Electrical Laboratory – Test Report

Empty enclosure

Test report N°	E-17-02173
Date of issue	17-02-2018
Sample reception date	12-12-2017
Date of performance	30-01-2017
Applicant	الهيئة السعودية للمواصفات والمقاييس والجودة
Address of applicant	الرياض
Customer	Habbal Alarabi Factory
Address of customer	Jeddah
Applicant / Customer reference	Applicant email
Applicant / Customer date	11-12-2017
Sample description	Empty enclosure
Trade mark / Manufacturer	HEMCO
Model / Style number / Type	HY 1000-604020
Previous report number (if re-test)	-
Additional information	600mmX400mmX200mm
Test method(s)	SASO IEC 62208/2014*

Overall result

Satisfactory ☑

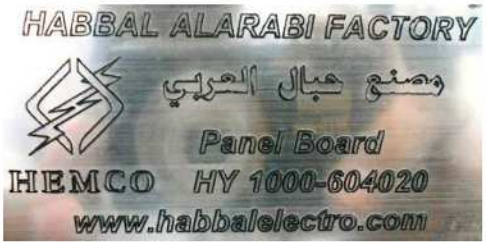
Unsatisfactory

* See page 3 for detailed scope of test

Possible test case results

- Test case does not apply to the test object ..... **N/A**
- Test case does meet the requirement ..... **P (Pass)**
- Test case does not meet the requirement ..... **F (Fail)**

General product information

 	
Sample under test	Marking of the sample

Remarks

- *" See enclosure ## "* refers to additional information related to this report in the annexes section
- *" See table ## "* refers to a table appended to this report in the annexes section
- *" See figure ## "* refers to an image, picture or drawing appended to this report in the annexes section
- Throughout this report, a point is used as decimal separator

18/02/2018

Asst. Lab. Manager / Unit Supervisor
(Signature / Date)

Laboratory Manager
(Signature / Date)

Summary of tests

Standard	Clause	Clause description	Verdict
SASO IEC 62208	6.2/9.3	Marking(1)	P
SASO IEC 62208	6.3	Documentation(1)	P
SASO IEC 62208	9.4	Static loads(1)	P
SASO IEC 62208	9.5	Lifting(1)	N/A
SASO IEC 62208	8.4	Access to the interior of the enclosure(1)	P
SASO IEC 62208	8.5/9.11	Protective circuit(1)	P
SASO IEC 62208	9.10	Dielectric strength(1)	P
SASO IEC 62208	9.7	Degree of protection (IK code) (1)	P
SASO IEC 62208	9.8	Degree of protection (IP code) (1)	P
SASO IEC 62208	9.6	Axial loads of metal inserts(1)	P
SASO IEC 622081	9.9.1	Thermal stability(1)	N/A
SASO IEC 62208	9.9.3	Resistance to abnormal heat and to fire(1)	P
SASO IEC 62208	9.13	Resistance to corrosion(1)	P
SASO IEC 62208	9.14	Thermal power dissipation capability(1)	P
Tests accredited by: (1) SAC – (2) GAC – (3) SAC & GAC			

Test report details

Clause	Requirement	Result / Remark	Verdict
6.2/9.3	**Marking**	See below	P
	The enclosure shall be identifiable, making it possible for the assembly manufacturer to obtain relevant information from the enclosure manufacturer. Such identification shall comprise:	See below	P
	either the name, trade mark or identification mark of the enclosure manufacturer;	Habbal Alarabi Factory (HEMCO)	P
	type designation or identification number of the enclosure.	HY 1000-604020	P
	The marking shall be durable and easily legible and may be inside the enclosure.	Durable and legible	P
	Marking made by moulding, pressing, engraving or similar. Labels with a laminated plastic covering shall not be submitted to the following test.		P
	The test is made by rubbing the marking by hand for 15 s with a piece of cloth soaked in water and then for 15 s with a piece of cloth soaked with petroleum spirit.	Comply	P
	After the test the marking shall be easily legible.	Legible	P
6.3	**Documentation**	See below	P
6.3.1	**General**	See below	P
	The manufacturer's documentation shall include all relevant constructional, mechanical characteristics, the enclosure classification (see Clause 4) and any instruction necessary for the correct handling, assembling, mounting and service conditions of the enclosure as well as reference to this standard:	Instruction manual provided	P
	Dimensions	Provided	P
	Mounting arrangements	Provided	P
	Permissible loads	Provided	P
	Lifting devices, if necessary	Not provided	N/A
	Provisions for protection against electric shock	Provided	P
	Applicable service conditions	Provided	P
	Location and size of protected space	Provided	P
	Data of thermal power dissipation capability	Provided	P
	Rated insulation voltage of enclosures constructed of an insulating material	Metallic	N/A
	Degree of protection	Provided	P

Test report details

Clause	Requirement	Result / Remark	Verdict
6.3.2	**Dimensions**	See below	P
	The dimensions shall be given in millimetres.	See below	P
	The external dimensions: height, width and depth are nominal values and shall be indicated in the catalogue of the enclosure manufacturer.	600mmX400mmX200mm (HeightXWidthXDepth)	P
	The projection of cable gland plates, removable covers and handles shall not be included in the external nominal dimensions; the dimensions of such shall be included in the manufacturer's documentation.	Not included	P
6.3.3	**Mounting arrangements**	See below	P
	The means and location of the enclosure mounting shall be defined in the enclosure manufacturer's documentation.	Provided	P
	The location of the equipment mounting surfaces and their means of fixing shall be defined in the enclosure manufacturer's documentation.	Provided	P
6.3.4	**Permissible loads**	See below	P
	The permissible loads that the enclosure and its doors are able to carry shall be defined in the enclosure manufacturer's documentation	20Kg	P
6.3.5	**Lifting and transport support**	See below	P
	Where required, the correct location and installation of lifting and transport support and the thread size of lifting devices, if applicable, shall be given in the enclosure manufacturer's documentation or in the instructions on how the enclosure has to be handled	Provided	P
6.3.6	**Protective circuit**	See below	P
	The enclosure manufacturer shall indicate in the technical documentation, if the enclosure ensures electrical continuity throughout by the conductive structural parts of the enclosure or if and how separate protective conductors to the protective circuits of the installation shall be carried out	Provided	P
9.4	**Static loads**	See below	P
	The enclosure fitted with all its required components to support the permissible load is loaded with a weight of 1,25 times the permissible load as declared by the manufacturer.	Loaded with 25kg	P
	The loads are arranged on the mounting plate or switchgear and controlgear supports and on the door evenly distributed as specified by the enclosure manufacturer.		P
	The loads are retained for 1 h in the closed position.	01hr	P

Test report details

Clause	Requirement	Result / Remark	Verdict
	For enclosures constructed of insulating material and metallic enclosures with parts (hinges, locks, etc.) of insulating material, this shall be carried out at 70 °C.		N/A
	The closed door is opened five times through 90 °, resting at least 1 min in the open position.	05 times	P
	For enclosures constructed of insulating material and metallic enclosures with parts (hinges, locks, etc.) of insulating material, this part of the test may be carried out at ambient temperature external to the heating cabinet.		P
	After the test, with the test loads in place, the enclosure shall show no cracks or permanent distortions and during the test no deflections which could impair any of its characteristics.	No cracks	P
9.5	**Lifting**		N/A
	This test only applies to enclosures with provisions for lifting.	No provision for lifting	N/A
	The enclosure is loaded as in 9.4 and with its door closed, is lifted with the specified lifting means and in the manner defined by the enclosure manufacturer.		N/A
	From the standstill position, the enclosure is raised up three times in a vertical plane returning to the standstill position.		N/A
	The enclosure is raised up and suspended for 30 min at a height of . 1 m for 30 min without any movement.		N/A
	Following this test, the enclosure is raised to a height of . 1 m and moved (10 ±0,5) m horizontally, then set down. This cycle, which should be carried out for 1 min ± 5 s is repeated three times at uniform speed.		N/A
	After the test, with the test loads in place, the enclosure shall show no cracks or permanent distortions and during the test no deflections which could impair any of its characteristics.		N/A
8.4	**Access to the interior of the enclosure**	See below	P
	Adequate access to the protected space shall be provided by means of a door(s) or removable cover(s). Access may be restricted by the use of a key or tool.	Provided by the use of a key	P
	Cable gland plates and covers which are removable from the outside shall require the use of a tool.		P
8.5/9.11	**Protective circuit**	See below	P
	Metallic enclosures shall ensure electrical continuity throughout either by the conductive structural parts of the enclosure or provisions for a separate protective conductor to earth or both.	Electrical continuity observed	P

Test report details

Clause	Requirement	Result / Remark	Verdict
	When a removable part of an enclosure is removed, the protective circuit for the remainder of the enclosure shall not be interrupted.		P
	For lids, doors, removable covers and the like, the usual metal screwed connections and metal hinges may ensure continuity of the protective circuit provided no electrical equipment is attached to them.		P
	Where these are intended for mounting electrical equipment additional means shall be provided to ensure the continuity of the protective circuit.		P
	The enclosure manufacturer shall provide means to facilitate the connection of the external protective conductor by the assembly manufacturer.		P
	It shall be verified that the different exposed conductive parts of the enclosure are effectively connected to the earthing terminal or contact of the protective circuit and that the resistance of the circuit does not exceed 0,1 Ω.	Required:≤ 0.1Ω Observed:0.021Ω	P
	Verification shall be made using a resistance measuring instrument or arrangement which is capable of driving a current of at least 10 A (a.c. or d.c.). The current is passed between each exposed conductive part and the earthing termination point. The voltage drop between these points is measured. The resistance calculated from the current and this voltage drop shall not exceed 0,1 Ω.	Compliance observed	P
9.10	**Dielectric strength**	See below	P
9.10.1	**General**		P
	This test applies to enclosures where insulating material is used, even in combination with non-insulating materials.	See below	P
9.10.2	**Preconditioning**		P
	The enclosures are placed in a humidity cabinet containing air with relative humidity maintained at between 91 % and 95 %. The air temperature, where the enclosures are placed, is maintained at (40 ± 2) °C.	93% RH, 40°C	P
9.10.3	**Enclosures without metal elements inside the protected space**		N/A
	An r.m.s. voltage of substantially sine-wave form at a value according to 10.9.4 of IEC 61439-1:2011 is applied for 1 min between two metal foils, one in contact with the external surface and the other inside the enclosure at the limit of the protected space.		N/A
9.10.4	**Enclosures having metal elements inside the protected space**	See below	P

Test report details

Clause	Requirement	Result / Remark	Verdict
	All internal metallic parts are connected to a bar, and an r.m.s. voltage of substantially sine wave form at a value according to 10.9.4 of IEC 61439-1:2011 is applied for 1 min between a metal foil in contact with the external surface and the bar.	2850VAC @ 60Hz	P
9.10.5	**Results to be obtained**		P
	The samples shall show no damage impairing their further use; no flashover or breakdown shall occur during the test.	No breakdown	P
9.7	**Degree of protection against external mechanical impacts (IK code)**	See below	P
	Verification of the degree of protection against mechanical impacts shall be carried out in accordance with IEC 62262 by means of a test hammer suitable for the dimensions of the enclosure.		P
	The enclosure shall be fixed on a rigid support as for normal use.		P
	The impact energy shall be applied:		P
	three times to each exposed surface in normal use whose largest dimension is not above 1 m;	0.7J for indoor use 02J for outdoor use	P
	five times to each exposed surface in normal use whose largest dimension is greater than 1 m.		N/A
	The test shall not be applied to the enclosure components (e.g. locks, hinges, etc.).		P
	The impacts shall be applied with even distribution over the faces of the enclosure.	Evenly distributed	P
	After the test, the enclosure shall continue to provide the IP code and dielectric strength. Removable covers can be removed and reinstalled, doors opened and closed.	Compliance observed	P
9.8	**Degree of protection (IP code)**	See below	P
9.8.1	**Degree of protection against access to hazardous parts and solid foreign objects**	See below	P
9.8.1.1	**Protection against access to hazardous parts**	See below	P
	Subclauses 12.1 and 12.2 of IEC 60529:1989 apply.	IP65	P
	The access probes shall not enter the protected space.	Not accessible	P
9.8.1.2	**Degree of protection against the ingress of solid foreign objects**	See below	P
	For IP 2X, IP 3X, IP 4X enclosures, 13.2 and 13.3 of IEC 60529:1989 apply.		N/A
	For IP 5X enclosures, 13.4, category 2 (without vacuum pump) and 13.5 (without vacuum pump) of IEC 60529:1989 apply.		N/A
	Ingress of talcum powder into protected space is verified		N/A
	For IP 6X enclosures, 13.6 of IEC 60529:1989 apply.	IP65	P

Test report details

Clause	Requirement	Result / Remark	Verdict
	No talcum powder shall be observable inside the enclosure at the end of the test.	No dust inside enclosure	P
9.8.2	**Degree of protection against ingress of water**	See below	P
	Subclauses 14.1 and 14.2 of IEC 60529:1989 apply.	IP65	P
	After the test, water shall not have ingressed into the protected space.	No ingress of water inside enclosure	P
	Ingress of water is verified by the use of dry absorbent paper positioned to occupy the base area of each protected space.		N/A
9.8.3	**Degree of protection against hazardous parts as indicated by additional letter**		N/A
	Clause 15 of IEC 60529:1989 applies.	No additional letter	N/A
	The access probe shall not touch the surface of the protected space.		N/A
9.6	**Axial loads of metal inserts**	See below	P
	This test applies to all kind of enclosures when threaded metal inserts are provided to retain the mounting plate or switchgear and controlgear supports in place.		P
	The test shall be carried out by applying an axial load for 10 s to representative samples	500N for 10 sec	P
	During the test, the enclosure shall fully rest on a supporting platform to allow the application of the above-mentioned load.		P
	At the end of the test, the insert shall still be in its original position; any sign of movement is not acceptable.	No sign of movement	P
	Cracks and splits in the material containing the insert are also not acceptable.	No cracks	P
9.9.1	**Thermal stability**		N/A
	The thermal stability of enclosures manufactured from insulating material shall be verified by the dry heat test. at a temperature of 70 °C, with natural air circulation, for a duration of 168 h.	Metallic enclosure	N/A
	The use of an electrically heated cabinet is recommended.		N/A
	After the treatment, the enclosure or sample is removed from the cabinet and kept at ambient temperature and a relative humidity of between 45 % and 55 % for at least four days (96 h).		N/A
	The enclosure or sample shall show no crack visible to normal or corrected vision without additional magnification nor shall the material have become sticky or greasy, this being judged as follows:		N/A
	With the forefinger wrapped in a dry piece of rough cloth, the sample is pressed with a force of 5 N.		N/A
	No traces of the cloth shall remain on the sample and the material of the enclosure or sample shall not stick to the cloth		N/A

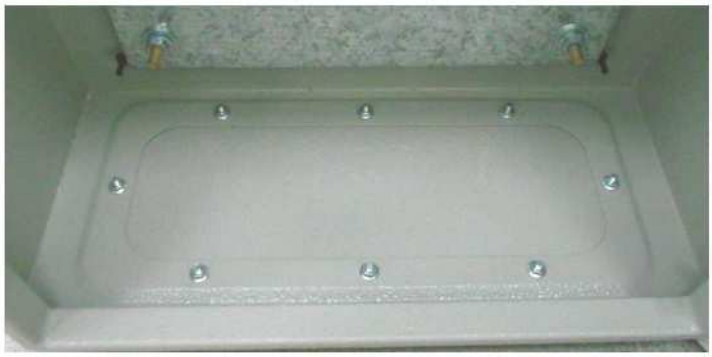
Test report details

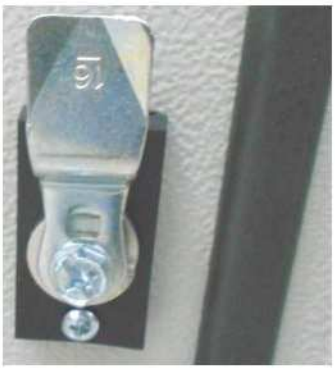
Clause	Requirement	Result / Remark	Verdict
9.9.3	**Resistance to abnormal heat and to fire**	See below	P
	If the dimensions of the enclosure are inconsistent with those of the test apparatus, the test shall be carried out on a sample.	Test was done on insulating part of lock	P
	The sample is stored for 24 h at temperature between 15 °C and 35 °C and a relative humidity of between 35 % and 45 % before starting the test.	45% RH, 30°C	P
	The temperature of the tip of the glow wire shall be as follows:	See below	P
	For parts intended to retain current-carrying parts in position: (960 ± 15) °C;		N/A
	For parts intended to be installed in hollow walls: (850 ± 15) °C;		N/A
	For all other parts, including parts not intended to retain current-carrying parts in position including the earth terminal: (650 ± 15) °C.	650°C for 30 sec	P
	The specimen is considered to have withstood the glow-wire test if		P
	there is no visible flame and no sustained glowing, or if	No visible flame	P
	Flames and glowing of the specimen extinguish within 30 s after removal of the glow wire.		N/A
	There shall be no burning of the tissue paper or scorching of the pinewood board.		N/A
9.13	**Resistance to corrosion**	See below	P
9.13.1	**General**		P
	Ferrous metallic enclosures and external ferrous metallic parts of insulating and combined enclosures shall be tested to verify that they ensure protection against corrosion.	See below	P
9.13.2	**Test procedure**		P
	Enclosures shall be subjected to the following test:	See below	P
9.13.2.1	**Severity test A**		P
	This test is applicable to:		P
	Metallic indoor enclosures;		P
	External metallic parts of indoor enclosures;		P
	Internal metallic parts of indoor and outdoor enclosures upon which intended mechanical operation may depend.		P
	The test consists of:		P
	6 cycles of 24 h each to damp heat cycling test according to IEC 60068-2-30 (Test Db) at (40 ± 3) °C and relative humidity of 95 %	6 Cycles at 95% RH, 40°C	P

Test report details

Clause	Requirement	Result / Remark	Verdict
	2 cycles of 24 h each to salt mist test according to IEC 60068-2-11; (Test Ka: Salt mist), at a temperature of (35 ± 2) ºC.	2 Cycles at 35°C	P
9.13.2.2	**Severity test B**		P
	This test is applicable to:		P
	Metallic outdoor enclosures;		P
	External metallic parts of outdoor enclosures.		P
	The test comprises two identical 12 day periods.		P
	5 cycles of 24 h each to damp heat cycling test according to IEC 60068-2-30 (Test Db) at (40 ± 3) ºC and relative humidity of 95 %	5 Cycles at 95% RH, 40°C	P
	7 cycles of 24 h each to salt mist test according to IEC 60068-2-11; (Test Ka: Salt mist), at a temperature of (35 ± 2) ºC.	7 Cycles at 35°C	P
9.13.3	**Results to be obtained**	See below	P
	Compliance is checked by visual inspection to determine that:		P
	there is no evidence of iron oxide, cracking or other deterioration	No evidence of iron oxide, cracking or other deterioration	P
	the mechanical integrity is not impaired;	Not impaired	P
	seals are not damaged;	Not damaged	P
	doors, hinges, locks, and fastenings work without abnormal effort.	Work normal	P
9.14	**Thermal power dissipation capability**	See below	P
	The thermal power dissipation data provided by the manufacturer (see 6.3.1) shall be determined by test in accordance with 10.10.4.2.2 of IEC 61439-1:2011,	Area of enclosurer:0.88m² Temperature 30K at 108 Watt Power loss:122 Watt/m²	P
	or by a calculation method, e.g. according to IEC/TR 60890.	Done by testing	N/A

Test report annexes





Construction of sample