

Test object : Neutral grounding resistor (NGR)
Customer : PAARSUN
Test samples : Single phase Neutral grounding resistor 6.3kV-30A-
212 ohm-10 sec
Place of performance test : High voltage test field of Iran Transfo in Zanjan
Environmental condition : Ambient temperature : (23 ± 2) °C
Number of pages of the reports : 8
Date of test : 18.11.2012

Certificate No.: T91082801

Postal Address :

IRAN TRANSFO Co.
High voltage test field
5th km Zanjan to Tehran road
P.O. BOX : 45195-118
ZANJAN
IRAN



Tested by:

I. Asgari

Approved by:

M. Ansari

Date: 18.11.2012

The Measurement uncertainties of the test results reported on this document are the following:

Voltage: $\pm 5\%$ current: $\pm 5\%$ time: $\pm 5\%$

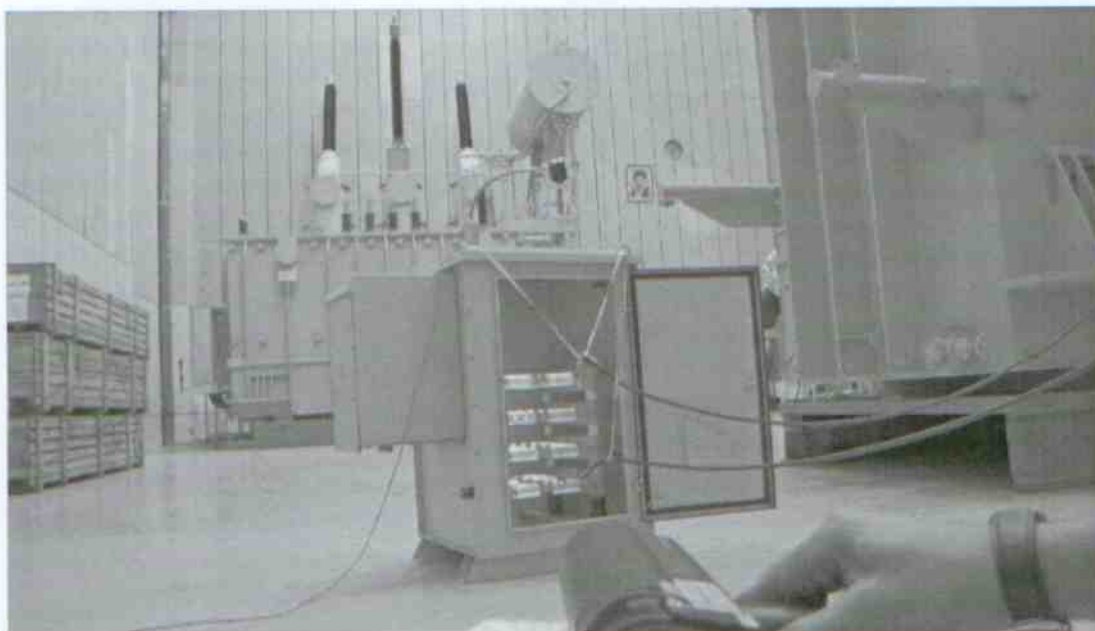
The measurement uncertainties are estimated at the level of twice the standard deviation (corresponding, in the case of normal distribution, to a confidence level of about 95 %) and have to be considered as maximum values.

Temperature – rise test

Measurement of the DC resistance: 213.07 Ω

Ambient air temperature: 23 $^{\circ}$ c

The average temperature rise: *



Arrangement of test object

Item	Time (sec)	Voltage(kV)	Current (A)	Resistance(Ω)
1	0	0.375	1.76	$R_0=213.07$
2	10	5.98	27.32	$R_t=218.89$

*The average temperature –rise of the resistor at end of the test has been calculated with applying the following formula:

Δt =temperature –rise

R_0 =cold resistance

R_t =hot resistance

α =temperature coefficient of stainless steel (Fe-Cr-Al) resistor=0.000044 /°c
(for 100-800°c)

The value of R_t and R_0 have been calculated from the ratio of the voltage across the resistor and the test current at the beginning and at the end of the test.

$$\Delta t = (R_t/R_0 - 1) / \alpha$$

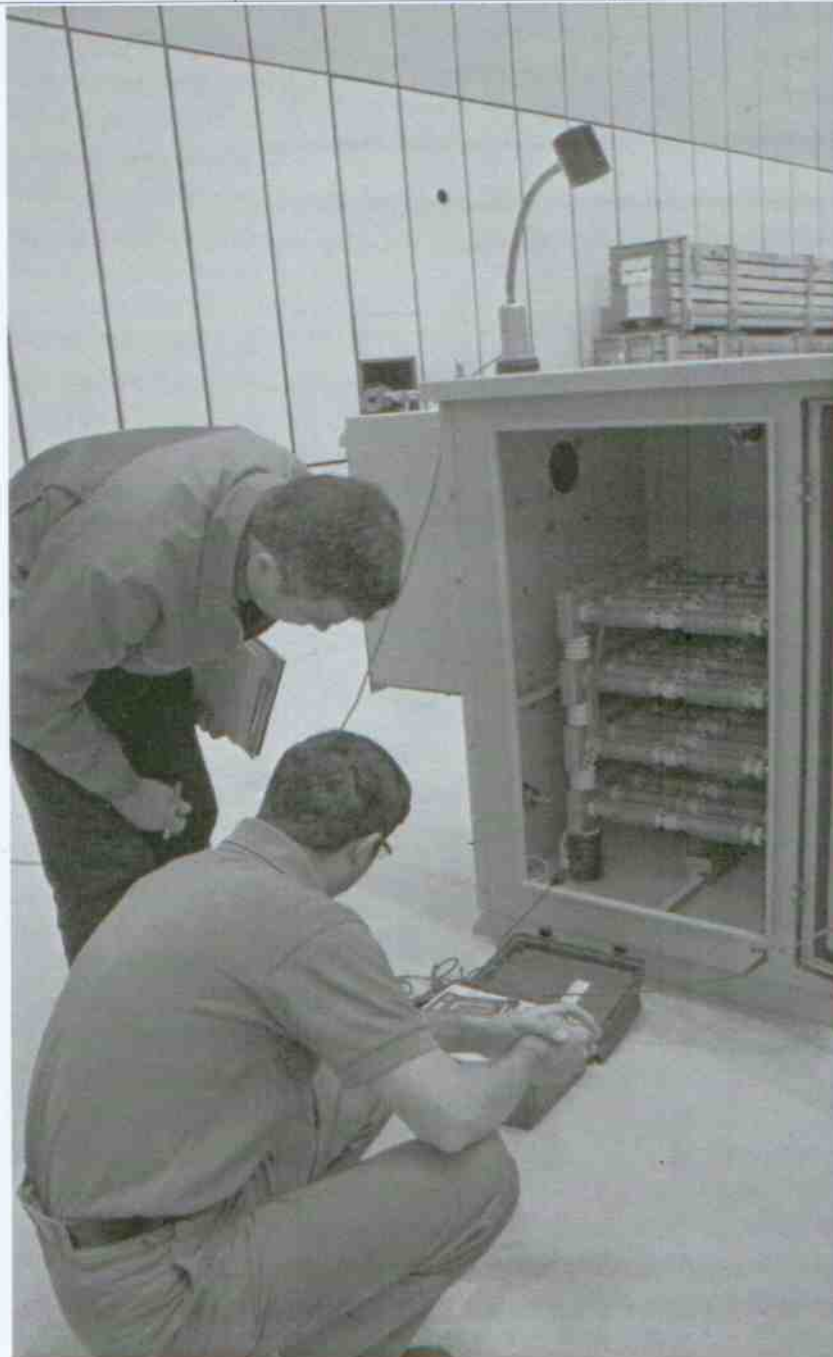
$$\Delta t = (218.89/213.07 - 1) / 0.000044 = 621$$

TEST RESULT

After the temperature –rise test:

- 1-All ceramics and equipments were checked.
- 2- Insulation tests was applied between :
 - 2-1- The terminals of the resistor and the earthed enclosure
 - 2-2- Between terminals of the resistor and tie rods.

This test repeated for three times and passed successfully, No fraction or discharge occurred during the test.



Condition of the test object after the test



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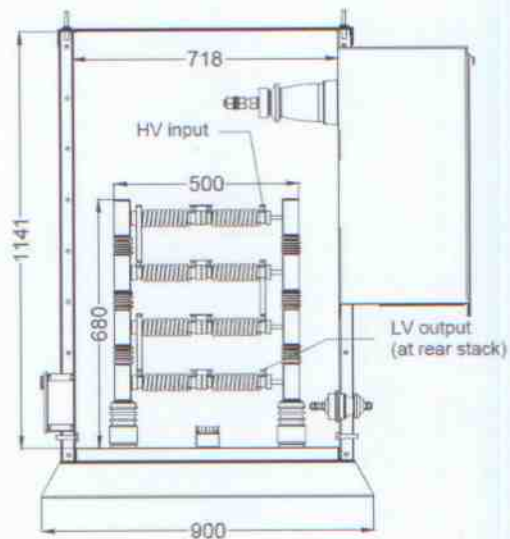
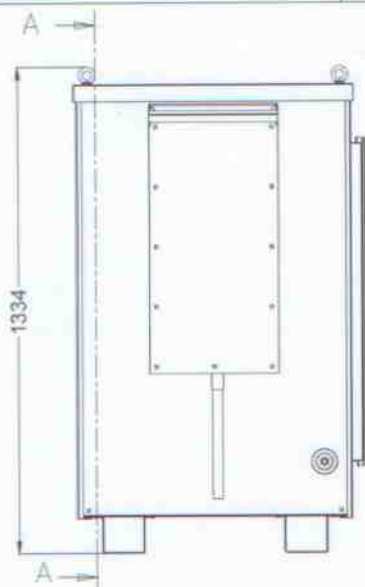
Approved by:

M. Ansari

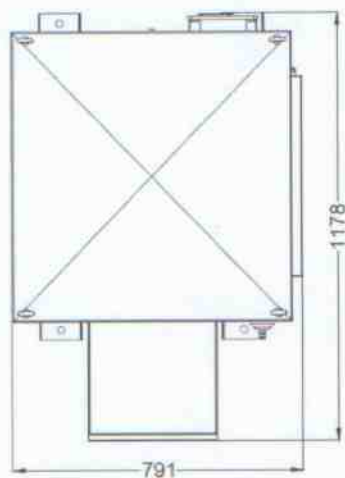
Date: 18.11.2012

Rated Characteristics of the tested object assigned by the client

Manufacturer:	PAARSUN-ZANJAN-IRAN
Equipment:	Neutral grounding resistor
Rated voltage:	6.3kV
System voltage:	11kV
Insulation level:	
Lightning impulse withstand voltage:	60kV
Power frequency withstand voltage:	20kV
Frequency:	50Hz
Rated current:	30A
Duration:	10sec
Resistor element:	Fe-Cr-Al
Resistance (at 25°C):	212Ω
Degree of protection:	IP55



Section A-A



PAARSUN ENG. Co. -IRAN

Neutral Earthing Resistor (30A-212Q-10Sec)

ARRANGEMENT TYPE TESTED AT IRAN TRANSFO

Dimensions are in mm



Tested by: *I. Asgari*

Approved by: *M. Ansari*

Date: 18.11.2012

PAARSUN

NEUTRAL EARTHING RESISTOR

Serial Number	
Tag Number	
Type Designation	Wire Wound
Manufacturing Year	2012
Customer	
Standard	IEEE-32
Resistor Element	Fe-Cr-Al(KANTHAL D)
Resistance [ohm at 20°C]	212±10%
Rated Current [A]	30
Continuous Current [A]	-
Rated Time [Sec]	10
Rated Voltage [kV-L-N]	6.36
System Voltage [kV-L-L]	11.0
Power Frequency Voltage [kV]	20
BIL Rating [kV]	60
Rated Ferequency [Hz]	50
Temprature Coefficient [1/°C]	0.000044 (100-800°C)
Max Temprature Rise [°C]	760
Weight [kg]	205
Service(Outdoor/Indoor)	Outdoor
Degree of Protection [IP]	IP55
Max Ambient Temperature [°C]	20
Sea Level Altitude [m]	<1000
Current Transformer	-

MADE IN IRAN



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Approved by: **M. Ansari**

Date: 18.11.2012