



Test report



Test report of synchronous generator
under protection of XFlow® water mist system

Date/Place : Nov. 10, 2004 WUXI
 Manufacturer : Wuxi Fenxi Electrical Machine Co., Ltd.
 No. 83-D, Wuxi National High and New Tech Industrial Development Zone
 Description of equipment : Synchronous generator (Type: 1FC5& 1FC6)
 : X-Flow® water mist system manufactured by York Fire Fighting

This is to verify that the generators mentioned above of enclosure degree IP23 are capable of working normally under protection of X-Flow® water mist system above mentioned with installations specified below.

Type of protection : IP23

Tested and reported by:

Wuxi Fenxi Electrical Machine Co., Ltd.

YORK FIRE FIGHTING

Reviewed, witnessed and approved by:

<p>CCS. 李维 李维</p>	<p>Accepted for installation in adjacent area where water may extend.</p>  <p>(Liu Wei Dong)</p>
<p>BW Witnessed Kehon Zhang 10/11/2004</p>	
<p>Huanying Lin 10 Nov. 2004 for Lloyd's Register</p>	



Test report of generator



1. Objective of Test:

The objective of the test is to verify if enclosure class IP23 is sufficient for the generators in connection with XFlow® water mist system by means of a full-scale test. Water mist sprayed shall have no harmful effects.

2. Testing method:

Using XFlow® water mist nozzle, min. pressure 7.7 bar for NHP4 & min. pressure 6.6 bar for NHP2.

These nozzles are to be supplied by the fire fighting system maker, York Fire Fighting
-construction of nozzle: Maker standard test nozzle

Refer to Appendix 1,2,3 for detailed construction

-water pressure at nozzle: min. pressure 7.7 bar for NHP4

min. pressure 6.6 bar for NHP2

-test duration: 20min.

3. Test procedure

- 1) Insulation resistance measurements to be taken before starting up of the generator.
- 2) Starting up, test will be carried out for 10 minutes at no load, rated voltage and rated frequency.
- 3) After starting up, using water mist nozzle, water will be applied with NHP2 at 6.7 bar about 20 min. with 50% load according to SOLAS 2000 Amendment.
- 4) Insulation resistance measurements to be carried out, the value shall be more than 5 M Ω .
- 5) Rotor and stator high voltage test to be carried out at 80% of 2000V for one minute.
- 6) Repeat above test with NHP4 at min 7.7 bar for only type 1FC5 with 20% load.

Appendix I Installation drawing of test applied on generator set 1FC5 with two nozzles NHP2.

Appendix II Installation drawing of test applied on generator set 1FC5 with one nozzle NHP4

Appendix III Installation drawing of test applied on generator set 1FC6 with one nozzle NHP2

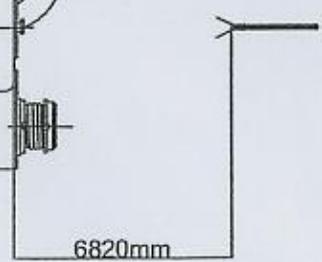
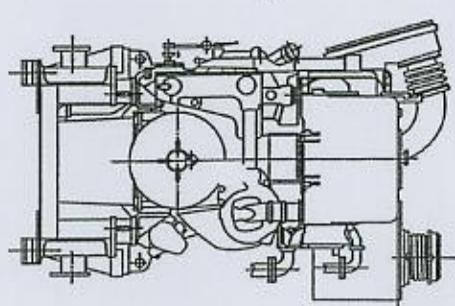
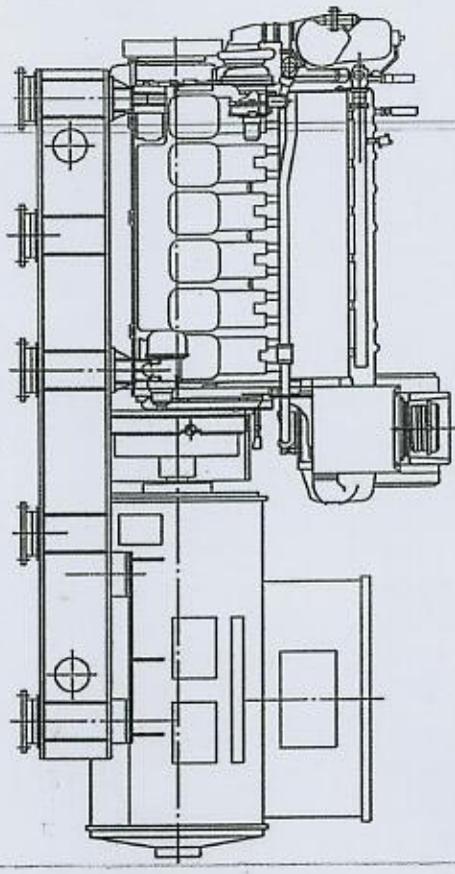
4. Test results:

The test was carried out with satisfactory result. No harmful effect was found. Insulation Resistance measurement and high voltage test are OK.

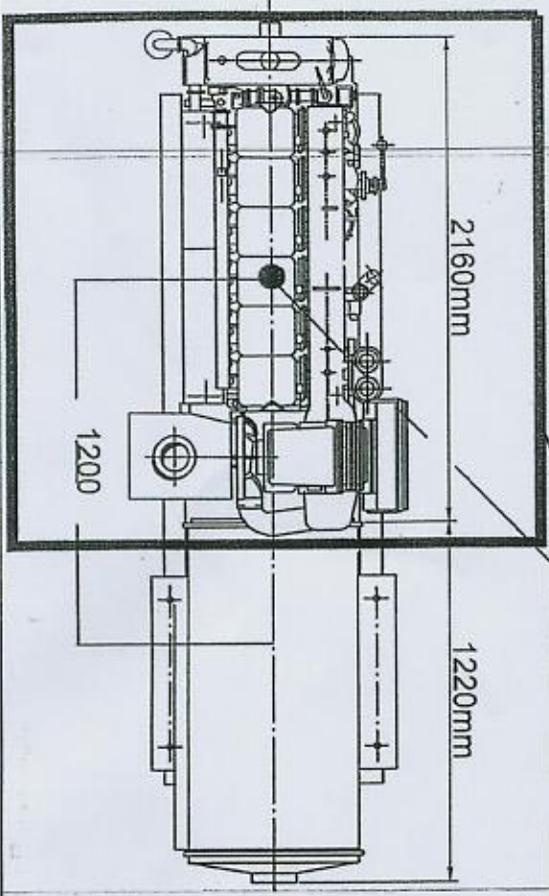
We confirmed that Siemens IP23 generators type 1FC5/1FC6 can withstand the XFlow® water mist system, "FWBLAFFS" and can be operated during the operation of XFlow® water mist system under test condition above mentioned item 3. The XFlow® section for the generators therefore doesn't need to separate in several sections for each generator.

	Insulation resistance (M Ω) before test	Insulation resistance (M Ω) After test	High voltage test For 1 minute
1FC6 284-4LA45 (serial No.0020830)	15/500(stator/rotor)	180/500	OK
1FC5 352-4TA45 (serial No.0401208)	200/500(stator/rotor)	200/500	OK

From F.W. Pump

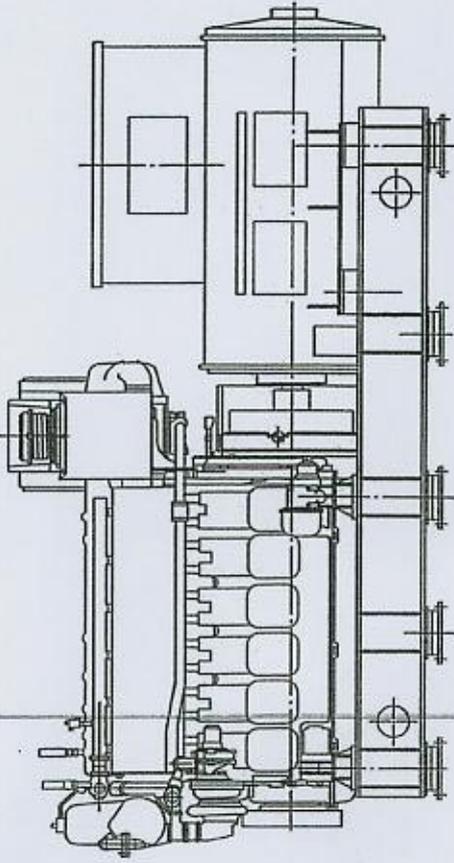


Appendix II
 1PCS with 1
 nozzle NHP4

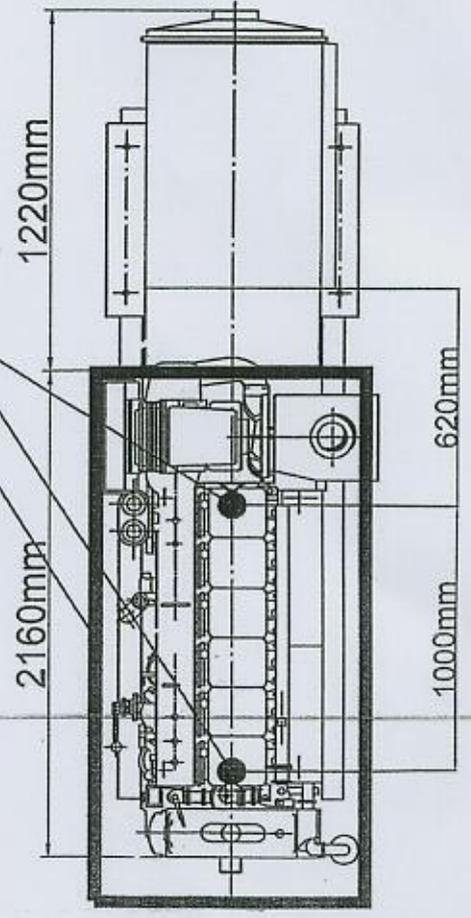


Checked by: JH	Date:	Drawn by:	Date:
MA	04	JH	2004-10-0
Part name:	Customer:	Scale:	1:1
York Novenco	Xflow Water Mist System	Approved by:	JH
Industrial 22, Dec-170	Pump Unit	Drawn by:	JH
Nassau, Denmark	Local Protection	Date:	2004-10-0
Tel: +45 70124222			
Fax: +45 65765555			
The drawing must be kept in custody or stored by our factory			
Revisions:		Revised by:	
1			

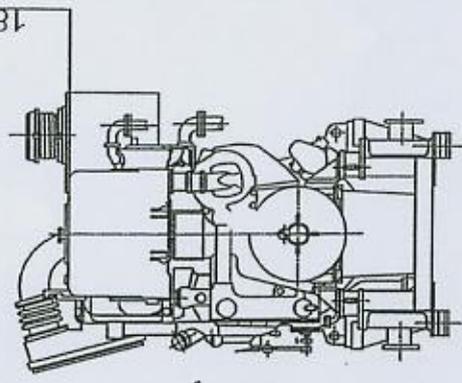
Appendix I
1FC5 with 2
nozzles NHP2



Protection Area
Nozzles (Pressure 6.7bar for NHP2)

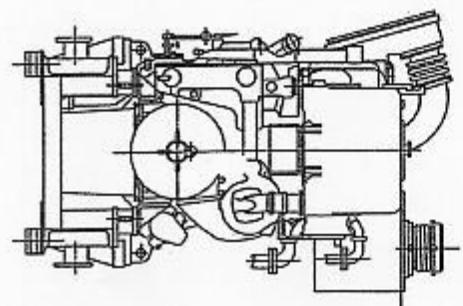
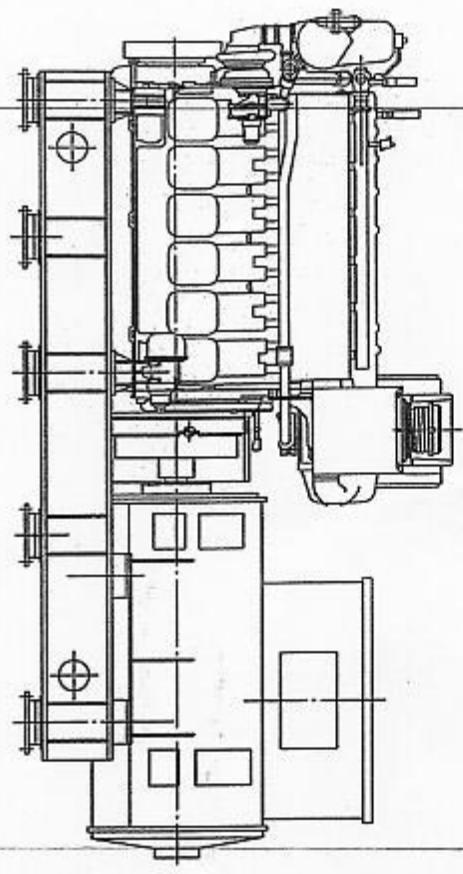
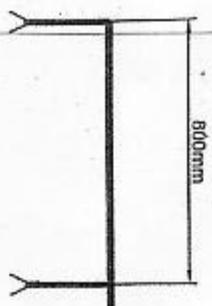


1860mm

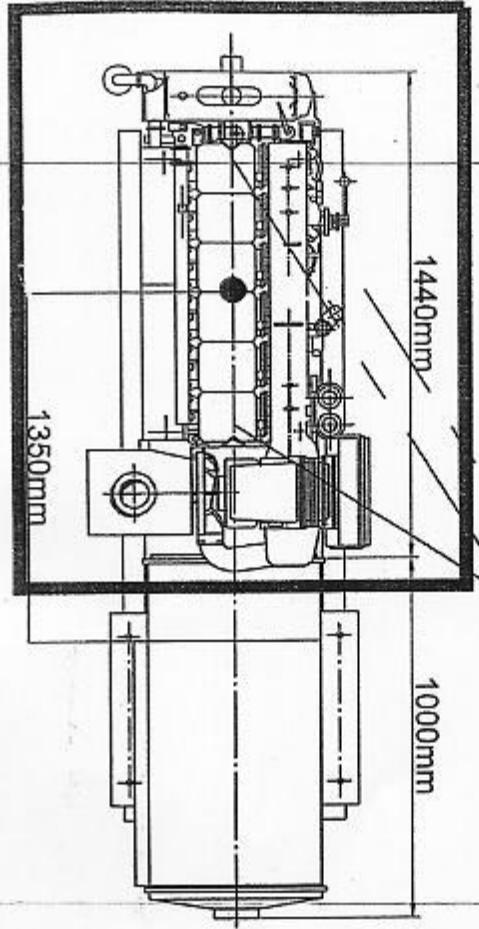


Checked by: JH	Date:	Rev:	Revision:
NO:	Code:	Int. No.:	First Draft:
YORK Novenco		YORK	YORK
Industivej 22, DK-4700		YORK	YORK
Horsbøl, Denmark		YORK	YORK
Tel. +45 86511000		YORK	YORK
Fax: +45 86510000		YORK	YORK
This drawing must not be used, copied or otherwise reproduced by any other party.			
Project:		Project:	
Xflow Water Mist System		Xflow Water Mist System	
Pump Unit		Pump Unit	
Local Protection		Local Protection	
Drawn by: JH	Checked by:	Rev. No.:	Rev. Date:
2004-10-10			

From F.W. Pump



Protection Area
Nozzles (Pressure 6.7bar for NHP2)



Appendix III

1 FC6 with 1 nozzle NHP2

Order No.	Alt	Part	Rev						
144	000	144	000	000	000	000	000	000	000
<p>YORK NOVERCO</p> <p>Industrial 22, DK-4700 Horsens, Denmark Tel: +45 70324222 Fax: +45 55759550</p> <p>From: Xilow Water Melt System From: Pump Unit From: Local Protection</p>									
<p>Part No. 144</p> <p>Alt. 000</p> <p>Rev. 000</p> <p>Drawn By: JH</p> <p>Approved By: JH</p> <p>Checked By: JH</p> <p>Date: 2004-10-10</p>									