

Test Report

PPR 526

**Performance Test
on CRSM heat-shrinkable
Wraparound Repair System**

Pages: 5

Appendices: none

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Report No. 1422

Report on testing Raychem-Wraparound repair system

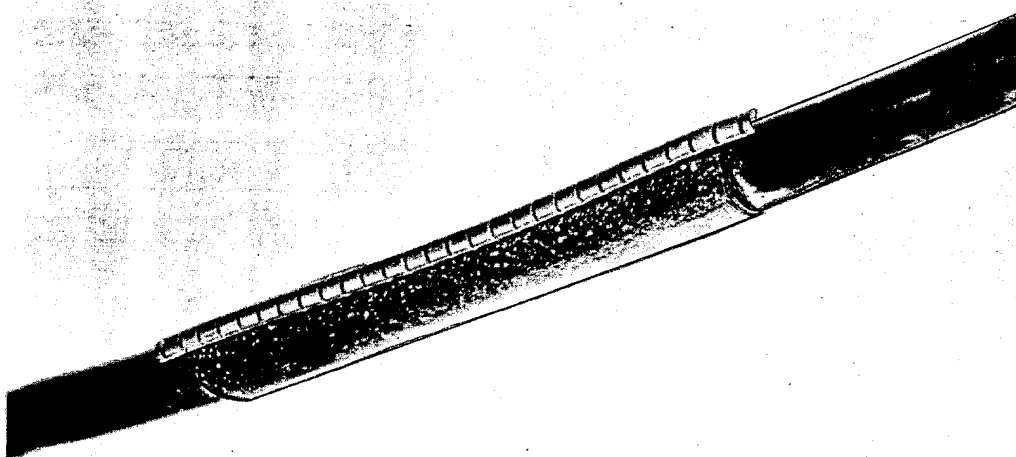
Manufacturer Raychem

By order of Raychem

Objective To evaluate whether the wraparound repair system withstand the electrical and thermal requirements of practical use.

Samples Number: 3
Type CRSM (formally WRSM)
Cable NAYCWY 3 x 95 se/95 0.6/1 kV
(Plastic insulated). The cable jacket has been removed in the test area. The sleeve overlapped the cable jacket on both sides for approx. 50 mm.

Picture 1 One sample



Test The following tests were agreed upon:

1. Water immersion

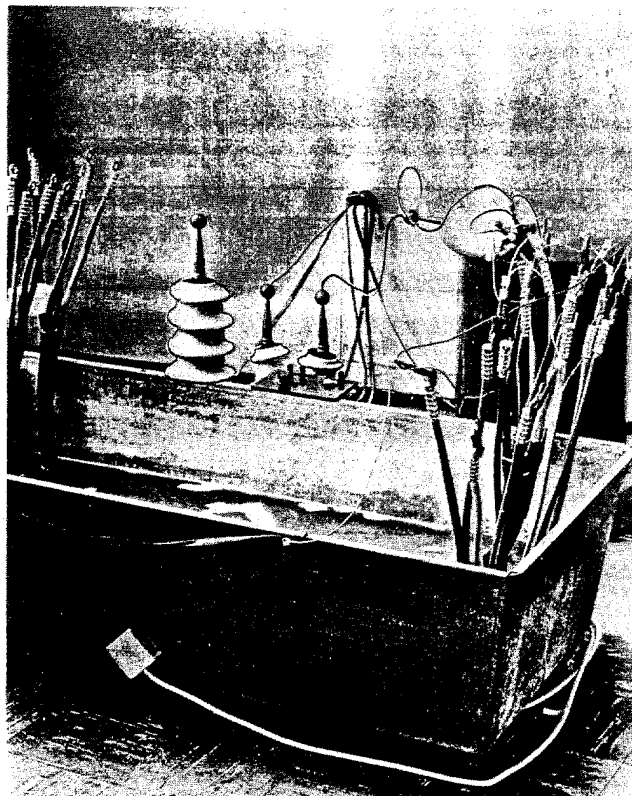
The samples were immersed for 60 hours in water at approx. 20°C.

2. A.c.-voltage test (see pict. 2)

Test in accordance with VDE 0271/3.69 Par. 19 "Specifications for PVC insulated cables in power installations". After removing the samples from the water bath after testing in accordance with test 1., a sinusoidal test voltage of 2.8 kV (50 Hz) was applied between 2 cores in turn, while the other 2 cores and the water container were earthed. The test was carried out by applying the test voltage to each core for 30 minutes.

Result No breakdown or flashover with any of the samples.

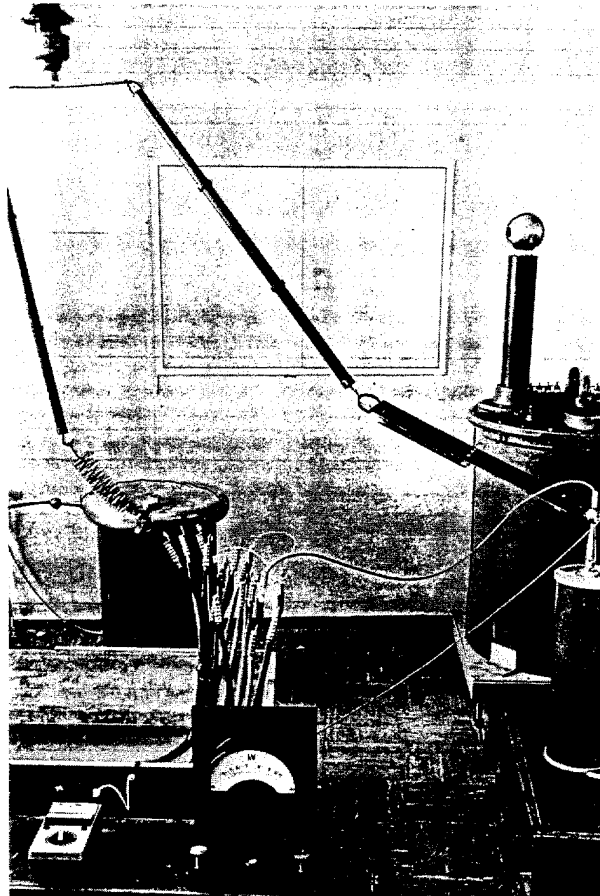
Picture 2 A.c.-voltage test



3. Apply d.c.-voltage and measure leakage current (see pict.3).
The leakage current between the insulated container and ground was measured by applying a d.c.-voltage of 6 kV for 15 minutes to the cores connected together.

Result Leakage current with all specimens $< 0.1 \mu\text{A}$.

Picture 3 Leakage current test



4. Load cycling and voltage tests in accordance with test 2 and test 3.

Following test 3 the samples were removed from the water, suspended horizontally, and an alternating current was applied for 2 hours to reach a steady state condition of $70^{\circ}\text{C} + 5\text{ K}$ conductor temperature. The current was switched off to leave the samples for 2 hours.

This cycle was repeated 30 times.

The a.c.-voltage test in accordance with test 2., the d.c.-voltage test and leakage current test in accordance with test 3. were repeated after 10, 20 and 30 cycles.

- Result
- a) A.c.-voltage test after 10, 20 and 30 cycles. No breakdown or flashover with any of the samples.
 - b) Leakage current test after 10, 20 and 30 cycles. Leakage current with all samples $< 0.1\ \mu\text{A}$.

5. Impulse voltage test

Following test 4. all samples were taken out of the water. An impulse test was carried out with an impulse voltage of 8 kV (1.0/50 μs). Each core of the samples was tested with 5 shots of negative polarity and 5 shots of positive polarity, while the other cores were earthed.

Result No breakdown, no flashover.

6. Water immersion

Repeat in accordance with test 1., but for only 24 hours.

7. A.c.-voltage test

Following test 6., repeat in accordance with test 2., but this time the test voltage was applied to each core for only 2 minutes.

Result No breakdown, no flashover.

8. Freezing test

Following test 7. the samples were taken out of the water, dried and placed in a refrigerator for 24 hours at -30°C .

9. Water immersion

Following test 8. the samples were left in roomtemperature for 24 hours, followed by a repeat of test 1 but for 24 hours.

10. Test with d.c.-voltage and leakage current test

Sample No.	Leakage Current μA
1	0.30
2	0.28
3	0.32

Summary:

The Raychem-Wraparound Repair-System of type CRSM (formally WRSM) remained fully functional after completion of all tests.

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