

# INSPECTION REPORT

SGS Report No.		IN-BJ-5301-120046	
Executing SGS		NA	
SGS BR File		NA	
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Client		LORENTZ Pump Mechanics (Beijing) Co., Ltd.	
Client Contact Information		Contact Person	Bruce Lee
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Primary Supplier		NA	
Primary Supplier Contact Information		Contact Person	NA
		Telephone	NA
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Manufacturer		LORENTZ Pump Mechanics (Beijing) Co., Ltd.	
Manufacturer Contact Information		Contact Person	Bruce Lee
		Telephone	010-63455327
		Email	bruce@lorentz.com.cn
Equipment / Material Inspected		4 sets of solar submersible pump system: PS4000 SJ17-4 max. lift: 45m PS4000 SJ8-15 max. lift : 80m PS1800 SJ5-12 max .lift : 70m PS4000 SJ 5-25 max. lift: 140m	
Project Name		Pump Efficiency confirmation	
Inspection Location		Zhangxie Village, Liangxiang Town, Fangshan District, Beijing 102401, China	
Date of inspection		July 9-11, 2012	
Inspector's name		Chengting Gao	
Client Ref. No. (Notification)	N/A	Manufacturer Order No.	N/A
Inspection Items (according to ITP or notification)	Criteria		Results
See test details	Test and calculation equation procedure / confirmation		Acceptable



## 1. NON CONFORMITY

Number of NCR opened	N/A
Equipment	N/A
Component	N/A
Quantity	N/A
Description non conformity	N/A
Actions taken	N/A
Date proposed for solution	N/A

Remark: If there is more than one item copy and paste the chart for new description

## 2. ABOUT SGS

SGS is the world's leading inspection, verification, testing and certification company. We are recognized as the global benchmark for quality and integrity. With more than 70,000 employees, we operate a network of more than 1,350 offices and laboratories around the world. [www.sgs.com](http://www.sgs.com)

## 3. PURPOSE OF INSPECTION

The purpose of the inspection by the SGS team was to verify the following:

1. LORENTZ pump products meet their stated performance characteristics (max lift)
2. LORENTZ pump products perform at 15% above their stated maximum lift
3. That the COMPASS pump sizing software provides accuracy with particular attention being made to efficiency calculations
4. To review and confirm the overall manufacturing and testing procedures for pump systems

## 4. REFERENCE DOCUMENTS

1. LORENTZ test procedures
2. Pump System efficiency equations used in COMPASS and in test report
3. LORENTZ COMPASS 3.0 solar pump planning software

## 5. PRESENT DURING INSPECTION

Mr. Gao Chengting, engineer and technical supervisor of SGS Shanghai  
 Mr. Bernt Lorentz – CEO LORENTZ Pump Mechanics  
 Mrs. Florence Ungaro, engineer LORENTZ  
 Mr. Bruce Lee, engineer LORENTZ

## 6. INSPECTION ACTIVITIES

All test equipment was verified by SGS engineer that calibration records were in order and that the calibration was by a recognised body (SGS recognised laboratories).

**Test 1 and 2 : To confirm LORENTZ pump products meet their stated performance characteristic of lift, flow rate and efficiency, the following tests were conducted by or witnessed by SGS inspector.**

Pumps, motors and PS Controller were taken randomly out of production by SGS inspector.

PS4000 SJ17-4 max. lift: 45m  
 PS4000 SJ8-15 max. lift : 80m  
 PS1800 SJ5-12 max .lift : 70m





PS4000 SJ 5-25 max. lift: 140m

Tests were performed to simulate a 15% higher lift than the maximums stated for each pump

SGS took measurements across the entire working range of the above mentioned pumps.

#### Test 1 and 2 : Result

**SGS confirms that the tested pumps are of same or better performance and efficiency than the charts of COMPASS 3.0 solar pump sizing software show.**

#### Test 3 : That the COMPASS pump sizing software provides accuracy with particular attention being made to efficiency calculations

From the results of test 1 SGS calculated the pump efficiency based on the input power and output power measured (hydraulic flow against pressure) and compared it with the COMPASS software

#### Test 3 : Results

**SGS confirms that the equations used in the LORENTZ COMPASS 3.0 are correct and match the measured results from the randomly sampled pumps.**

#### Test 4 : To review and confirm the overall manufacturing and testing procedures for pump systems

SGS observed the testing of pump systems. SGS checked the test procedures and performance parameters that each system component must reach. 100% of systems are tested before putting into stock.

SGS confirms that LORENTZ operates a mandatory 100% quality control for each pump system. This means every pump end, motor and controller is individually quality tested, documented and filed under their individual serial numbers.

The following specific tests and audit of historic records was verified

**Pump Ends :** Every pump end is tested at 5 different heads, flow rates and speeds and the data is recorded under the Pump End serial number for further tracking.

SGS reviewed the records of measurements for past ten years. (2002 until current date)

**Motors:** ECDRIVE motors are individually tested for 3 different axial loads and power consumptions.

Criteria are set that must be reached for each of these measurements to pass the quality check.

SGS reviewed the records of measurements for past ten years. (2002 until current date)

**PS Controllers:** Each PS Controller is individually tested.

SGS reviewed the records of measurements for past ten years. (2002 until current date)

#### Test 4 : Results

**SGS confirms that an extremely vigorous and thorough test process is in place in the LORENTZ factory for 100% of the products manufactured.**

## 7. CONCLUSION

All of the requirements for the inspection were fully met.

The above reflects our findings at time and place of inspection. This certificate does not relieve sellers/suppliers from their contractual responsibilities nor does it prejudice buyers' right of claim toward sellers/suppliers for compensation for any apparent and/or hidden defects not detected during our random inspection or occurring thereafter.



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This report is issued according to the General Conditions for Inspection and Tests. The issuance of this report does not imply that buyers or sellers may not exercise their rights, nor does it exempt them from their responsibilities according to law and the Sales Contract. Contradictory stipulations are not our responsibility. Our responsibility for this report is limited to serious cases of negligence duly proved by the party who requested our services and under no circumstances may the corresponding indemnity be greater than ten times the value received as remuneration for our services. Except in the case of a special agreement, samples taken will not be maintained by the Company for more than three months. The information stated in this report (or certificate) is derived from the results of inspection or testing procedures carried out in accordance with the instructions of our Client, and/or our assessment of such results on the basis of any technical standards, trade custom or practice, or other circumstances which should in our professional opinion be taken into account.



Above findings are limited to date and place of intervention only.

## 8. NEXT VISIT

N/A

---- END of REPORT ----

Issued by: Chengting Gao

Function: Inspector  
Industrial Services Division  
SGS Shanghai Office  
Date of Issue: July 12, 2012



Reviewed by: Thomas Liu

Function: Manager  
Industrial Services Division  
SGS Beijing Office  
Date of Issue: July 12, 2012