





America

# Field Evaluation Report

**Customer:** DyoCore  
**Project #:** SI1008948  
**Date:** 22-OCT-2010

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San Diego, CA. 92121  
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<b>Client Information:</b>	
<b>Name:</b>	<b>DyoCore</b>
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<b>Phone:</b>	<b>858-598-5254</b>
<b>Fax:</b>	<b>866-404-2428</b>
<b>E-Mail:</b>	<b>rick@dyocore.com</b>
<b>Contact Person:</b>	<b>Richard Berry</b>
<b>Final Installation Site:</b>	
<b>Name:</b>	<b>Mr. and Mrs. Harold</b>
<b>Address:</b>	<b>9646 Prospect Ave Lakeside, CA</b>
<b>Phone:</b>	<b>N/A</b>
<b>Fax:</b>	<b>N/A</b>
<b>E-Mail:</b>	<b>rick@dyocore.com</b>
<b>Contact Person:</b>	<b>Richard Berry</b>
<b>Description of the installation site:</b>	<b>Residence</b>
<b>Local jurisdiction Information</b>	
<b>Title:</b>	<b>County of San Diego CA</b>
<b>Inspector's Name:</b>	<b>Pat Healy</b>
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<b>E-Mail</b>	<b>Pat.healy@sdcounty.us.gov</b>
<b>Evaluator Information</b>	
<b>Name of Engineer</b>	<b>Chuck Skinner</b>
<b>Evaluation Date</b>	<b>22-OCT-2010</b>
<b>Signature of Engineer</b>	
<b>Name of Reviewer</b>	<b>Rick Grumski</b>
<b>Review Date</b>	<b>29-OCT-2010</b>
<b>Signature of Reviewer</b>	



**Description of Equipment**

<b>No. of Units:</b>	<b>1</b>	<b>Standards</b>	<b>UL Subject 6141, NFPA 70</b>
<b>Description</b>	<b>Wind Turbine</b>		
<b>Manufacturer</b>	<b>DyoCore</b>		
<b>Model #:</b>	<b>SolAir 1 800</b>		
<b>Serial #:</b>	<b>SolAir-20104</b>		
<b>Electrical rating:</b>	<b>240V 15A 800W @12mph 1P 60 Hz</b>		
<b>TUV Field Label #</b>	<b>25972</b>		

**A. PURPOSE:**

The purpose of construction evaluation safety testing is to manifest that custom-made or imported equipment without a listing mark comply with the requirements of relevant US/Canadian standards for safety of electrical utilization systems. Local building inspectors normally require these tests as a pre-requisite for approving their relevant utilization.

**B. SUMMARY:**

Project initiated as per P.O. #:	Check # 1194
P.O. was issued by:	David Raines
P.O. was issued on:	05-Oct-10
The field inspection started on:	22-Oct-10
The field inspection completed on:	22-Oct-10

Any discrepancies found during the evaluation and duly corrected by the client, has been indicated in a letter of non-compliance, attached to this report.

Upon completion of the investigation, a serialized TUV Label has been applied on the equipment, indicating compliance to relevant sections of safety standards indicated in the document.

**C. GENERAL CONDITIONS OF ACCEPTANCE:**

This equipment has been evaluated containing components and designs as shown in this report. Any modification resulting in change in material, manufacturing methods, loading, environment or location affecting the installation and use of the labeled product under the provisions of the relevant electrical safety standards, will lead to an automatic cancellation of this label.



TUV's label indicating the equipment as compliant does not relieve the owner/manufacturer of its responsibility for the safe operation and maintenance of the equipment.

This evaluation does not include evaluation of the suitable operation of the unit and does not include emission tests and locations defined as hazardous by the National Electrical Code/Canadian Electrical Code.

## **D. INSPECTION PROCEDURES:**

### **1. Component List:**

The following safety relevant components were inspected for suitability of electrical rating and National <sup>1</sup> approvals. Discrepancies noted during evaluation are noted in our letter of non-compliance, annexed to this report.

- Circuit Breakers
- Fuses
- Pushbuttons
- Relays
- Transformers
- Interlocks
- Internal Wires
- Lasers
- Power Cords
- Interconnecting cords
- GFCI's
- Interlocks
- Motors
- Motor Overload
- Motor Contactors
- Lamps
- Receptacles
- Cables and Wires
- Disconnect Switches
- EMO's
- Power Supplies
- Heaters
- Motor Controllers

### **2. Construction Evaluation:**

The equipment's design was visually inspected with particular attention to the following areas:

- Use of Approved Components
- Proper Motor protection
- Proper Transformer protection
- Proper conductor protection
- Proper wire bending spaces
- Ground and bonding
- Accessibility of live parts
- Wiring ampacity
- Wiring methods
- Environmental conditions
- Suitability of material
- Guarding of Live Parts
- Guarding of moving parts
- Damaged Components
- Accessibility of moving parts
- Environmental conditions
- Pinching, crushing, falling hazards
- Sharp edges
- Suitability of enclosures
- Availability of suitable markings
- Suitability of power connection
- General Engineering Practices

<sup>1</sup> National approvals: TüV, UL, ETL, CSA etc.



In details, the following inspections were performed:

**(a) Grounding and Bonding:**

Exposed non-current carrying parts of the equipment were inspected for effective grounding and bonding in accordance with applicable provisions of the standards referenced in a checklist, annexed to this report.

**(b) Guarding of Live and Moving Parts:**

All internal components were inspected for installation in a suitable enclosure and effective guarding in accordance with applicable provisions of the standards.

Moving parts are inspected to contain suitable guards against pinching, crushing or other mechanical injury.

**(c) Overcurrent, Short Circuit and Overload Protection:**

Overcurrent, short circuit and overload protection installed in this equipment was evaluated for compliance to relevant standards. They were identified to be Nationally approved components and of proper size and location.

**(d) Internal Wiring:**

Internal wiring and wiring methods were evaluated for compliance with relevant standards. Wiring was verified to be Nationally approved types, properly sized and rated, with a temperature rating suitable for the installed application.

**(e) Field testing:**

Field-testing was performed to verify the suitability of operation and safety of the unit. Selection of tests are dependent on the type of equipment and relevant standard's requirements. Test data sheets are attached to this report.

**(f) Environmental Suitability:**

The suitability of the equipment within its environmental context was evaluated. Outdoor type equipment were evaluated for suitability for exposure to rain, dust, humidity, splashing etc. Enclosures were required to be NEMA rated and suitable for their relevant application



**(g) Installation of the Unit:**

It was verified that the equipment / fixture is installed in accordance with the manufacturer's installation instructions. Furthermore, installation requirements as per the National Electric Code/Canadian Electric Code such as working areas, power connection, etc. were also evaluated and corrective measures suggested.



# **Annex I**

## **Letter of Findings And Corrections**



Customer: DyoCore  
 Product Model/Serial Number(s):

Project Number: **SI1008948**

Findings summary to be completed on-site. Copy of this page to be left with site contact person.  
 Formal findings letter to be submitted after review.

Standard	Clause	Nonconformance (note machine if multiple inspected)
NFPA 70	250.4	Properly attach equipment grounding conductor to the diode enclosure. Currently attached to the cover. <b>Removed from the cover and attached with a tapped screw to the interior of the junction box.</b>
NFPA 70	690.13	Install a listed DC Overcurrent protective device in the DC output from the turbine. <b>A listed Overcurrent device has been added.</b>

Date:

TUV SUD FE \_\_\_\_\_

(initials)

Site Contact \_\_\_\_\_



# **Annex II**

## **Component List**



Schematic I.D.	Component Description	Rating (V, A, Hz, W, VA, HP, Phase, etc.)	Certification Marks	Remarks
		<b>Components are on file</b>		

Note: Electrical schematics with Bill of Materials may be substituted in project folder for component list.



# **Annex III**

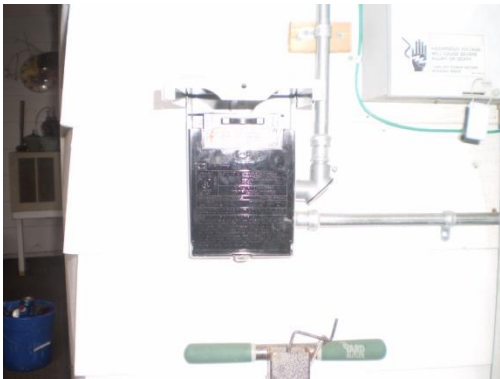
# **Photographs**



Diode Box



View of Solar Panel



AC Disconnect



Inverter



Nameplate on Inverter



Overall view of turbine



Equipment:	Wind Turbine	Model #:	SolAir I 800
Serial #:	SolAir-20104		
TUV Label	25972		

DIELECTRIC VOLTAGE WITHSTAND or INSULATION RESISTANCE TEST DATA				
Test Equip. Ref. #:	6557	Cal. Due	26-APR-11	
Circuit	Type of Insulation Basic/Reinforced	Test Voltage	Results	Remarks
Line to ground	Basic	1000VDC	>1000MΩ	

VOLTAGE AND CURRENT READINGS				
Test Equip. Asset #:	6555	Cal. Due	26-APR-11	

VOLTAGE MEASUREMENT						CURRENT MEASUREMENT					
L1-L2	L1-L3	L2-L3	L1-G/N	L2-G/N	L3-G/N	L1	L2	L3	Neutral	Ground	Pass / Fail
NO	VOLTA GE	TAKEN	SYSTEM NOT	CONNE CTED		NO	CURRE NT	TAKE N	NOT OPERAT ING		Pass

COMPONENT TEMPERATURE RISE DATA					
Ambient Temp.:	25.2C	Test Equip. Asset #:	6559	Cal. Due	26-APR-11

COMPONENT IDENTIFICATION	COMPONENT TEMPERATURE	TEMPERATURE RISE	TEST METHOD
Diodes	24.2C		Laser
Motors	24.2C		Laser
Inverter	24.5C		Laser

E-STOP AND INTERLOCK TEST					
EMO FUNCTION TEST			INTERLOCK FUNCTIONAL TEST		
Location	Result	Interlock Description	Result	Interlock Description	Result
N/A	N/A	N/A	N/A	N/A	N/A

GROUNDING CONTINUITY TEST				LEAKAGE CURRENT TEST			
Test Equip. Asset #	6547	Cal. Due	05-MAY-11	Test Equip. Asset #:		Cal. Due	
Location	Ohms	Result	Circuit	Polarity	mA	Result	
Incoming to equipment	.1	Pass	Open	Normal	N/A	N/A	
			Open	Reversed			
			Closed	Normal			
			Closed	Reversed			

GENERAL NOTES

END OF REPORT