Multiple Impulse Method (MIM)
The Advanced Secondary Impulse Method (SIM)

Explanation:

The SIM MIM is the latest and most efficient measuring method for prelocating cable faults.

An impulse which is sent out from the Echometer IRG 3000 (according to Impulse Reflection Method) into a cable will show no reflection at high impedance cable faults. Therefore the positive reflection of the far cable end will be indicated. In a second step the fault is ignited by a single high voltage pulse or DC voltage of a surge generator and a flashover occurs at the fault spot. Exactly during the time of arcing a second measuring impulse is sent from the Echometer IRG 3000 into the cable which will be reflected from the arc with negative polarity because the arc is low resistive. For more reliable performance the Echometer IRG 3000 using a 200MHz transient recorder is recording 5 measurements (multiple impulse) indicating the fault position during one single high voltage impulse.

The simultaneous display of both echograms leads to highest precision of cable fault prelocation. The relevant distances are shown by automatic cursor settings.

Block diagram:
Measurement example:

Healthy trace, echogram before

Faulty trace, 5 echograms during the flashover

Faulty point

Five „faulty“ traces, one is displayed

Advantages:

- easy interpretation of the faulty picture
- highest accuracy
- 5 faulty pictures according to 200MHz real time transient recorder
**Secondary Impulse Method DC, SIM DC:**

A first measurement is done with positive reflection of the cable end. After this the echometer is waiting for the High Voltage triggering coming from surge generator SSG in DC mode. This is done by increasing the DC voltage of SSG till the breakdown at fault position occurs. The trigger releases a secondary measurement which is reflected by the fault negatively. As surge energy, the capacity of the cable under test is used. Especially for long cables the cable capacity, depending on the break down voltage can be very high and leading to proper results.

The SIM DC method is also performed with the Multiple Impulse Method delivering 5 break down pictures.

**Advantage of SIM DC:**
The capacity of the cable is used and therefore a more powerful fault breakdown can be reached.