

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

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Inspection Report

Information Provided by Customer

Customer : BIS Hua Wei Pipelines & Steel Structure Engineering Co Ltd.
Address : Unit 403, Yee Kuk Industrial Centre,
555 Yee Kuk Street, Cheung Sha Wan, HK
Project : For Stocks
(SGPLPO-HKG-00218A-Stock-UQL-BIS)
Subject : Inspection of Ductile Iron Fittings

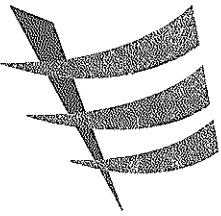
Lab. Information

Report No. : PFA10270
Issue Date : 30 May 2011
W. I. No. : IN/1/2/10
ETL Lab. No. : IN/1/0062/02
Page No. : 1 of 5

As requested by "BIS Hua Wei Pipelines & Steel Structure Engineering Co Ltd.", inspection of ductile iron fittings were carried out by "ETS-Testconsult Ltd." and with details and results as follows :

- 1.0) **Date of inspection** : 21 to 23 February 2011
- 2.0) **Location of inspection** : Saint -Gobain (Maanshan) Foundry Co. Ltd. at
No.1, Huagong Road, Cihu Maanshan City, Anhui, PRC.
- 3.0) **Applicable document** : The manufacturer's catalogue
- 4.0) **Products descriptions** : "PAM" brand, D. I. fittings, internally & externally coated with
fusion bonded epoxy
(see clause 6.1 for details)
- 5.0) **Scope of inspection**
 - 5.1) Sampling for inspection
 - 5.2) Visual inspection for appearance and marking check
 - 5.3) Dimensional measurement
 - 5.4) Witnessed hydrostatic / pneumatic pressure test
 - 5.5) Protective coating thickness measurement
 - 5.6) Witnessed tensile & Brinell hardness tests on cast bars
 - 5.7) Reviewed manufacturer's Q. C. documentation including verification of calibration certificates of
measuring & testing equipment for validity
 - 5.8) Issued acceptance note
 - 5.9) Issued inspection report





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6.0) Inspection details & results

6.1) Sampling for inspection

Item no.	Products descriptions	Type	DN Flange (mm)	DE Range (mm)		Total quantities supplied (pcs)	No. of samples selected for visual, marking, dimensional, protective coating thk. check & hydrostatic pressure checks (pc.)
				mini	maxi		
1	"PAM" UltraQUICK NG flange adaptor (carbon steel B & N)	C	65/80	80	102	10	1
2		D	100	97	127	10	1
3		F	150	151	181	120	1
4		J	250	260	290	30	1
5		G	200	196	226	50	1
6		K	300	306	336	40	1
7	"PAM" UltraLING NG coupling (carbon steel B & N.)	C	N.A.	80	102	10	1
8		D		97	127	10	1
9		F		151	181	50	1
10		J		260	290	30	1
11		G		196	226	10	1
12		K		306	336	15	1

6.2) Visual inspection for appearance and marking check

No harmful defect was found on the selected and inspected samples (i.e. blow holes, cavities & etc.) and acceptable. A label was fixed on each fitting body with the following information, i.e.

PAM  (UltraQUICK/UltraLING) NG TYPE(x) OD/DE(XXX/XXX) PFA16 (bolt size) BOLT TORQUE (XXXNm) and (manufacturer's reference no.)

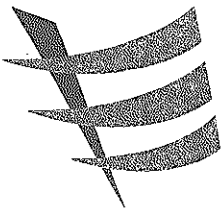
6.3) Dimensional measurement

The dimensions of the selected samples were measured by our inspector. The requirements and actual dimensions were tabulated as follows :

Note : All dimensions are in mm except otherwise specified



"PAM" UltraQUICK NG flange adaptor (carbon steel B & N)						
Type	As per catalogue			Actual		
	L	a	D	L	a	D
C	142	18	209	142	18	209
D	142	17	242	142	17	242
F	142	17	297	143	17	297
J	172	20	409	172	20	409
G	142	18	348	143	18	348
K	173	22	459	173	22	459



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"PAM" UltraLING NG coupling (carbon steel B & N,)				
Type	As per catalogue		Actual	
	L	D	L	D
C	182	208	182	209
D	232	240	233	240
F	232	295	233	295
J	292	407	292	408
G	262	342	262	343
K	292	467	293	467

Remark for item 6.3)

The measured results are found to comply with the manufacturer's catalogue by considering the deviation will not affect the application.

6.4) Witnessed hydrostatic / pneumatic pressure test

The selected samples were hydrostatic / pneumatic pressure tested and witnessed by our inspector. There were no signs of leakage, pressure drop and sweating found and in compliance with the requirements of the manufacturer's catalogue.

(Hydrostatic test pressure ≥ 25 bar for \leq DN300 and the duration ≥ 2 minutes)

(Pneumatic test pressure ≥ 1 bar and the duration ≥ 10 seconds)

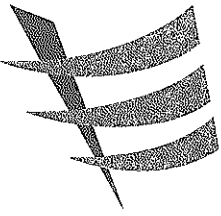
6.5) Protective coating thickness measurement

The fusion bonded epoxy coating thickness on the selected samples were measured by our inspector. The measured results were found to be in range of 273-426 microns and complied with the manufacturer's catalogue (i.e. ≥ 250 microns)

6.6) Witnessed tensile & hardness tests on cast bars

(2) pieces of cast bars represented this delivery lot of D. I. fittings were tested & witnessed by our inspector. The test results were found to comply with the requirements of the manufacturer's catalogue.





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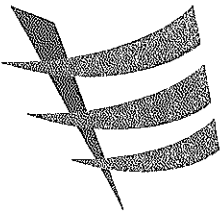
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6.7) Reviewed manufacturer's Q.C. documentation including verification of calibration certificates of measuring & testing equipment for validity

Item no.	Document title	Appendix no. (Attached)	Remarks
1	The manufacturer's ISO 9001 : 2008 certificate & the certificate for product conformity to ISO 2531 : 1998, EN 545 : 2006 & GB 13295 : 2008	1 (2 pages)	Reviewed & for information
2	The "WRAS" approval letter to "Akzo Nobel" Power Coating GMBH on resincoat R4 red, R4 blue, R4 black & R4 green epoxy power coating (Test report : M103927/A-D & M103991/A-D) Ref. CR/JC & dated : 15 March 2007	2 (1 pages)	Reviewed & "WRAS" approved the epoxy paint & is suitable for use in contact with potable water intended for human consumption with regard to their effects on the quality of water to BS 6920 & for cold water & hot water use up to 85°C
3	The manufacturer's certificate of quality for D. I. fittings (covered : descriptions of products, type, quantity and weight Cert. dated : 3 March 2011	3 (2 pages)	Reviewed & the manufacturer certified that the delivery products complied with the reference standards and 100% brand new.
4	The manufacturer's catalogue for "PAM" UltraQUICK NG flange adaptor & UltraLING NG coupling	4 (11 pages)	For information
5	The records of mechanical properties test of cast bars (test witnessed by our inspector)	5 (2 pages)	Reviewed & the test results of the cast bars complied with the requirements of BS EN 545.
6	The calibration certificates -Pressure gauges Cert. No.: LX10 01-6873 ~6874, LX10 01-9666 & date of calibration : 11 Oct. 2010 & 6 Dec. 2010 - Tensile machine Cert. No.: LX11 06-0011 & date of calibration : 12 January 2011 - Brinell hardness machine Cert. No.: LX11 07-0001 & date of calibration : 12 January 2011 -Coating thickness measuring equipment Cert. No.: CD10 16-0558 & date of calibration : 8 August 2010	6 (9 pages)	Reviewed & the calibration certificates were found valid for the usage.





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7.0) Others

- 7.1) The samples selected for inspection were marked by our inspector with "ETL- LAM" for easy identification.
- 7.2) A separate acceptance note was issued.


8.0) Conclusion

Based on the inspection results & reviewed the manufacturer's documentation, the D. I. fittings supplied for this delivery were found to comply with the requirements of the manufacturer's catalogue.

9.0) Inspected and reported by: Mr. LAM, Ming Wah (ETL - Inspector)



Approved Signatory



WONG, Yiu Keung Tony