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Test report

No. TRHZP1602004/01
about the test of a technical equipment

Applicant: National Quality Supervision and Inspection Center on Industrial and Mining Electric Drive Vehicle
No.11 East Baishi Road ,Xiangtan Jiuhua Economic and Technological Development Zone

Order No.: QTHZP02004/16

This report contains 2 text pages

Designed: 24.03.2016 by: Yuan Chao

Reviewed: 24.03.2016 by:

Applicant:	National Quality Supervision and Inspection Center on Industrial and Mining Electric Drive Vehicle No.11 East Baishi Road ,Xiangtan Jiuhua Economic and Technological Development Zone
Manufacturer:	Xiangtan City Tianyi Electric Co., Ltd. No.473, Shaoshanxi Road, Xiangtan, Hunan Province, P.R.China
Reference/Equipment:	Three phase asynchronous motor Model: YE2-90L-4
Rating:	Rated voltage: 380 V~ Rated frequency: 50 Hz Rated current: 3,7 A Rated output power: 1,5 kW Rated power factor: 0,79 Rated speed: 1390 r/min Duty type: S1 Thermal Class: F IP code: IP54 Efficiency: 78,0%
Date of receipt:	03.03.2016
Type of examination:	Test for determining the motor efficiency
Test regulations:	EN 60034-30:2009 EN 60034-2-1:2007
Testing period:	03.03.2016-10.03.2016
Test location:	TÜV NORD (Hangzhou) Co., Ltd. No.50, Jiu Huan Road, 5th floor, Jiang Gan District, Hangzhou, China Zhejiang LEAD Product Technic Co., Ltd No. 555 Jianshe San Road, Xiaoshan District, Hangzhou, China
Annex (No. of pages):	Annex 1 to Test Report TRHZP1602004/01 (4 pages) Test report No.: STL/R160580 (8 pages) from Zhejiang LEAD Product Technic Co., Ltd.
Test result:	According to the applicant's request, only provide the test result of motor efficiency, but not determining whether the test result is compliance with the requirements of the standards or not.

Test Report

File No.: HZP1602004
Annex 1 to Test Report TRHZP1602004/01

Date: 23.03.2016

Applicant	National Quality Supervision and Inspection Center on Industrial and Mining Electric Drive Vehicle No.11 East Baishi Road ,Xiangtan Jiuhua Economic and Technological Development Zone
Manufacturer	Xiangtan City Tianyi Electric Co., Ltd. No.473, Shaoshanxi Road, Xiangtan, Hunan Province, P.R.China
Date of Application	26.02.2016
Date of receipt:	03.03.2016
Product	Three phase asynchronous motor
Model No.	YE2-90L-4
General Information	
Rated Voltage	380 V
Rated Frequency	50 Hz
Rated current	3,7 A
Rated output power	1,5 kW
Rated power factor	0,79
Rated speed	1390 r/min
Duty type	S1
Thermal Class	F
IP code	IP54
Efficiency	78,0%
Type of examination	Test for determining the motor efficiency
Testing Period	03.03.2016-10.03.2016
Testing Laboratory	TÜV NORD (Hangzhou) Co., Ltd. Zhejiang LEAD Product Technic Co., Ltd.

The submitted test sample as described in the report hereunder is in compliance with the requirements:

EN 60034-30:2009 "Rotating electrical machines – Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE-code)"

EN 60034-2-1:2007 "Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)"

The efficiency values are determined on the basis of the summation of losses method in accordance with EN 60034-2-1:2007.

Yuan Chao

Approved by Yuan Chao

Particulars: test item vs. test requirements

Duty class	:	S1
Cycling duration factor	:	None
Thermal classification according to IEC 62114	:	F
Type of cooling	:	IC411
Primary coolant	:	Air
Secondary coolant	:	No secondary coolant
Maximum ambient air temperature (°C)	:	40 ℃
Altitude above sea level (m)	:	Not exceed 1000 m above the sea-leave
IP degree of machine	:	IP54
Dimension	:	See English User Manual
Mass of equipment (kg)	:	25 kg

General remarks:

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

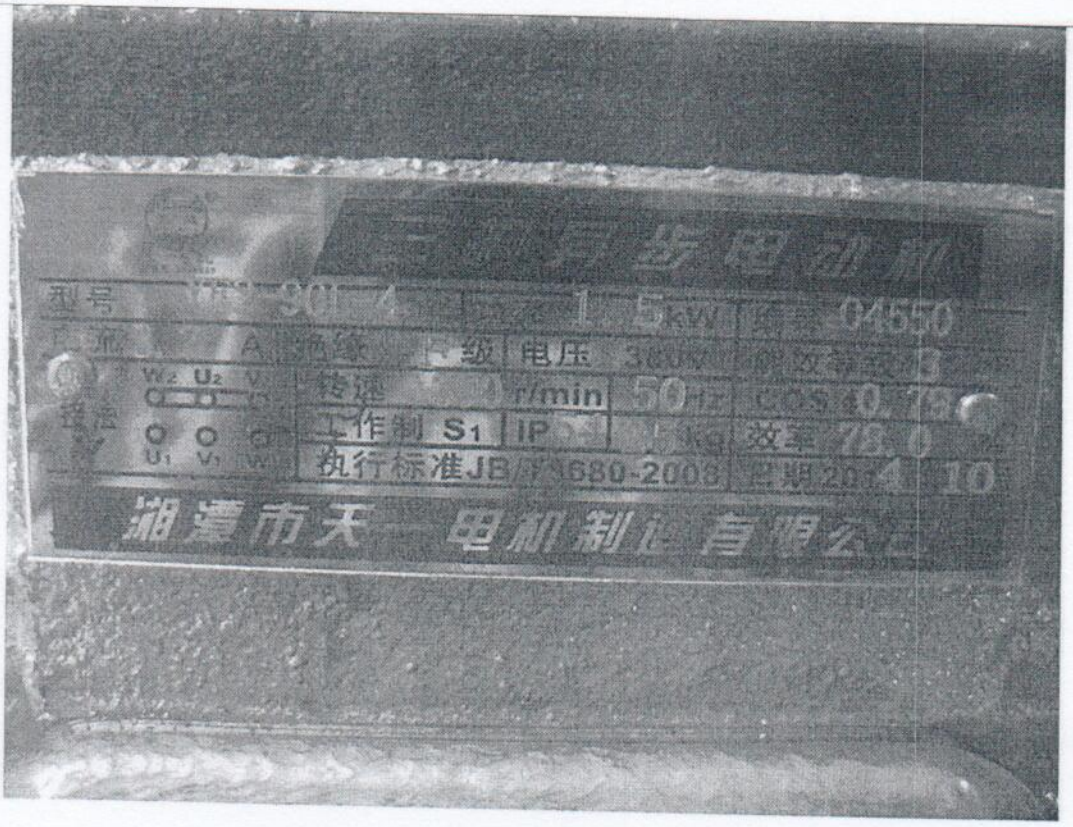
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The applicant apply for determining the efficiency of three phase asynchronous motor model YE2-90L-4.

According to the applicant's request, this test report only provide the test result of motor efficiency, but not determining whether the test result is compliance with the requirements of the standards or not.

Marking of the rating plate:



Test Report

TÜV NORD

File No.: HZP1602004
Annex 1 to Test Report TRHZP1602004/01

Calculation list of the efficiency of three phase induction machines

Type: YE2-90L-4 ; Frame No.: 90 ; Rated output power 1,5 kW ; Number of phase: 3~ ;
Frequency: 50 Hz ; Rated voltage: 380 V ; Synchronous speed: 1500 r/min ;
Limit of temperature rising: 105 K ; Duty: S1

No.	contents	100% load
1	Stator winding resistance before thermal test (R_1/Ω)	7,489
2	Winding temperature when measuring R_1 ($\theta_1/℃$)	21,8
3	Stator winding resistance after rated load thermal test (R_N/Ω)	11,617
4	Winding operation temperature after rated load thermal test ($\theta_w/℃$)	163,4
5	Ambient temperature after thermal test ($\theta_b/℃$)	22,6
6	Ambient temperature of load test ($\theta_a/℃$)	22,6
7	Winding temperature during load test ($\theta_t/℃$)	141,2
8	Output power of load test (W)	1500
9	Synchronous speed (n_s/r/min)	1500
10	Speed in rotation (n/r/min)	1328
11	Slip ratio (s)	0,115
12	Line voltage (U/V)	380,01
13	Stator line current (I_1/A)	4,655
14	Stator input power (P_1/W)	2327
15	Iron losses under each load point (P_{Fe}/W)	94,445
16	Friction and windage losses (P_{fw}/W)	26,951
17	Power absorbed I^2R by stator winding under test temperature θ_t (P_{cu1}/W)	356,597
18	Power absorbed I^2R by rotor winding under test temperature θ_t (P_{cu2}/W)	215,110
19	Residual losses (P_L/W)	153,816
20	Intercept (B)	78,990
21	Slope (A)	0,648
22	Correlation coefficient (r)	0,989
23	Additional load losses (P_s/W)	75,420
24	Power absorbed I^2R by stator winding under specified temperature θ_s (P_{cu1s}/W)	379,869
25	Slip under specified temperature θ_s (s_{tc}/r/min)	183,224
26	Speed in rotation under specified temperature θ_s (n_c/r/min)	1316,776
27	Slip ratio under specified temperature θ_s (s_s)	0,122
28	Power absorbed I^2R by rotor winding under specified temperature θ_s (P_{cu2s}/W)	226,305
29	Total losses (P_T/W)	802,989
30	Output power (P_2/W)	1524,011
31	Efficiency (η)	65,63
32	Power factor ($\cos\varphi$)	0,760

Results of motor character

Load in percentage	100% load
Efficiency %	65,63
Temperature rising (K)	140,8

END OF TEST REPORT