 VAh (137,86 VAh for 12h tracking) (112,78 VAh for 12h non-tracking)
Stow energy consumption	10,32 Wh***	6,87 Wh***	25,18 VAh
Input power requirements	250-1500Vdc	25 – 55 Vdc	180 – 264 Vac
Peak power consumption tracking	144,90 W*	30,79 W*	59,58 VA
Peak power consumption non-tracking	53,67 W**	17,94 W**	9,93 VA
Peak power consumption stow positioning	77,53 W***	24,58 W***	119,23 VA
Battery level during consumption tests: TCU01-A: *Battery charge during the test: 17,5% **Battery charge/discharge during the test: 0% ***Battery discharge during the test: 2,5%	TCU01-B *Battery charge during the test: 5% **Battery discharge during the test: 3% ***Battery discharge during the test: 22,5%		

Tracker control unit (model/manufacturer)	STR-150	SPB-300	AC2-300
	P4Q Electronics		
Includes backup power	NO	YES	NO
Daily energy consumption	713,95 Wh (541,52 Wh for 12h tracking) (172,43 Wh for 12h non-tracking)	236,50 Wh (185,51 Wh for 12h tracking)* (50,99 Wh for 12h non-tracking)**	291,44 VAh (151,99 VAh for 12h tracking) (139,45 VAh for 12h non-tracking)
Stow energy consumption	11,75 Wh	3,78 Wh	9,30 VAh
Input power requirements	400-1500Vdc	28-42 Vdc 1,75A	1,65A@230Vac 3,5A@115Vac
Peak power consumption tracking	93,97 W	17,03 W	25,11 VA
Peak power consumption non-tracking	20,24 W	7,97 W	12,00 VA
Peak power consumption stow positioning	79,59 W	22,34 W	50, 64 VA
Tracking accuracy			
Accuracy, typical (low wind)	0,24		
Accuracy, 95th percentile (low wind)	0,48		
Mean wind speed during the “low wind” test conditions	2,64 m/s		
Accuracy typical (high wind)	0,24		
Accuracy, 95th percentile (high wind)	0,48		
Mean wind speed during the “high wind” test conditions	5,24 m/s		

Weight and area of payload installed during testing	12,47 Kg/m^2
Payload centre of mass installed during testing	1,467 m
Control characteristics	
Control algorithm	Hybrid with backtracking
Control interface	Human-machine interface and remote interface
External communication interface	ModBus (RS-485, Ethernet, Zigbee, Lora, Optical fiber)
Emergency stow provided	YES
Stow time	15 minutes and 25 seconds
Clock accuracy	Maximum deviation of 2 minutes per month, synchronized every day by communications
Hard limit switches	Limit of angle by overcurrent
Mechanical design	
Actuation type	Ganged actuation
Drive type	Electric
Motor	24V DC ; ≤4,2A
Range of motion, primary axis	-60º to +60º
Drive train torsional stiffness	See diagrams of angular displacement vs applied torque
Backlash	0,05 (east) 0,07 (west)
Environmental conditions	
Maximum allowable wind speed during tracking	17,61 m/s
Maximum allowable wind speed in stow	40 m/s
Temperature operational range	-20ºC to +55ºC
Temperature survival range	-40ºC to +60ºC
Snow rating	< 20 cm
Maintenance and Reliability	
Maintenance schedule	Attached in manual

The inspection of manufacturing process was performed in: On August 05, 2021.	NCLAVE Manufacturing S.L.U. Pol. Ind. La Peña Crta- NA 134. Km-93 31230. Viana, Navarra. Spain
Inspection Report Number:	11461-21-1-IF

RECORD OF CHANGES

Revision	Modification / Changes	Date
0	Initial version	23/04/2021
1	New edition to include new tracker control units	11/08/2021