Test Report

CESI

Client	**ALSTOM T&D**
Address of the client	Noventa di Piave – VENEZIA
Tested samples/items	**Enclosure for motor operating mechanism type CMM/800** Client has not delivered the relevant drawings of the equipment to CESI
Tests carried out	**Verification of the degree of protection:IP54 category 2** Test for first characteristic numeral "5" Test for second characteristic numeral "4",
Standards/Specifications	**IEC 60529 (edition 2.1, 2001-02)**
Tests date	**from January 30, 2003 to February 3, 2003**

The results reported in this documents relate only to the tested samples/items

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No. of pages	8	**No. of pages annexed**	//
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Verified	CERT - M. Balaz		
Approved	CERT - U. Colombo		

CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certificazione
Il Responsabile

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Activity code: 36619D
Keywords: 12015R 24080T 53001D 66730H

1 SPECIFIC INFORMATION

Date of receipt of the test samples/items	january 23, 2003
Test location	CESI - Milano - Via Rubattino 54
Test laboratory	Explosion Proof Devices and Minor AD Laboratories - P172 Operating procedure LAB - 95/028728
CESI testing team	A. Padovani - R. Passari
Test witnessed by	//
Reference documents	See paragraph 3
Information about sampling	//
Sampling date	//
Carried out by	//
Has the samples/items to be retained?	NO
If YES until ../../..	//

2 TESTED OBJECT

Test object: Enclosure for motor operating mechanism type CMM/800
Delivery note: n. 3/03 dated 23/01/2003
External dimensions: 543 x 535 x 554 mm
Category 2 has been assigned by the Manufacturer

3 RECOGNITION OF THE TESTED OBJECT

RECOGNITION OF THE OBJECT HAS NOT BEEN PERFORMED because the client has not delivered the relevant drawings of the equipment to CESI

4 VERIFICATION OF THE DEGREE OF PROTECTION

4.1 Test for verification of the degree of protection indicated by the first characteristic numeral "5"

4.1.1 Tests performed

Tests performed are:

1. test against access to hazardous parts (according to paragraph 12.2 of the European Standard IEC 60529)
2. test against penetration of solid foreign objects (according to paragraph 13.4 of the European Standard IEC 60529)

4.1.2 Test conditions

Atmospheric conditions:		29	°C
Relative humidity:		50	%
air pressure:		96	kPa
test 1	rigid steel wire diameter:	$1\ ^{+0.05}_{0}$	mm
	test force:	1±10%	N
test 2	Category:	2	
	Depression inside the object:	//	mbar
	Volume of the test object:	//	m^3
	Extraction rate:	//	volume per hour
	Duration of the test:	8	hours

4.1.3 Test results

The behaviour of the tested apparatus ***was in compliance*** *with the acceptance criteria given in subclauses 12.3 and 13.5.2 for category 2 of the European Standard IEC 60529, namely:*

- *talcum powder has not been observed inside the enclosure.*

4.2 Test for verification of the degree of protection indicated by the second characteristic numeral "5"

4.2.1 First test

The apparatus under test was in the set-up used for the test relative for the first characteristic numeral.

4.2.1.1 Tests performed

Test performed is:

- test against water (according to paragraph 14.2.5 of the European Standard IEC 60529)

4.2.1.2 Test conditions

	--/--/-	
Atmospheric temperature:	30	°C
Relative humidity:	50	%
Air pressure:	96	kPa
Internal diameter of the nozzle:	6,3	mm
Delivery rate:	12,5 ± 5%	l/minute
Water pressure:	(*)	
Core of the substantial stream:	(#)	
Test duration per m^2 of enclosure surface area likely to be sprayed:	1	minutes
Minimum duration of the test:	3	minutes
Distance from nozzle to enclosure surface:	from 2,5 to 3	m

(*) to be adjusted to achieve the specified delivery rate
(#) circle of approximately 40 mm diameter at 2,5 m distance from nozzle

4.2.1.3 Test results

The behaviour of the tested apparatus ***was not in compliance*** *with the acceptance criteria given in subclause 14.3 of the European Standard IEC 60529, namely.*

- *penetration of water inside the enclosure between the crank driving protection*
- *internal electrical equipment wetted by water*

4.2.2 Second test

The apparatus under test with a modified sheet of crank driving protection.
Based on the apparatus behaviour in the previous test, the sheet crank driving protection was modified by the manufacturer, than the enclosure was submitted to an additional test.

4.2.2.1 Tests performed

Test performed is:

- test against water (according to paragraph 14.2.5 of the European Standard IEC 60529)

4.2.2.2 Test conditions

	--/--/-	
Atmospheric temperature:	30	°C
Relative humidity:	50	%
Air pressure:	96	kPa
Internal diameter of the nozzle:	6,3	mm
Delivery rate:	12,5 ± 5%	l/minute
Water pressure:	(*)	
Core of the substantial stream:	(#)	
Test duration per m^2 of enclosure surface area likely to be sprayed:	1	minutes
Minimum duration of the test:	3	minutes
Distance from nozzle to enclosure surface:	from 2,5 to 3	m

(*) to be adjusted to achieve the specified delivery rate
(#) circle of approximately 40 mm diameter at 2,5 m distance from nozzle

4.2.2.3 Test results

The behaviour of the tested apparatus ***was not in compliance*** *with the acceptance criteria given in subclause 14.3 of the European Standard IEC 60529, namely*

- *penetration of water inside the enclosure between the crank driving protection*
- *internal electrical equipment wetted by water*

4.3 Test for verification of the degree of protection indicated by the second characteristic numeral "4"

As Client's request, and considering the rusult of the previous test (see page 5 and 6) the test proceded in conformity with the conditions indicated by the second characteristic numeral "4".
Condition of the test as in the previous verification.

4.3.1 Tests performed

Test performed is:

- test against water (according to paragraph 14.2 4 procedure b of the European Standard IEC 60529)

4.3.2 Test conditions

	--/--/-	
Atmospheric conditions:	30	°C
Relative humidity:	50	%
Air pressure:	96	kPa
distance to the object:	300	mm
Test duration per m^2 of enclosure surface area likely to be sprayed:	1	minutes
minimum duration of the test:	5	minutes
water pressure:	100	kPa
delivery rate:	10 ± 5%	l/minutes
counterbalanced shield:	removed	

4.3.3 Test results

The behaviour of the tested apparatus ***was in compliance*** *with the acceptance criteria given in subclause 14 3 of the European Standard IEC 60529, namely:*

- no water observed inside the enclosure

5 PHOTOGRAPHS OF THE TESTED OBJECT

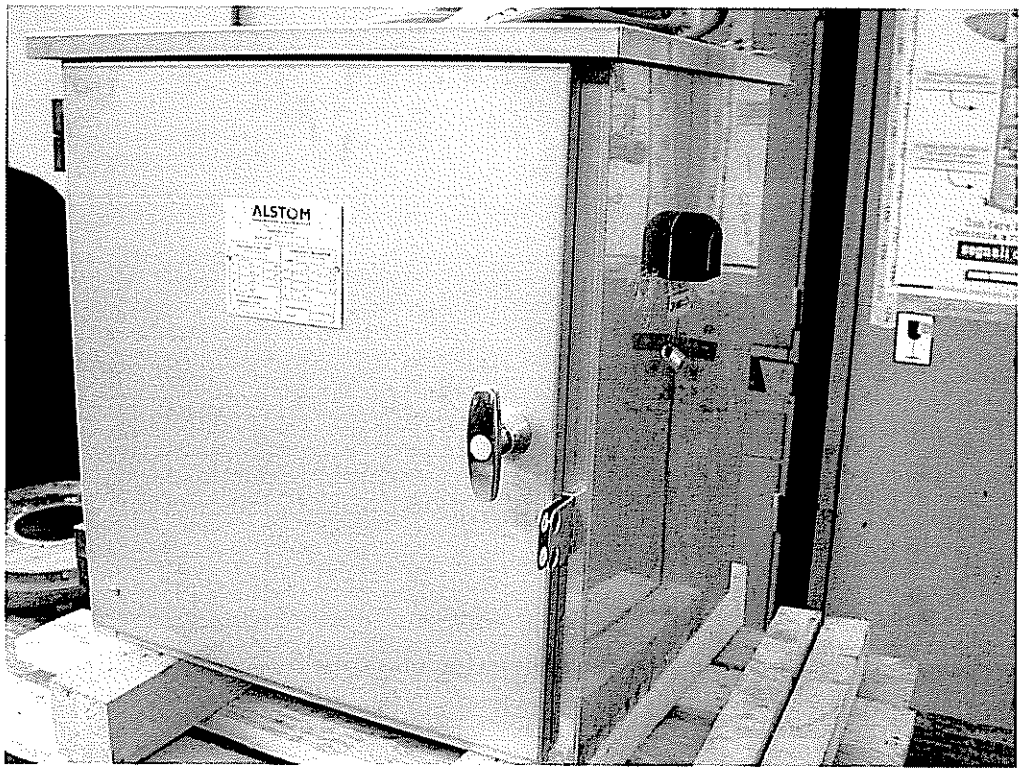

Photo no. 1

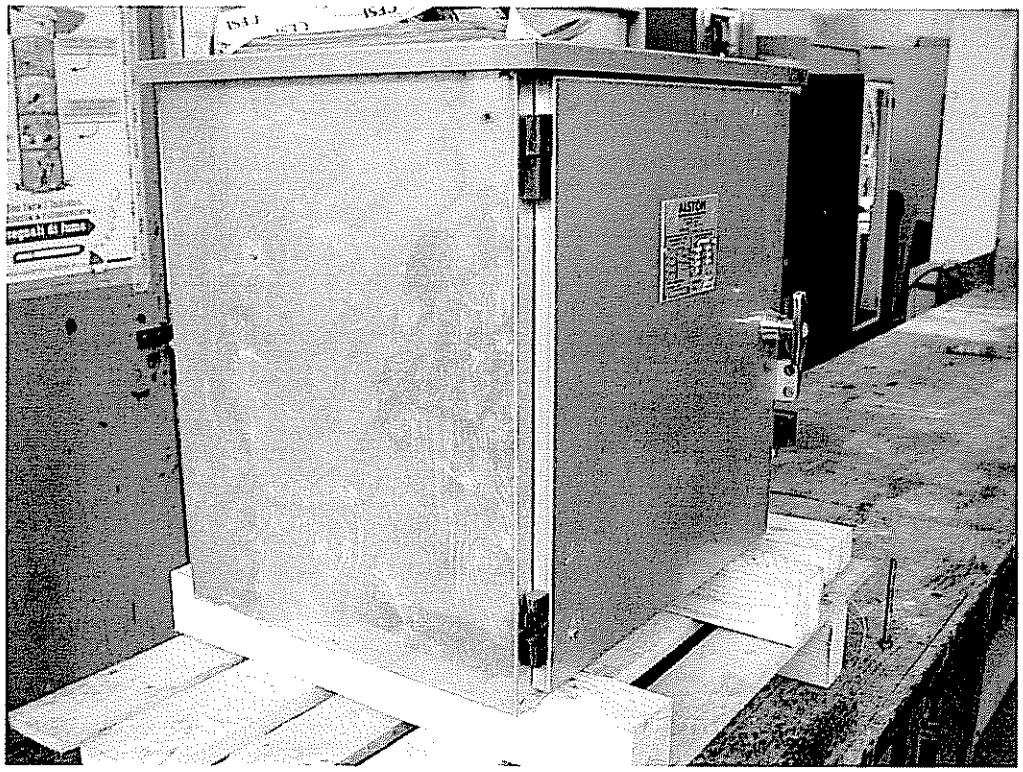

Photo no. 2