Test report

No.: 03.05.03.097-0 **Version: 1/2**

Client	:	Ofil Ltd. P.O.Box 4016 Nes-Zionna 74140 Israel
Object tested	:	DayCor II camera
Type	:	---
Manufacturer	:	---
Date received	:	---
Date of Test	:	19.05.2003
Applied test regulations	:	According to the specifications of the client
Test carried out	:	Sensitivity test with a DayCor II camera
Test result	:	The detection of partial discharges with an apparent charge of 1.5 pC is possible in a distance of 8 meters.
Specialist testers	:	Dr.-Ing. D. Borneburg, E. Hommernick

Dortmund, 14. 09. 2003 Dr.-Ing. D. Borneburg Dipl.-Ing. U. Amen

Report No. 03.05.03.097-0 contains 7 pages.

Summary

The RWE Eurotest performed a sensitivity test with the DayCor II camera.

At all stages of the pd development the detection of partial discharges with an apparent charge of 1.5 pC is possible in a distance of 8 meters. However, in case of low repetition frequencies of the partial discharge activity the detection is hard, because it appears only at fewer frames on the DayCor camera. At higher repetition frequencies it is much easier.

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1. Applied test regulations

According to the specifications of the client

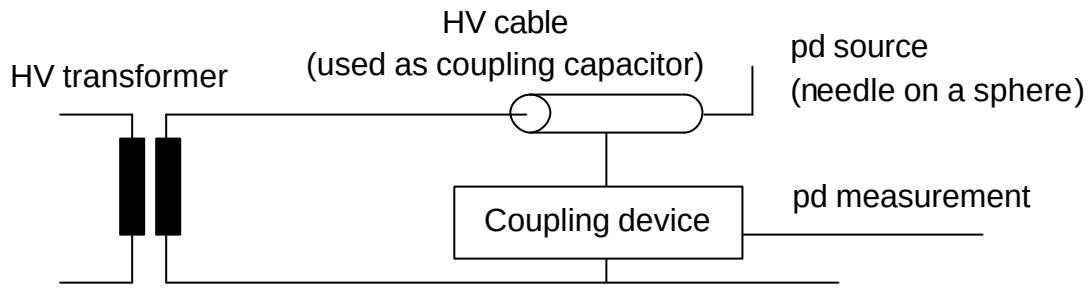
2. Test equipment

Equip.-No.	cal.	Equipment	Type	Manufacturer
617		DayCor II camera	UV camera	Ofil Ltd.
*) Measuring equipment is calibrated based on national and international reference standards. Calibration certificates are to be inspected on request.				

Table 1: Test equipment

3. Test carried out and results

According to the specifications of the client a needle (grinded tungsten needle with a diameter of 0.8 mm from tungsten inert-gas welding) on high voltage potential is used as a source for partial discharges and observed in a distance of 8 m with the DayCor II camera for different levels of the applied high voltage. The ambient conditions during the observation are 20 °C, 1010 hpa and 59 % rel. humidity. Figure 1a shows a diagram and Figure 1b and 1c a photo of the Test setup.



a)

b)

c)

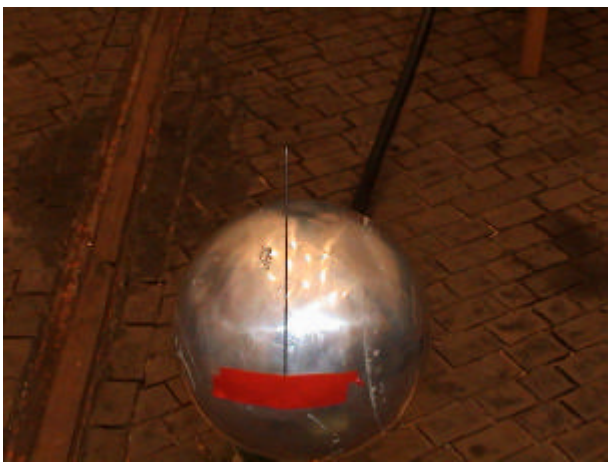


Figure 1: *a) Diagram of the test setup.*
b) Photo of the test setup.
c) Detailed Photo of the needle placed on a sphere (grinded tungsten needle with a diameter of 0.8 mm from tungsten inert-gas welding).

At the inception voltage of 5 kV the measured apparent charge level is 1.5 pC. With increasing voltage the pulse repetition frequency increases too and the apparent charge level remains unchanged. The counting rate is measured ten times with the small square frame setting for each camera and voltage setting and listed in table 2. Figure 2a-2j shows single frames of the observed needle at different high voltage levels with the camera setting LI = 0 second and LI = 1/2 second. The applied voltage level in kV is recognizable on the display in the background.

Applied voltage [kV]	Counting rate [count/min] (LI = 0 second)	Counting rate [count/min] (LI = 1/2 second)
5	105, 193, 73, 71, 66, 46, 97, 89, 35, 25 **average: 80**	531, 575, 791, 525, 430, 480, 655, 706, 801, 747 **average: 624**
7	818, 486, 307, 257, 260, 266, 256, 314, 301, 268 **average: 353**	1546, 1886, 1523, 1243, 1284, 1464, 1320, 1519, 1410, 1348 **average: 1454**
9	600, 532, 443, 549, 576, 623, 579, 511, 569, 550 **average: 553**	1806, 1790, 2174, 1648, 2073, 1894, 2114, 1778, 2006, 1720 **average: 1900**
11	1277, 961, 1023, 1036, 918, 796, 877, 842, 837, 739 **average: 930**	2172, 2100, 2010, 2039, 1919, 1960, 1892, 1927, 1812, 1774 **average: 1960**
13	1225, 1049, 1056, 1093, 1603, 986, 994, 1003, 1085, 1183 **average: 1127**	1652, 1702, 1862, 1978, 1896, 2029, 1943, 1974, 2107, 1970 **average: 1911**

Table 2: Counting rate for each camera and voltage setting measured in parallel ten times with the small square frame setting.

a) b)

c) d)

e) f)

g) h)

i) j)

Figure 2: Single frames of the observed needle at different high voltage levels with the camera setting LI = 0 second and LI = 1/2 second. The applied voltage level in kV is recognizable on the display in the background.

At all stages of the partial discharge development the detection of partial discharges with an apparent charge of 1.5 pC is possible in a distance of 8 meters. However, in case of low repetition frequencies of the partial discharge activity the detection is hard, because it appears only at fewer frames on the DayCor camera. At higher repetition frequencies it is much easier.