

Result of Product Carbon Footprint Verification

The inventory of Thin film CIGS PV module product life cycle carbon emissions in year 2016 of Eterbright Solar Corporation

- Address: No. 442-1, Zhonghua Rd., Toufen City, Miaoli County, 351 Taiwan, R.O.C.

has been verified in meeting the following requirements:

- Standards: ISO/TS 14067:2013, ISO 14040:2006, ISO 14044:2006
- Product Category Rule: N/A
- Product Carbon Footprint Programme: Cahier des charges de l'appel d'offres portant sur la réalisation et l'exploitation d'Installations de production d'électricité à partir de l'énergie solaire « Centrales au sol de puissance comprise entre 500 kWc et 17 MWc ». (AO CRE4)


Following activities were conducted during verification:

- Document review, interview, site visit and recalculation

Based on the information we have received and evaluated, it was verified (referring to verification report no. 14060729 001) by TÜV Rheinland Taiwan that:

- The level of assurance carried out in this PCF verification was agreed by both parties is Reasonable Assurance Level.
- Required materiality of the verification is 5% and GWP value is following IPCC 2007 Report. Data and information, which support this PCF verification, are from historical in nature (Equipment operating data, include process equipment, building and utilities).
- System boundary of this product: Cradle to Gate
- Geography boundary: Taiwan (including 1 site: Miaoli)
- LCA software or database: table3: Valeurs des émissions de GES en CO2eq pour la fabrication des composants of Cahier des charges de l'appel d'offres portant sur la réalisation et l'exploitation d'Installations de production d'électricité à partir de l'énergie solaire « Centrales au sol de puissance comprise entre 500 kWc et 17 MWc ». (AO CRE4).
- Product carbon footprint inventory report period: Oct. 3, 2016 to Jan. 12, 2017.
- Product and functional unit: one piece of Thin film CIGS PV module (1900mm x 1235mm x 45mm / model: Cigs-XXXXA1 module series), not include Accessories (Junction Box) and packaging.
- Model no. and carbon emissions: Cigs-XXXXA1 module series (this verification follow average Power of module is 341.58W) / 196.95 kg of CO₂ equivalent
- Definition of Variable: Cigs-XXXXA1: the XXXX=3000-3650, increments of 25, Output watt (300W-365W with 2.5W step)
- This statement is valid from 2017/03/27 until 2019/03/26

Date of Issue 2017/03/27
TÜV Rheinland Taiwan Ltd.
11F, No. 758, Sec. 4, Bade Rd.,
Taipei 105, Taiwan



Jason J. S. Wu
TÜV Rheinland Systems Greater China
2017/03/27

This Verification Result is based on the information made available to TÜV Rheinland Taiwan and the engagement conditions detailed above. Therefore, TÜV Rheinland Taiwan can not guarantee the accuracy or correctness of this information. TÜV Rheinland Taiwan can not be held liable by any party relying or acting upon this Verification Result.

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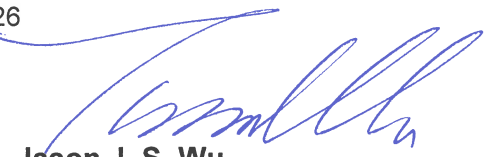
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- Document review, interview, site visit and recalculation

Based on the information we have received and evaluated, it was verified (referring to verification report no. 14060729 001) by TÜV Rheinland Taiwan that:

- Cigs-XXXXA1 module series:
 - 196.95 kg CO₂-eq/module
 - 576.58 kg CO₂-eq/kWp
- Modules processing CIGS (include cell process):
 - 157.09 kg CO₂-eq/module
 - 66.95 kg CO₂-eq/m² module
 - 459.89 kg CO₂-eq/kWp
- Glass:
 - 30.49 kg CO₂-eq/module
 - 1.17 kg CO₂-eq/kg
 - 89.27 kg CO₂-eq/ kWp
- EVA:
 - 5.74 kg CO₂-eq/module
 - 2.94 kg CO₂-eq/kg
 - 16.81 kg CO₂-eq/ kWp
- PET:
 - 3.63 kg CO₂-eq/module
 - 2.90 kg CO₂-eq/kg
 - 10.62 kg CO₂-eq/kWp
- This statement is valid from 2017/03/27 until 2019/03/26

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