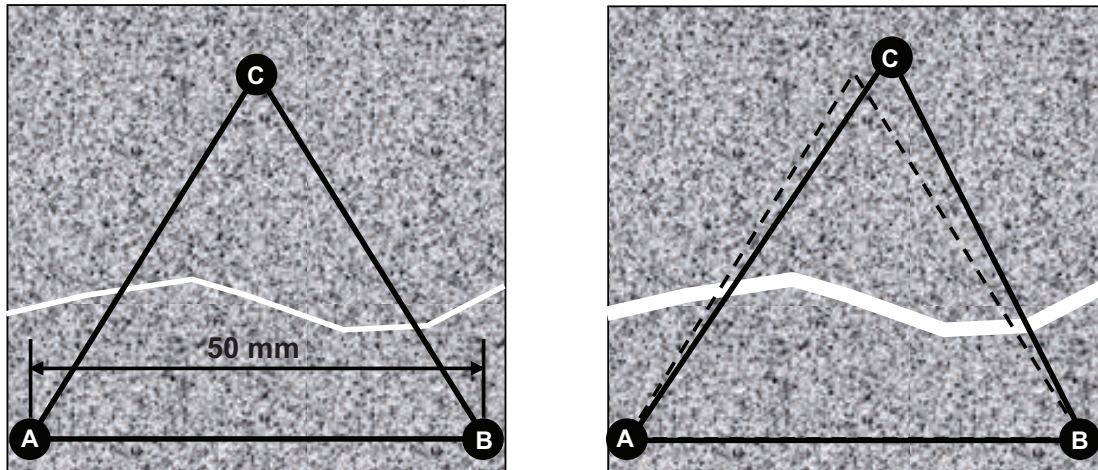


Purpose

The **CMD** system is used to monitor the opening and closing of a surface crack as well as relative lateral movement between the two sides of the crack as a function of time.

Principle

With the **CMD** (**C**rack **M**onitoring **D**evice), a three-point rosette, in the shape of an equilateral triangle with 50-mm side lengths, is bonded to the surface. Two of the rosette points are positioned parallel to the crack, and the third one is positioned on the opposite side of the crack approximately half the distance to the base line.



Temperature and moisture related movements, measured between points A and B, together with crack movement measurements between points A and C as well as between points B and C are transformed mathematically into the opening or closing of the crack and into the relative lateral movement of the two sides of the crack.

The measurements are made manually with the **CMD-200** using a caliper, or they can be made electronically with the **CMD-300** using displacement sensors (LVDTs). The **CMD-300** also has the option for remote monitoring from the office by means of a phone line.

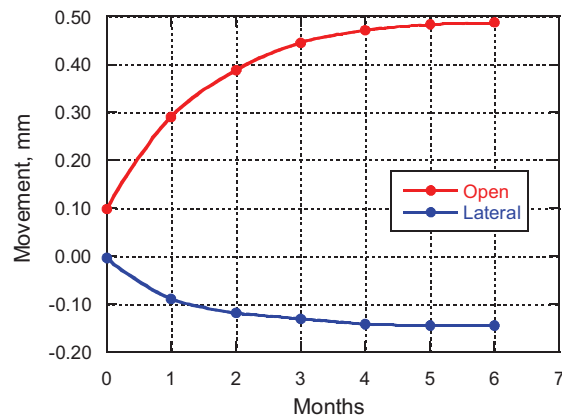
Precision and variation

The resolution of the displacement measurements is 0.01 mm and the coefficient of variation for replicate measurement on the same crack is 5 %.

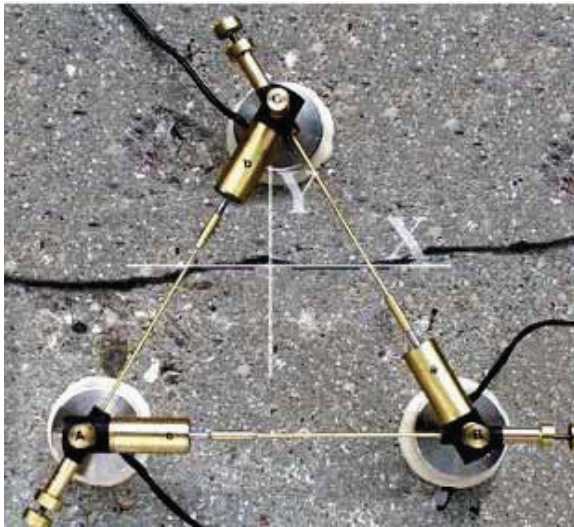
Testing Examples



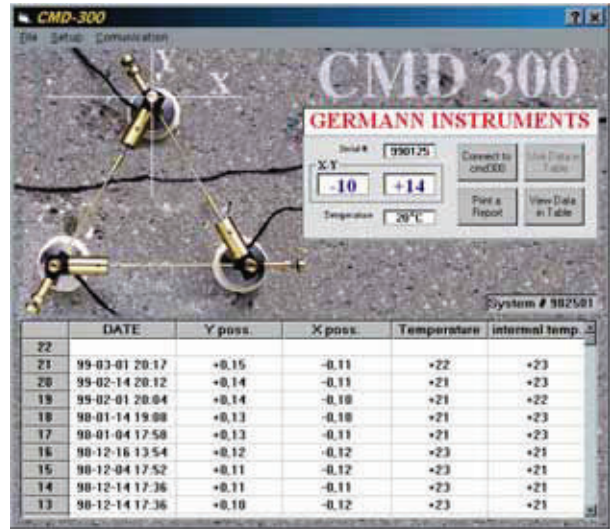
The **CMD-200** being used for measurement of crack movement caused by ASR



Opening and lateral movement of a crack measured over 6 months



The **CMD-300** rosettes with LVDT sensors mounted.



Computer display from the logging of the crack movement downloaded to a PC on-site or at the office by a phone line

CMD Ordering Numbers

CMD-200



Item	Order #
Three rosettes	CMD-210
Positioning plate, acrylic	CMD-220
GRA glue, box	CMD-230
Precision caliper, electronic	CMD-240
Manual	CMD-250

The **CMD-250** manual contains the mathematical equations for calculating the crack opening or closing and the lateral movement based on the recorded distances between the rosette points.

CMD-300



Item	Order #
Case with electronics and phone line cord	CMD-310
Three point rosette mounted with LVDT sensors (illustrated top of page)	CMD-320
Positioning plate, acrylic	CMD-330
Extension RS-232 cable	CMD-340
GRA glue, box	CMD-350
Set of anchoring tools	CMD-360
Tube with silicone	CMD-370
CMD-300 software, CD-ROM	CMD-380
Manual	CMD-390

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