



**AIR MOVEMENT AND CONTROL
ASSOCIATION INTERNATIONAL, INC.**

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Test No. 28023-A1

October 31, 2011

TO: Aireng Company
Plot # 08, SECTOR I-11/4
Industrial Area
Islamabad, Punjab PAKISTAN 44000

ATTN: Ahmed Saeed
saeed@airengindustries.com

**SUBJECT: CONTRACT TESTING
MODEL No. 15**

Attached are the test results of the subject model performed on October 29, 2011.

If you should have any questions concerning these data, please let us know.

Sincerely,
AIR MOVEMENT AND CONTROL
ASSOCIATION INTERNATIONAL, INC.

Josh Parent
Laboratory Manager

Attachment

Copy To: saeed@airengindustries.com

PERFORMANCE CURVE

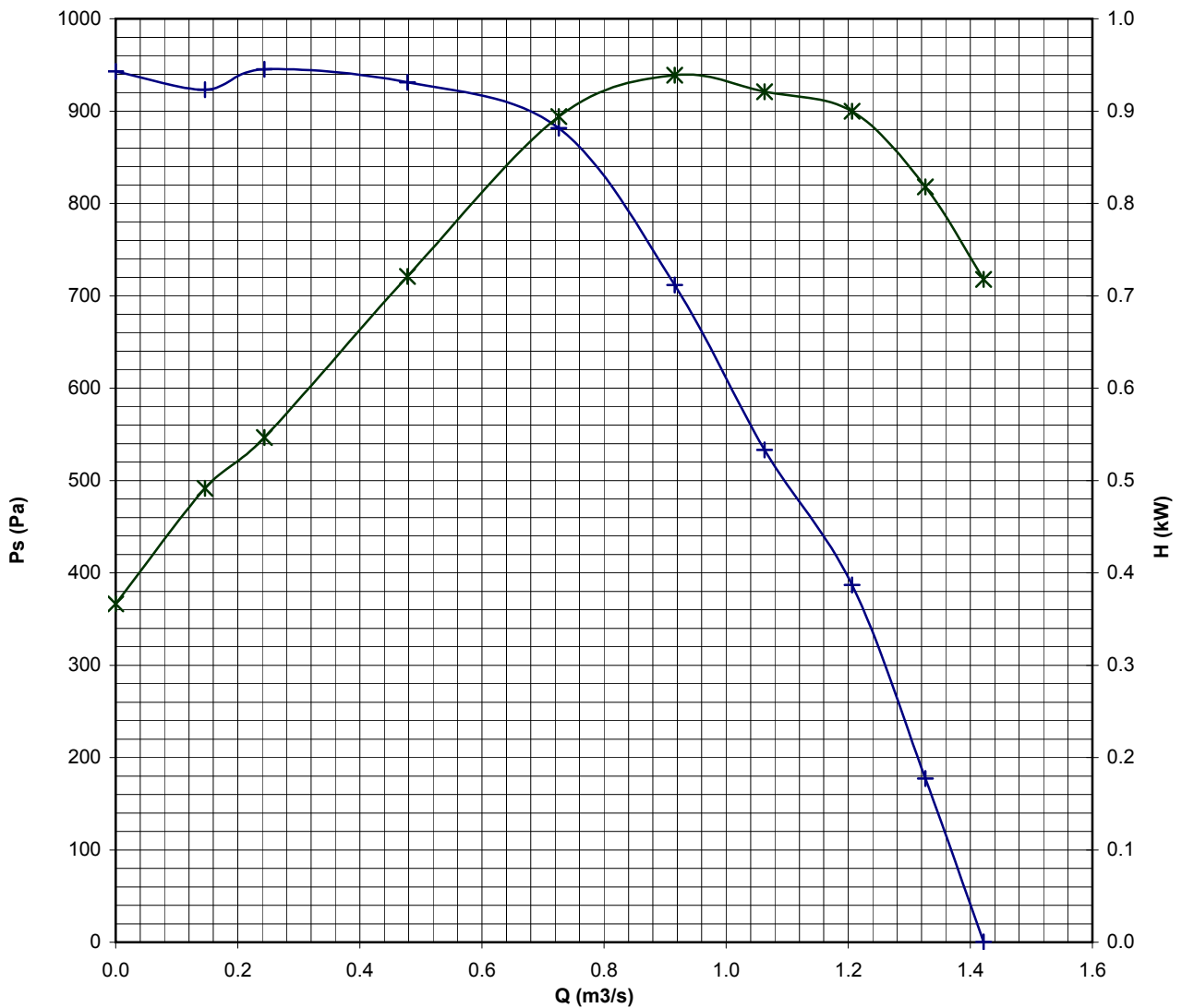
Test Unit : Centrifugal-Backward
 Manufacturer : Aireng Company
 Trade Name : ATBIC
 Model Number : 15
 Impeller Diameter : 384 mm
 Inlet Area : 0.1134 m²
 Outlet Area : 0.1250 m²

Test Number : 28023-A1
 Date of Test : 29 Oct 2011
 Tested For : Aireng Company
 Witness : No
 Technician : LTH

Test Method per AMCA Standard 210-99, Figure 12, Installation Type B
 Results at Standard Air, Speed = 2000 rpm

LEGEND

- Fan Flow Rate, Q
- + Fan Static Pressure, Ps
- * Fan Power Input, H



TEST RESULTS

Test Unit : Centrifugal-Backward
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Test Number : 28023-A1
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 Witness : No
 Technician : LTH
 Pb : 100450 Pa

Test Method per AMCA Standard 210-99, figure 12 setup, Installation type B

Results at Test Conditions :

Det.	po (kg/m ³)	N (rpm)	Pt (Pa)	Pv (Pa)	Ps (Pa)	Q (m ³ /s)	H (kW)	Kp	ηt (%)	ηs (%)
1	1.1373	2000	74	74	0	1.422	0.681	1.0003	15.45	0.04
2	1.1364	2000	232	64	168	1.327	0.775	0.9997	39.69	28.74
3	1.1368	2000	419	53	366	1.206	0.852	0.9989	59.28	51.80
4	1.1368	2000	546	41	505	1.063	0.872	0.9985	66.41	61.43
5	1.1370	2000	705	30	674	0.916	0.889	0.9979	72.41	69.29
6	1.1373	2000	854	19	835	0.726	0.847	0.9974	73.01	71.38
7	1.1372	2001	892	8	883	0.478	0.684	0.9976	62.17	61.59
8	1.1380	2000	899	2	897	0.244	0.518	0.9986	42.19	42.09
9	1.1375	2001	876	1	876	0.146	0.466	1.0002	27.53	27.51
10	1.1375	2001	895	0	895	0.000	0.348	1.0000	0.00	0.00

Result at Standard Air, N = 2000 rpm

Det.	Pt (Pa)	Pv (Pa)	Ps (Pa)	Q (m ³ /s)	H (kW)	Kp	etat (%)	etas (%)
1	78	78	0	1.422	0.718	1.0003	15.45	0.04
2	245	68	177	1.326	0.818	0.9997	39.69	28.74
3	443	56	387	1.206	0.900	0.9989	59.28	51.80
4	576	43	533	1.063	0.921	0.9985	66.41	61.43
5	744	32	712	0.916	0.939	0.9979	72.41	69.29
6	902	20	882	0.726	0.894	0.9974	73.01	71.38
7	940	9	931	0.478	0.721	0.9976	62.17	61.59
8	948	2	945	0.244	0.547	0.9986	42.19	42.09
9	924	1	923	0.146	0.491	1.0002	27.53	27.51
10	943	0	943	0.000	0.366	1.0000	0.00	0.00

These test data were obtained in a laboratory accredited by AMCA for AMCA Standard 210 testing.
 Data are not certified by AMCA

MEASUREMENT

Test Unit : Centrifugal-Backward
 Manufacturer : Aireng Company
 Trade Name : ATBIC
 Model Number : 15
 Impeller Diameter : 384 mm
 Inlet Area : 0.1134 m²
 Outlet Area : 0.1250 m²

Test Number : 28023-A1
 Date of Test : 29 Oct 2011
 Tested For : Aireng Company
 Witness : No
 Technician : LTH
 Pb : 1004.50 hPa

Test Method per AMCA Standard 210-99, figure 12 setup, Installation type B

Data at Test Conditions :

Det.	tdo (°C)	two (°C)	td2 (°C)	td5 (°C)	Ps5 (Pa)	dP (Pa)	td7 (°C)	Ps7 (Pa)	T (Nm)	N (rpm)
1	31.2	25.1	32.2	32.2	0	893	32.2	0	3.25	2000
2	31.6	24.9	32.3	32.3	168	775	32.3	168	3.70	2000
3	31.4	25.3	32.4	32.4	366	640	32.4	366	4.07	2000
4	31.4	25.2	32.5	32.5	505	496	32.5	505	4.17	2000
5	31.3	25.2	32.5	32.5	674	368	32.5	674	4.25	2000
6	31.2	25.2	32.5	32.5	835	231	32.5	835	4.05	2000
7	31.3	25.2	32.5	32.5	883	101	32.5	883	3.27	2001
8	31.0	25.2	32.6	32.6	897	27	32.6	897	2.48	2000
9	31.2	25.2	32.6	32.6	876	10	32.6	876	2.23	2001
10	31.2	25.2	32.6	32.6	895	0	32.6	895	1.66	2001

Open Nozzle Diameters

c	c	c	c	c	c	c	c	c	c	c
c	c	c	c	c	c	c	c	c	c	c
6	6	c	c							

Appurtenances : Unit tested with AFMA built outlet duct

Additional Comments : Contract Test

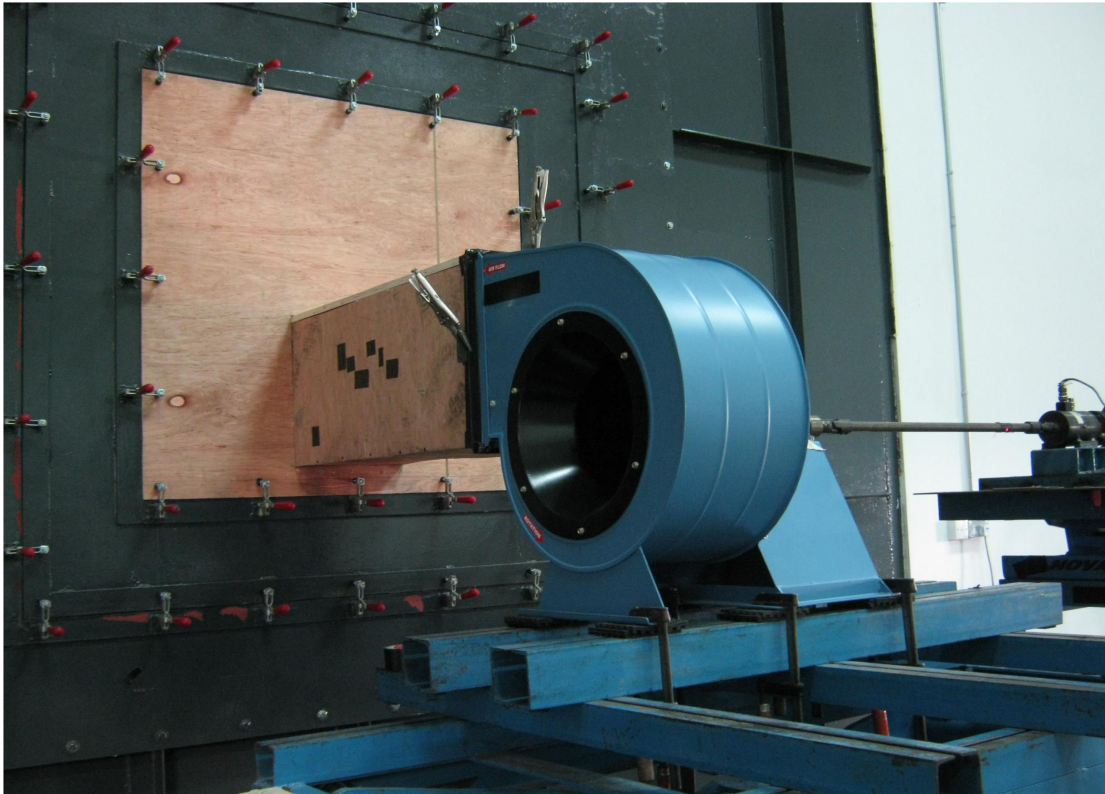
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TEST SETUP PICTURE

Test Unit : Centrifugal-Backward
Manufacturer : Aireng Company
Trade Name : ATBIC
Model No. : 15

Test Number : 28023-A1
Date of Test : 29 Oct 2011



Air Performance Test
Figure 12 Setup
Installation Type B

INSTRUMENT LIST

Test Number: 28023-A1
 Date of Test: 29 Oct 2011

Technician: LTH

The following instruments, calibrated as applicable per AMCA standards, were used for this test

PRESSURE

Instruments	Manufacturer
<input checked="" type="checkbox"/> Static Pressure Transducer FC0332	Furness
<input type="checkbox"/> Total Pressure Transducer FC0332	Furness
<input checked="" type="checkbox"/> Static & Total Pressure Transducer FC0332	Furness
<input checked="" type="checkbox"/> Barometric Pressure Transmitter T2114	Comet

TEMPERATURE

Instruments	Manufacturer
<input checked="" type="checkbox"/> RTD Sensor Plane 5-Fig 12	Valutemp
<input type="checkbox"/> RTD Sensor Plane 8-Fig 15	Valutemp
<input checked="" type="checkbox"/> Humidity Transducer TH-200-HN/STH-PD150	Kimo

SPEED

Instruments	Manufacturer
<input checked="" type="checkbox"/> Speed Meter & Diffuse Reflective Sensor MP5W-44 & BM200-DDT	Autonics

ELECTRIC METER

Instruments	Manufacturer
<input type="checkbox"/> Multimeter Fluke 322	Fluke
<input type="checkbox"/> Power Meter WT230	Yokogawa

TORQUE

Instruments	Manufacturer
<input checked="" type="checkbox"/> Torque Transducer 1604-200 (5.5kW)	Lebow
<input type="checkbox"/> Torque Transducer 1604-2000 (37kW)	Lebow
<input checked="" type="checkbox"/> Strain-Gauge Conditioner Type 3278 Torque Readout	Daytronics

SOUND

Instruments	Manufacturer
<input type="checkbox"/> Pulse Data Acquisition & CPB Analysis Types 3560-B-010 & 7771-N2	Bruel & Kjaer
<input type="checkbox"/> Diffuse-field microphone Type 4943	Bruel & Kjaer
<input type="checkbox"/> Microphone Preamplifier Type 2669-L	Bruel & Kjaer
<input type="checkbox"/> Rotating Boom Type 3923	Bruel & Kjaer
<input type="checkbox"/> Pistonphone for Acoustic Calibration Type 4228	Bruel & Kjaer
<input type="checkbox"/> Reference Sound Source RSS Type 4204	Bruel & Kjaer
<input type="checkbox"/> Correction Barometer Type UZ001	Bruel & Kjaer