

EMC TEST REPORT

TTM Energiprodukter AB

Degasing equipment

NoXygen 5

Report no: 12025



Prepared by Ulf Heiding	Approved by Tobias Harlén	Date 2012-02-21
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Head information

<i>Report no</i> 12025	<i>Date</i> 2012-02-21	<i>Prepared by</i> Ulf Heiding
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<i>Customer</i> TTM Energiprodukter AB	<i>Contact person</i> Per-Olof Illerstam
<i>Postal address</i> Slöjdaregatan 5, SE-393 53 Kalmar, Sweden	
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<i>Type of apparatus</i> Degasing equipment			
<i>Type no</i> NoXygen 5			
<i>Voltage</i> 230 Vac	<i>No of phases</i> 1	<i>Current</i> - A	<i>Power</i> 800 W
<input checked="" type="checkbox"/> Class I, earthed <input type="checkbox"/> Class II, double insulated <input type="checkbox"/> DC application			

<i>Tested acc to</i> Emission: EN 61000-6-3:2007, EN 61000-3-2:2006, -A1:2009, -A2:2009, EN 61000-3-3:2008 Immunity: EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11

<i>Test result</i> <input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed
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<i>Note</i> The test results in this report apply only to the tested sample of EUT. Criteria for normal performance: No false start/stops of pump motor, no false activation of water valves or false registration of fill water flow, max +/-0.1bar deviation of water pressure.

Test summary

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Emission according to EN 61000-6-3:2007			
Environmental phenomena	Basic Standard	Result	Comments
Conducted disturbance	EN 61000-6-3:2007	Passed	
Radiated disturbance	EN 61000-6-3:2007	Passed	
Harmonics	EN 61000-3-2:2006, -A1:2009, -A2:2009	Passed	
Flicker	EN 61000-3-3:2008	Passed	*

Immunity according to EN 61000-6-2:2005 *				
Environmental phenomena	Basic Standard	Test specifications	Result	Comments
Electrostatic discharge (ESD)	EN 61000-4-2:1995 -A1:1998, -A2:2001	Contact discharge 2, 4 kV Air discharge 2, 4, 8 kV	Passed Passed	
Radio-frequency electromagnetic field	EN 61000-4-3:2006 -A1:2008	80 - 2 700 MHz 10 V/m AM 80%, 1 kHz sinus	Passed	* Tested with + 20 %
Fast transients	EN 61000-4-4:2004 -A1:2010	Coupling network 2 kV Capacitive clamp - kV	Passed Not applicable	***
Surges	EN 61000-4-5:2006	Line to line 0.5, 1 kV Line to ground 0.5, 1, 2 kV	Passed Passed	
Induced radio-frequency field	EN 61000-4-6:2007	0.15 - 80 MHz 10 V _{RMS} AM 80%, 1 kHz sinus	Passed	* Tested with + 20 %
Power frequency magnetic field	EN 61000-4-8:1994 -A1:2001	- A/m 50 Hz	Not applicable	**
Voltage dips and interruptions	EN 61000-4-11:2004	Residual voltage Time 0 % 20 ms 40 % 200 ms 70 % 500 ms 0 % 5 s	Passed Passed Passed Passed	

* Test not within the scope of the accreditation.

** Not applicable since the EUT does not contain any devices that are sensitive to the specified level of magnetic field.

*** Not applicable since the EUT does not have any external cables, or have external cables but with a lead length of less than 3 m.

Measurements uncertainties

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The reported expanded uncertainty U_{lab} is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

The uncertainty evaluation has been carried out in accordance with publications EA-4/16, CISPR16-4-2 and UKAS LAB34.

Conducted disturbance, mains terminals ± 2.9 dB

Radiated disturbance measured in Semi Anechoic Chamber (SAC)

30-200 MHz	horizontal polarisation	± 9.0 dB
	vertical polarisation	± 7.7 dB
200-1 000 MHz	horizontal polarisation	± 3.7 dB
	vertical polarisation	± 5.3 dB

Radiated disturbance measured in Weather Protected Open Area Test Site (OATS)

30-200 MHz	horizontal polarisation	± 3.5 dB
	vertical polarisation	± 5.6 dB
200-1 000 MHz	horizontal polarisation	± 3.9 dB
	vertical polarisation	± 5.1 dB

Compliance or non-compliance with a disturbance limit is determined according to the following, quoted from CISPR 16-4-2:2003.

If U_{lab} is less or equal to U_{cispr} then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} then:

- compliance is deemed to occur if no measured disturbance, increased by $(U_{lab}-U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, $(U_{lab}-U_{cispr})$, exceeds the disturbance limit.

The expanded uncertainty U_{cispr} is for:

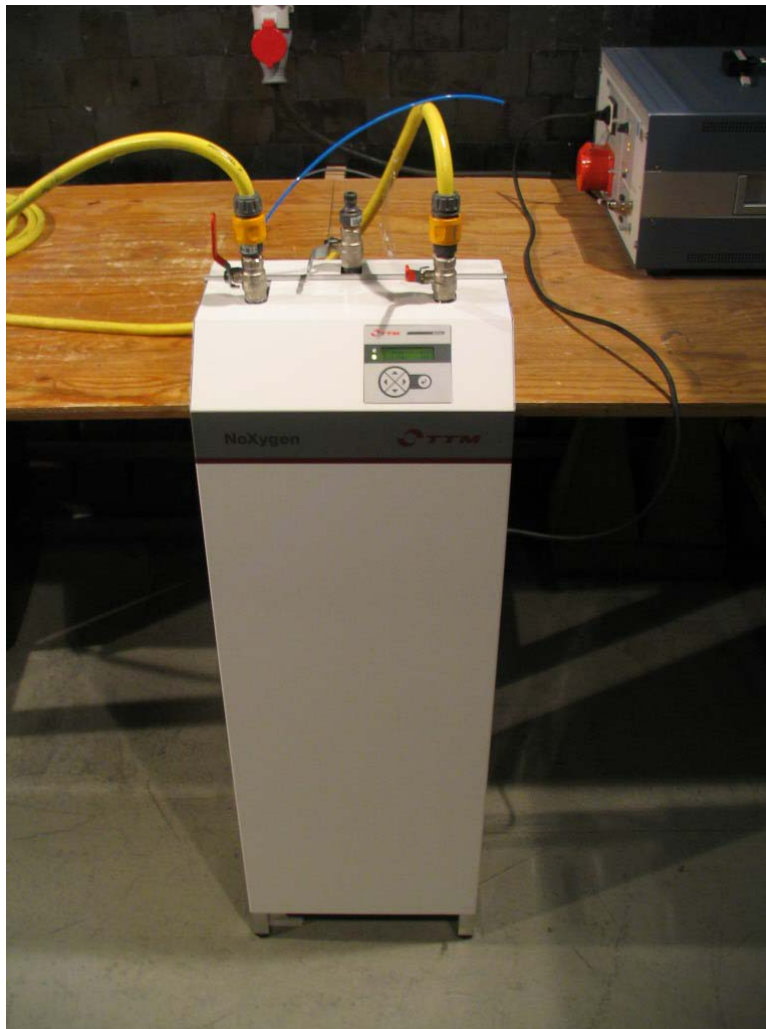
- conducted disturbance, mains port 150 kHz – 30 MHz ± 3.6 dB
- radiated disturbance, 30 – 1 000 MHz ± 5.2 dB

Conducted disturbance test set-up

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Degassing equipment NoXygen 5

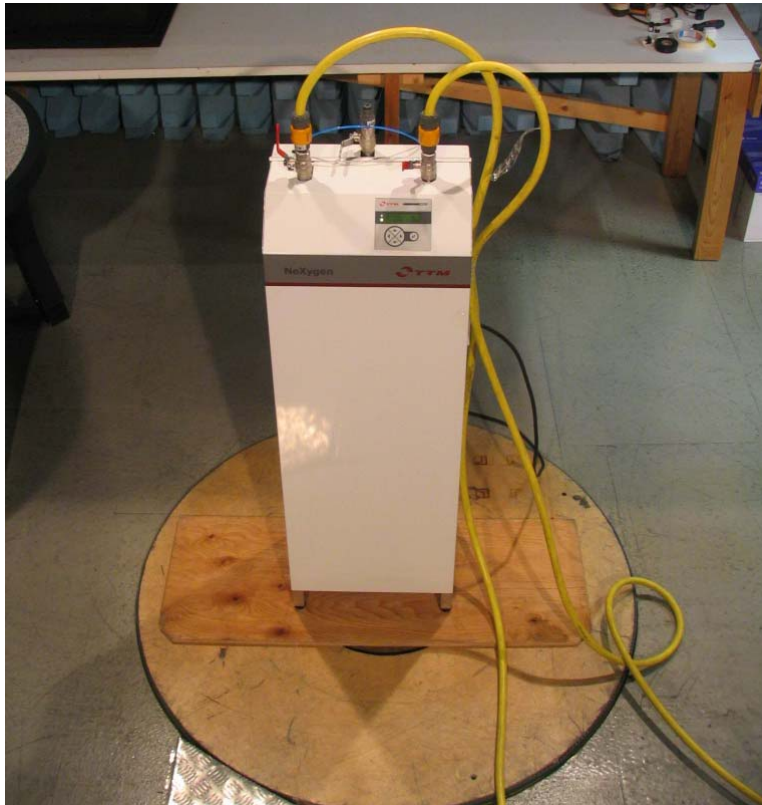
Measuring performed in Semi Anechoic Chamber (SAC)



Radiated disturbance test set-up

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Degasing equipment NoXygen 5



Measuring is performed in Semi Anechoic Chamber (SAC) with antenna distance 3 m.

Picture shows front view and corresponds to azimuth 0°. Rotation is made clockwise up to 360° at peak search.

Pre-scan with PK-detector is made at antenna height 1.3 m, 0° and 90° azimuth and horizontal and vertical antenna polarisation. Worst-case is shown in graph.

The reported QP-values in the table represents worst-case found by rotating the EUT between 0° and 360° azimuth and varying the antenna height between 1 and 4 m and changing the antenna polarisation between horizontal and vertical.

Deviation from standard:

The used SAC is not compliant with the NSA requirements of ± 4 db according to CISPR 16-1 in the frequency range 30-200 MHz.

Immunity test equipment

<i>Report no</i> 12025		Used
Signal generator 9 kHz - 2.4 GHz	Marconi 2024	<input checked="" type="checkbox"/>
Signal generator 9 kHz - 3.3 GHz	Rohde & Schwarz SML03	<input checked="" type="checkbox"/>
RF power amplifier 10 kHz - 250 MHz, 75 W	Amplifier Research 75A250	<input checked="" type="checkbox"/>
RF power amplifier 25 - 1 000 MHz, 30 W	Amplifier Research 30W1000M7	<input checked="" type="checkbox"/>
HF power amplifier dual band 1 - 4 GHz, 30/17 W	Milmega AS0104-3017	<input checked="" type="checkbox"/>
Electromagnetic field strength meter 20 Hz - 18 GHz	PMM 8051	<input checked="" type="checkbox"/>
Optical repeater	PMM 8051 OR-1	<input checked="" type="checkbox"/>
E-field probe 500 kHz - 3 GHz, max 120 V/m	PMM BA-01	<input checked="" type="checkbox"/>
E-field probe 10 MHz - 1 GHz, max 30 V/m	PMM BA-05	<input checked="" type="checkbox"/>
Level control 10 kHz - 1 GHz	Amplifier Research 888	<input checked="" type="checkbox"/>
Bilog antenna 30 MHz - 1GHz	Chase CBL 6111B	<input type="checkbox"/>
Bilog antenna 30 MHz - 3 GHz	Chase CBL 6112A	<input checked="" type="checkbox"/>
Double ridged broadband horn antenna 0.7 – 6.5 GHz	Schwarzbeck BBHA 9120 LFA	<input type="checkbox"/>
ESD simulator 0.2 - 16.5 kV (EN 61000-4-2)	Schaffner NSG 435	<input checked="" type="checkbox"/>
Fast transient/burst generator (EN 61000-4-4)	Schaffner NSG 2025	<input checked="" type="checkbox"/>
Capacitive clamp (EN 61000-4-4)	Schaffner CDN 126	<input type="checkbox"/>
Surge pulse generator, 1.2/50, 8/20 (EN 61000-4-5)	Schaffner NSG 2050/PNW 2050	<input checked="" type="checkbox"/>
Pulse coupling network, 1 & 3 phase (EN 61000-4-5)	Schaffner CDN 131/133	<input checked="" type="checkbox"/>
Pulse coupling network, signal line 40 Ω (EN 61000-4-5)	Schaffner CDN 116	<input type="checkbox"/>
Coupling network 150 kHz - 230 MHz (EN 61000-4-6)	Schaffner CDN 516S	<input checked="" type="checkbox"/>
EM injection clamp 10 kHz - 1 GHz (EN 61000-4-6)	FCC F2031 S/N 215	<input type="checkbox"/>
Power frequency and pulse magnetic field (EN 61000-4-8/9)	Magnetic coil / Schaffner NSG 2050	<input type="checkbox"/> / <input type="checkbox"/>
3-phase voltage dips test system, 32 A/phase (EN 61000-4-11)	EMC-Partner PFS/SRC 32 System	<input type="checkbox"/>
Combi generator, burst, surge, voltage dips (EN 61000-4-11)	Schaffner Best Plus	<input checked="" type="checkbox"/>
Pulse coupling network (EN 61000-4-4, -5)	Schaffner CDN 135	<input type="checkbox"/>
5 kVA AC power source (EN 61000-3-13)	Schaffner NSG 1007	<input type="checkbox"/>
Load dump pulse generator (ISO 7637-2 test pulse 5)		<input type="checkbox"/>
Temperature and humidity measurement instrument	Testo 615	<input checked="" type="checkbox"/>
Oscilloscope DC - 300 MHz, 2,5 Gs	Tektronix TDS 3032	<input checked="" type="checkbox"/>
Linear power supply 24 Vdc 10 A	SF 10A-230	<input type="checkbox"/>
Rotating table / Moving antenna	±180°/ 1-4 m, hor & vert polarisation	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>
Screen room 1.8 x 1.8 x 2.4 m for measuring equipment	Siemens	<input type="checkbox"/>
SAC, Semi Anechoic Chamber	10 x 5 x 5 m	<input checked="" type="checkbox"/>
OATS, Open Area Test Site	8 x 15 x 5 m	<input type="checkbox"/>
In situ measurement at		<input type="checkbox"/>

Emission test equipment

<i>Report no</i> 12025		Used
EMI Test receiver 9 kHz - 7 GHz	Rohde & Schwarz ESCI7	<input checked="" type="checkbox"/>
Measuring system 9 kHz - 2.5 GHz	Rohde & Schwarz ESPC	<input type="checkbox"/>
Spectrum analyser 9 kHz - 1.8 GHz	Tektronix 2712	<input type="checkbox"/>
Mains equivalent 5 μ H//50 Ω , 160 A	Rohde & Schwarz ESH 3-Z6	<input type="checkbox"/>
Mains equivalent 50 μ H//50 Ω , 2 x 16 A	Rohde & Schwarz ESH 3-Z5	<input type="checkbox"/>
Mains equivalent 50 μ H//50 Ω , 4 x 25 A	Rohde & Schwarz SH 2-Z5	<input checked="" type="checkbox"/>
Mains equivalent 50 μ H//50 Ω , 4 x 100 A	FCC-LISN-50-100-4	<input type="checkbox"/>
Absorbing clamp 30 - 1000 MHz	Rohde & Schwarz MDS-21	<input type="checkbox"/>
Absorbing clamp 30 - 300 MHz	R&S MDS 9	<input type="checkbox"/>
Bilog antenna 30 MHz - 1 GHz	Chase CBL6111B	<input type="checkbox"/>
Bilog antenna 30 MHz - 3 GHz	Chase CBL6112A	<input checked="" type="checkbox"/>
Double ridged broadband horn antenna 0,7 – 6,5 GHz	Schwarzbeck BBHA 9120 LFA	<input type="checkbox"/>
Active antenna 30Hz - 50 MHz	Emco 3301B	<input type="checkbox"/>
Triple loop antenna 2M, 9 kHz - 30 MHz	Rohde & Schwarz HM 020	<input type="checkbox"/>
Control unit	Rohde & Schwarz BG 020	<input type="checkbox"/>
Balance-to-unbalance transformer, 150 kHz - 1.605 MHz	Acc to CISPR 15 Fig A.2a	<input type="checkbox"/>
Pulse limiter 10 dB	Rohde & Schwarz ESH 3-Z2	<input checked="" type="checkbox"/>
Current probe, 9 kHz - 30 MHz	Rohde & Schwarz ESH 2-Z1	<input type="checkbox"/>
Voltage probe 1500 Ω , 9 kHz - 30 MHz, -29 dB	Emco 3701 Line Probe acc. to CISPR	<input type="checkbox"/>
Harmonics & flicker test system (EN 61000-3-2, -3)	Schaffner ProfLine 2100 (CCN 1000 + NSG1007)	<input type="checkbox"/>
Harmonics & flicker test system (EN 61000-3-2, -3, -11, -12)	EM-Test DPA503 + ACS 503	<input checked="" type="checkbox"/>
Measuring receiver 85 kHz - 30 MHz	Schwarzbeck FSME 1515	<input type="checkbox"/>
Discontinuous interference analyzer	Chase DIA 1500, Ser. No. 1523	<input type="checkbox"/>
Oscilloscope DC - 100 MHz, 500 Ms	Tektronix THS720STD	<input type="checkbox"/>
Oscilloscope DC - 300 MHz, 2,5 Gs	Tektronix TDS 3032	<input type="checkbox"/>
Linear DC power supply 0 - 350 V, 7 A	NT-97	<input type="checkbox"/>
Power supply 0-30 Vdc 10 A (SMPS)	Delta Elektronika MST 030-10	<input type="checkbox"/>
Power supply 24 Vdc 10 A (Linear)	SF 10A-230	<input type="checkbox"/>
Battery	12 V 60 Ah / 12 V 60 Ah	<input type="checkbox"/> / <input type="checkbox"/>
Rotating table / Moving antenna	$\pm 180^\circ$ / Height 1-4 m, hor & vert polarization	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>
Screen room 1.8 x 1.8 x 2.4 m for measuring equipment	Siemens	<input checked="" type="checkbox"/>
SAC, Semi Anechoic Chamber	10 x 5 x 5 m	<input checked="" type="checkbox"/>
OATS, Open Area Test Site	8 x 15 x 5 m	<input type="checkbox"/>
In situ measurement at		<input type="checkbox"/>

EN 61000-4-2: Electrostatic discharge (ESD) immunity test

Report no 12025

EUT	Degasing equipment NoXygen 5
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Test voltage (kV) Contact discharge	Test voltage (kV) Air discharge	Note
<input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 6 <input type="checkbox"/> 8 <input type="checkbox"/> Special	<input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 4 <input checked="" type="checkbox"/> 8 <input type="checkbox"/> 15 <input type="checkbox"/> Special	10 discharges each of positive and negative polarity. Temperature 22 °C (15-35 °C) Relative humidity 26 % * (30-60 %) *) Outside specified range according to the standard.

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
- B. Temporary degradation or loss of function or performance, which is recoverable.
- C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
- D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: B Passed Failed

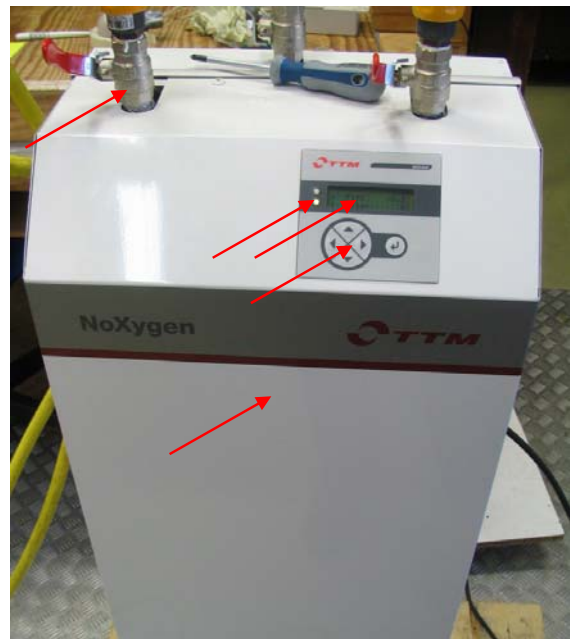
Notes

It has been demonstrated that the ESD generator meets the specified requirements in the standard with at least a 95% confidence.

Visual control of function of EUT.

Criteria for normal performance: See head note.

Test points shown in picture.



Tested by Tobias Harlén

Date 2012-02-21

EN 61000-4-3: Radiated radio frequency electromagnetic field immunity test

Report no 12025

<i>EUT</i>	Degasing equipment NoXygen 5
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Test field strength	Frequency range	Frequency step	Dwell time
10 V/m	80 - 2 700 MHz	1 %	3 s

- Vertical and horizontal polarisation.
- Amplitude modulation 80 %, 1 kHz, sinusoidal.
- Pulse modulation 100 %, 1 Hz, 50% duty cycle.

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
- B. Temporary degradation or loss of function or performance, which is recoverable.
- C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
- D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: A Passed Failed

Notes

All tests performed with 2 V/m above specified test level.
 Visual control of function of EUT with video camera.
 Criteria for normal performance: See head note.



<i>Tested by</i> Ulf Heiding	<i>Date</i> 2012-02-20
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EN 61000-4-4: Electrical fast transient/burst immunity test

Report no 12025

<i>EUT</i>	Degasing equipment NoXygen 5
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Test voltage	Couplers	Note
2 kV	PE+N+L1	Duration 1 min Frequency 5 kHz Repetition rate 300 ms Positive and negative polarity
-	-	

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
- B. Temporary degradation or loss of function or performance, which is recoverable.
- C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
- D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: B Passed Failed

Notes

It has been demonstrated that the burst generator meets the specified requirements in the standard with at least a 95% confidence.

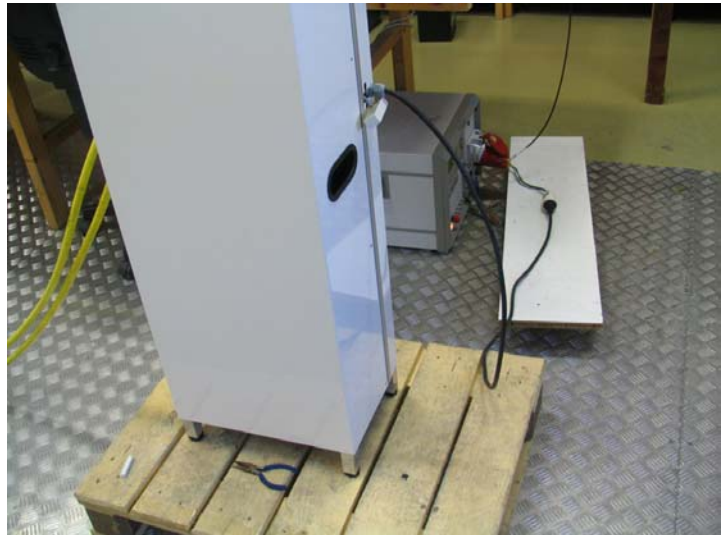
Visual control of function of EUT.

Criteria for normal performance: See head note.

Mains input tested in coupling unit.

Test result:

Temporary false trig of triac to pump, but no loss of functionality.



<i>Tested by</i> Ulf Heiding	<i>Date</i> 2012-02-21
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EN 61000-4-5: Surge immunity test

Report no 12025

<i>EUT</i>	Degasing equipment NoXygen 5
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Test voltage	Couplers	Note
0.5 & 1.0 kV (line-to-line, R_1 2 Ω)	L1-N	5 positive and 5 negative surges each at 0°, 90°, 180° and 270° Repetition rate 10 s (1 min or less according to standard)
0.5, 1.0 & 2.0 kV (line-to-ground, R_1 12 Ω)	L1-PE, N-PE	

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
- B. Temporary degradation or loss of function or performance, which is recoverable.
- C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
- D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: B Passed Failed

Notes

It has been demonstrated that the surge generator meets the specified requirements in the standard with at least a 95% confidence.

Visual control of function of EUT.

Criteria for normal performance: See head note.



<i>Tested by</i> Tobias Harlén	<i>Date</i> 2012-02-21
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EN 61000-4-6: Induced radio frequency field immunity test

Report no 12025

EUT **Degasing equipment NoXygen 5**

Test field strength	Frequency range	Frequency step	Dwell time
10 V	0,15 - 80 MHz	1 %	3 s

- Continuous wave.
 Amplitude modulation 80 %, 1 kHz, sinusoidal.
 Pulse modulation 100 %, 1 Hz, 50% duty cycle.

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
 B. Temporary degradation or loss of function or performance, which is recoverable.
 C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
 D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: A Passed Failed

Notes

All tests performed with 2 V above chosen test level.
 Visual control of function of EUT.
 Criteria for normal performance: See head note.
 Mains input tested in CDN516.



Tested by Tobias Harlén

Date 2012-02-20

EN 61000-4-11: Voltage dips and short interruptions immunity test

Report no 12025

EUT	Degasing equipment NoXygen 5
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Residual voltage	Cycles	Time	Required performance criterion	Test result criterion
0 %	1	20 ms	B	A
40 %	10	200 ms	C	B
70 %	25	500 ms	C	B
0 %	250	5 s	C	B

Each test repeated 3 times with 30 seconds interval.

Test result

The test results may be classified on the basis of the operating conditions and the functional specifications of the equipment under test, according to the following performance criteria:

- A. Normal performance within the specification limits.
- B. Temporary degradation or loss of function or performance, which is recoverable.
- C. Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
- D. Degradation or loss of function, which is not recoverable, due to damage of equipment (components).

Required criterion for compliance: See above Passed Failed

Notes

Visual control of function of EUT.

Criteria for normal performance: See head note.

Tested by Ulf Heiding

Date 2012-02-20

EN 61000-3-2: Harmonic current emissions

Test Report

Report title:	12025-01 H
Company Name:	Dectron AB
Date of test:	13:42 20.Feb 2012
Measurement file name:	12025-01 H TTM Energiprodukter AB, NoXygen 5.rsd
Tester:	UH
Standard used:	EN/IEC 61000-3-2 Ed.3 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	180s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	TTM Energiprodukter AB
E. U. T.:	NoXygen 5 Active mode

Test Result	
E. U. T.:	PASS
Power Source:	PASS

E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 100%:	
Order (n):	None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.	
Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 150%:	
Order (n):	None

Power Source Result

First dataset out of limit:	
DS (time):	None
Harmonic(s) out of limit:	
Order (n):	None

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	492.192E-3			
2	6.522E-3	0.604	1.08	PASS
3	123.233E-3	5.358	2.30	PASS
4	2.891E-3	0.672	430.00E-3	PASS
5	45.859E-3	4.023	1.14	PASS
6	1.890E-3	0.630	300.00E-3	PASS
7	8.158E-3	1.059	770.00E-3	PASS
8	1.422E-3	0.618	230.00E-3	PASS
9	8.156E-3	2.039	400.00E-3	PASS
10	1.309E-3	0.711	184.00E-3	PASS
11	3.743E-3	1.134	330.00E-3	PASS
12	1.203E-3	0.784	153.33E-3	PASS
13	3.998E-3	1.904	210.00E-3	PASS
14	1.074E-3	0.817	131.43E-3	PASS
15	3.482E-3	2.321	150.00E-3	PASS
16	1.008E-3	0.877	115.00E-3	PASS
17	2.822E-3	2.133	132.35E-3	PASS
18	1.062E-3	1.039	102.22E-3	PASS
19	3.050E-3	2.575	118.42E-3	PASS
20	1.331E-3	1.446	92.00E-3	PASS
21	2.525E-3	1.571	160.71E-3	PASS
22	1.364E-3	1.631	83.64E-3	PASS
23	2.197E-3	1.497	146.74E-3	PASS
24	1.661E-3	2.167	76.66E-3	PASS
25	2.109E-3	1.562	135.00E-3	PASS
26	2.745E-3	3.879	70.77E-3	PASS
27	1.794E-3	1.436	124.99E-3	PASS
28	1.721E-3	2.619	65.71E-3	PASS
29	1.553E-3	1.335	116.39E-3	PASS
30	2.528E-3	4.123	61.33E-3	PASS
31	1.472E-3	1.352	108.87E-3	PASS
32	1.197E-3	2.082	57.50E-3	PASS
33	1.365E-3	1.334	102.27E-3	PASS
34	1.365E-3	2.522	54.12E-3	PASS
35	1.159E-3	1.202	96.44E-3	PASS
36	1.093E-3	2.138	51.11E-3	PASS
37	1.130E-3	1.239	91.21E-3	PASS
38	964.569E-6	1.992	48.42E-3	PASS
39	1.151E-3	1.331	86.53E-3	PASS
40	903.106E-6	1.963	46.00E-3	PASS

EN 61000-3-3: Voltage changes, fluctuations and flicker

Test Report

Report title:	12025-03 F
Company Name:	Dectron AB
Date of test:	14:23 21.Feb 2012
Tester:	TH
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Flicker Impedance:	Zref (IEC 60725)
Customer:	TTM Energiprodukter AB
E. U. T.:	NoXygen 5

Test Result	PASS
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Maximum Flicker results

	EUT values	Limit	Result
Pst	0.948	1.00	PASS
dc [%]	0.658	3.30	PASS
dmax [%]	3.395	6.00	PASS
dt [s]	0.020	0.50	PASS

EMI Measurement

Test Report 12025-01

Customer	TTM Energiprodukter AB
Device Under Test	NoXygen 5
Operating Conditions	230 Vac, 50Hz, active mode.
Operator Name	Ulf Heiding
Test Specification	EN 61000-6-3, voltage on mains
Comment	

Scan Settings (1 Range)

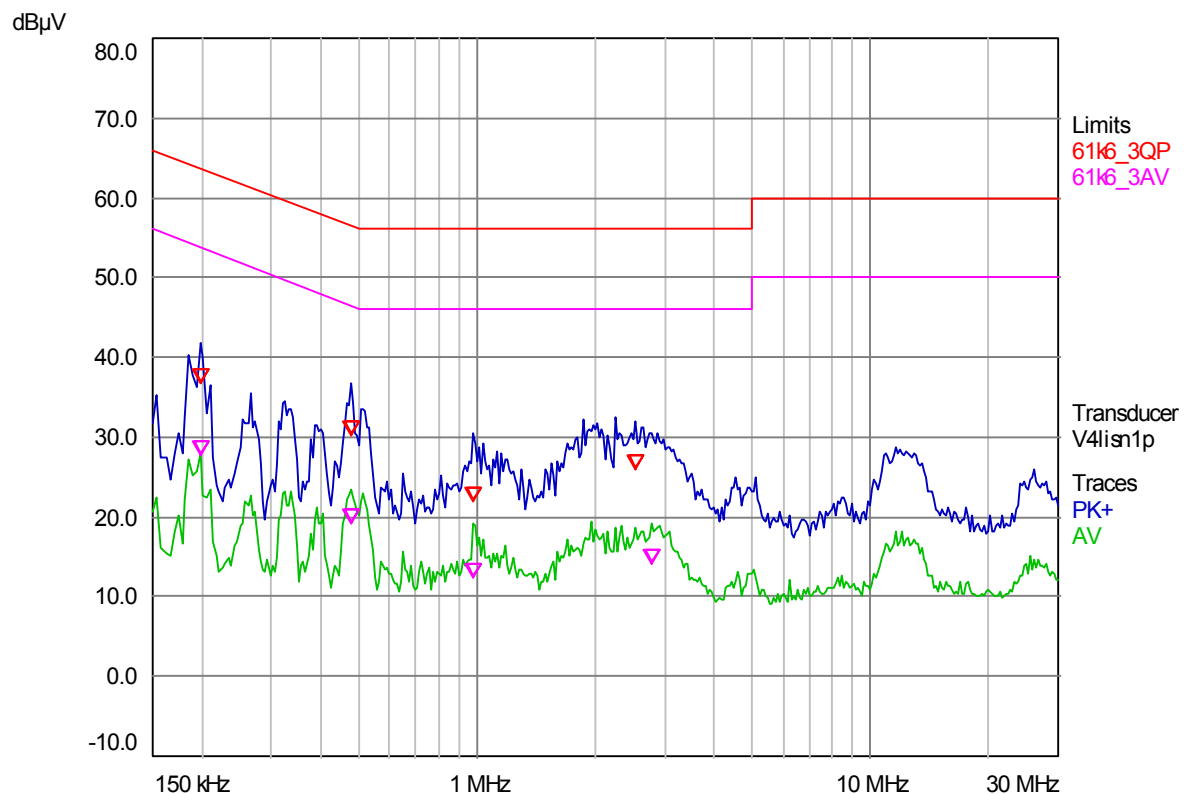
Frequencies			Receiver Settings			
Start	Stop	Step	Res BW	M-Time	Atten	Preamp
150 kHz	30 MHz	4 kHz	9 kHz (6dB)	1 ms	10 dB	Off

Final Measurement

Detectors: QP , AV
Peaks: 5

Meas Time: 1 s
Acc. Margin: 50 dB

Pre-measurement Graph



Final Measurement Results

Trace	Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.198	36.71	63.69	-26.98		N / gnd
2 AV	0.198	27.62	53.69	-26.07		N / gnd
1 QP	0.478	30.34	56.37	-26.03		N / gnd
2 AV	0.478	19.11	46.37	-27.26		N / gnd
1 QP	0.982	21.84	56.00	-34.16		N / gnd
2 AV	0.982	12.47	46.00	-33.53		L1 / gnd
1 QP	2.522	26.01	56.00	-29.99		N / gnd
2 AV	2.766	14.24	46.00	-31.76		L1 / gnd

* = limit exceeded

EMI Measurement

Test Report 12025-11

Customer: TTM Energiprodukter AB
 Device Under Test: NoXygen 5
 Operating Conditions: 230 Vac, 50Hz, active mode.
 Operator Name: Ulf Heiding
 Test Specification: EN 61000-6-3 Electric field strength in SAC 3m
 Comment:

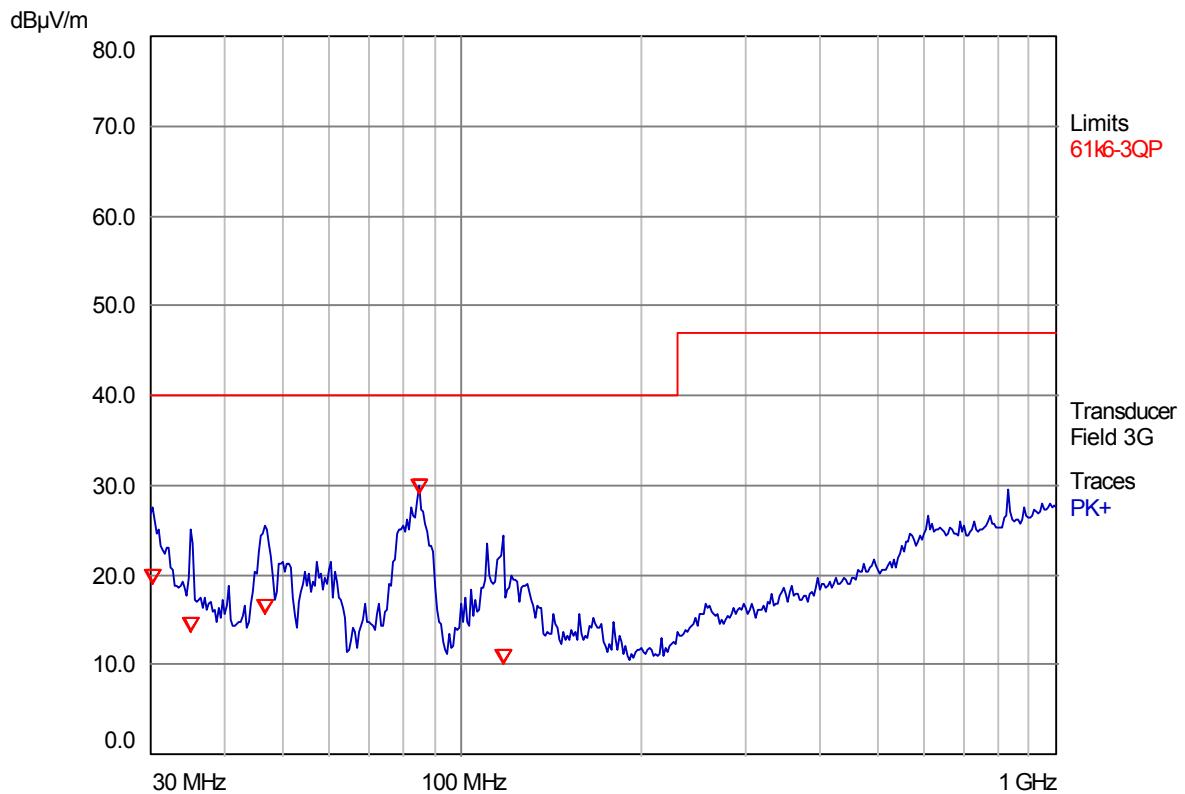
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	Stop	Step	Res BW	M-Time	Atten	Preamp
30 MHz	1 GHz	40 kHz	120 kHz (6dB)	1 ms	Auto	On

Final Measurement

Detector: QP
 Peaks: 5
 Meas Time: 1 s
 Acc. Margin: 50 dB

Pre-measurement Graph



Final Measurement Results

Trace	Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	30.16	19.09	40.00	-20.91		85°, 1.0m, ver
1 QP	35.12	13.57	40.00	-26.43		350°, 1.0m, ver
1 QP	46.8	15.54	40.00	-24.46		55°, 1.0m, ver
1 QP	84.52	29.15	40.00	-10.85		340°, 1.0m, ver
1 QP	117.88	9.96	40.00	-30.04		90°, 1.0m, ver

* = limit exceeded