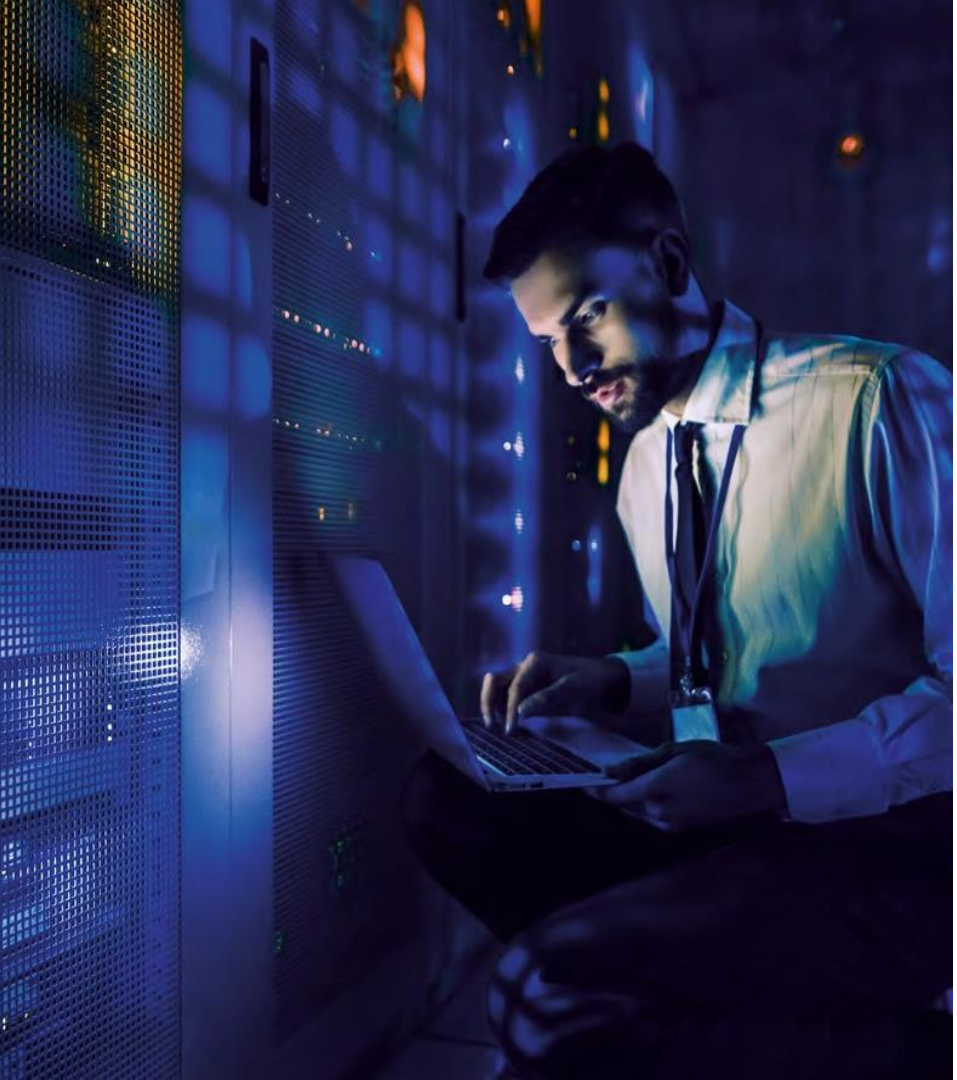
Empowering designers to Build a Greener & more Sustainable Data Center





Eliminating downtime

Along with increasing **DTC complexity** and rising demand comes an **increased risk of downtime** and associated costs.

Outages are relatively common and costly, but they **can also be anticipated** and avoided.

Power issues are the single **biggest cause of outage** making it essential to deploy solutions that guarantee maximum power availability.



Eliminating downtime

Anticipate insulation faults throughout the lifetime of the data center



Marco NEGRI
Specification Engineer
Italy



Vincent FRIEDRICH
Product Marketing Manager - Metering

socomec
Innovative Power Solutions



Anticipate insulation faults and eliminate the need for RCD thanks to Residual Current Monitoring - RCM

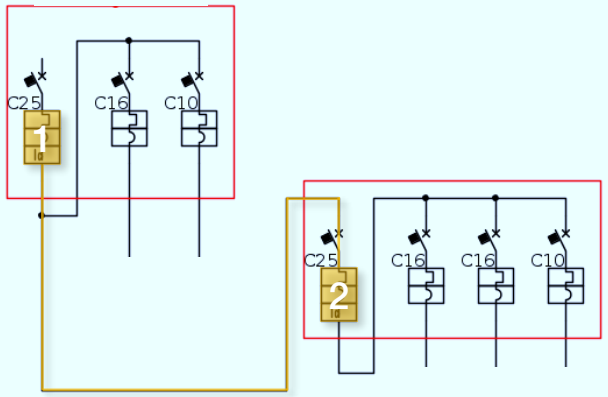
Anticipation	**Continuity**
CONTINUOUSLY MONITOR INSULATION FOR DRIFT	QUICKLY LOCATE INSULATION FAULTS

The operator of any DTC **must guarantee** the electrical installation's **continuity of service.**

Circulation of **residual currents** in IT bays is quite normal …

BUT it **can also generate power outages!**

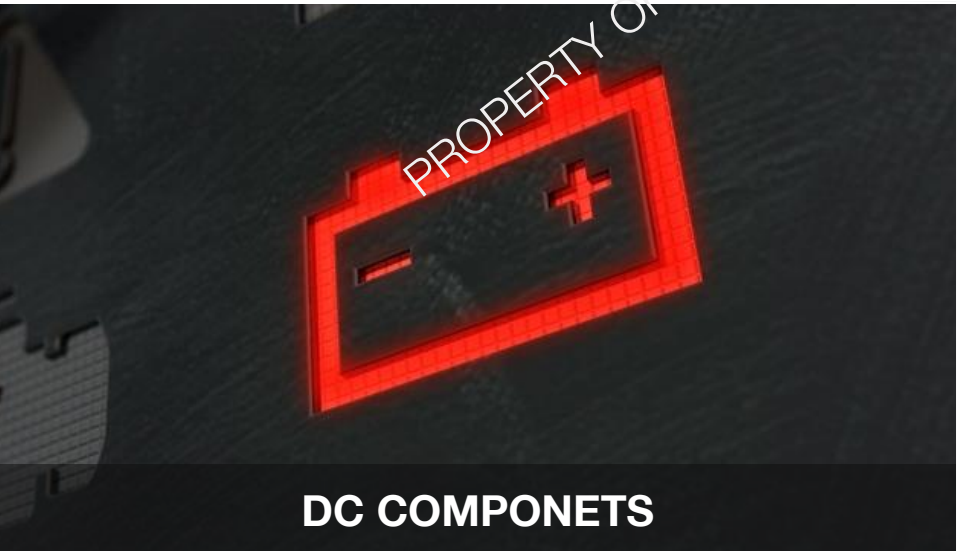
PROPERTY OF SOCOMEC



COORDINATION AND SELECTIVITY



DISTURBANCES SENSITIVITY



DC COMPONETS

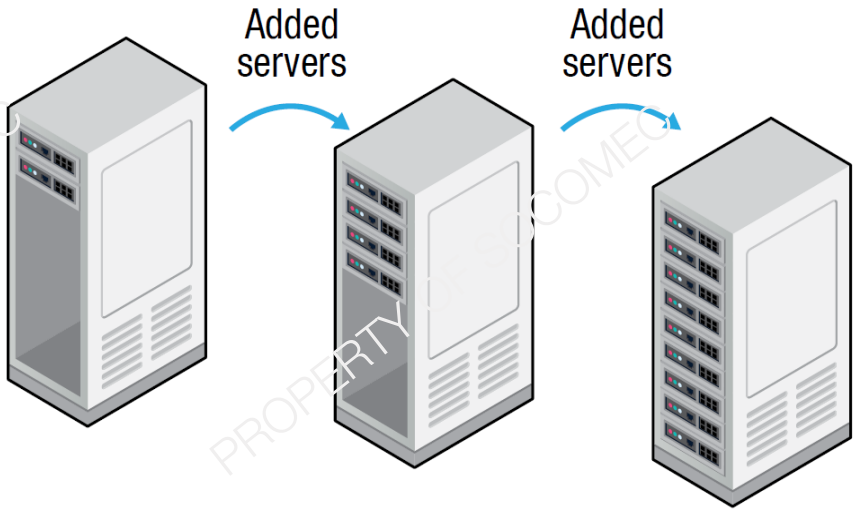


NATURAL LEAKAGE CURRENTS

PROPERTY OF SOCOMEC
PROPERTY OF SOCOMEC



Slowly but surely, it all adds up!



$I_{\Delta} \approx 4\ mA$
$I_{sys} \approx 3\ A$

$I_{\Delta} \approx 10\ mA$
$I_{sys} \approx 8\ A$

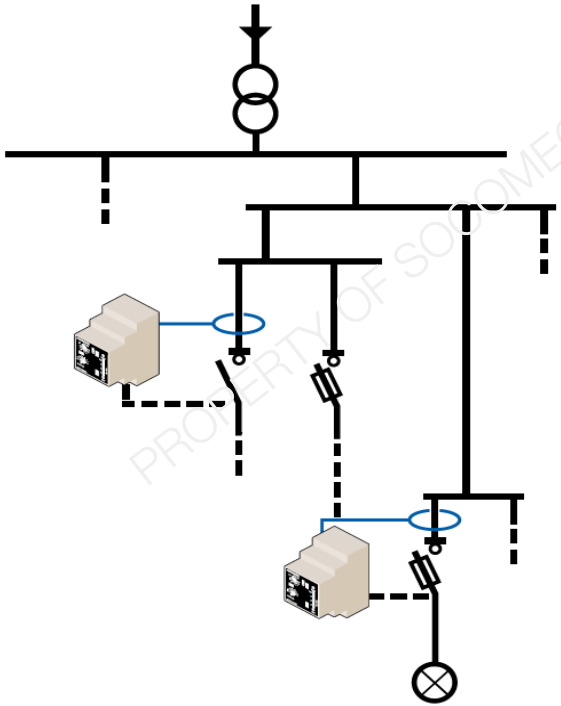
$I_{\Delta} \approx 22\ mA$
$I_{sys} \approx 16\ A$

PROPERTY OF SOCOMEC

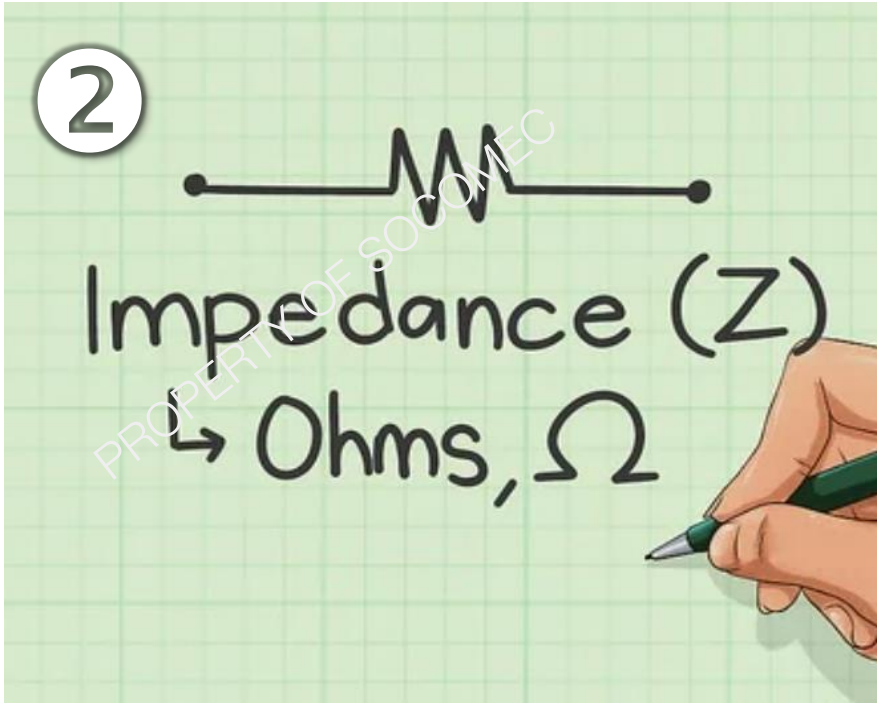

KEEP
CALM
IT'S
ANOTHER
FALSE ALARM
PROPERTY OF SOCOMEC
PROPERTY OF SOCOMEC

Calculating the impedance of the short circuit ring

1



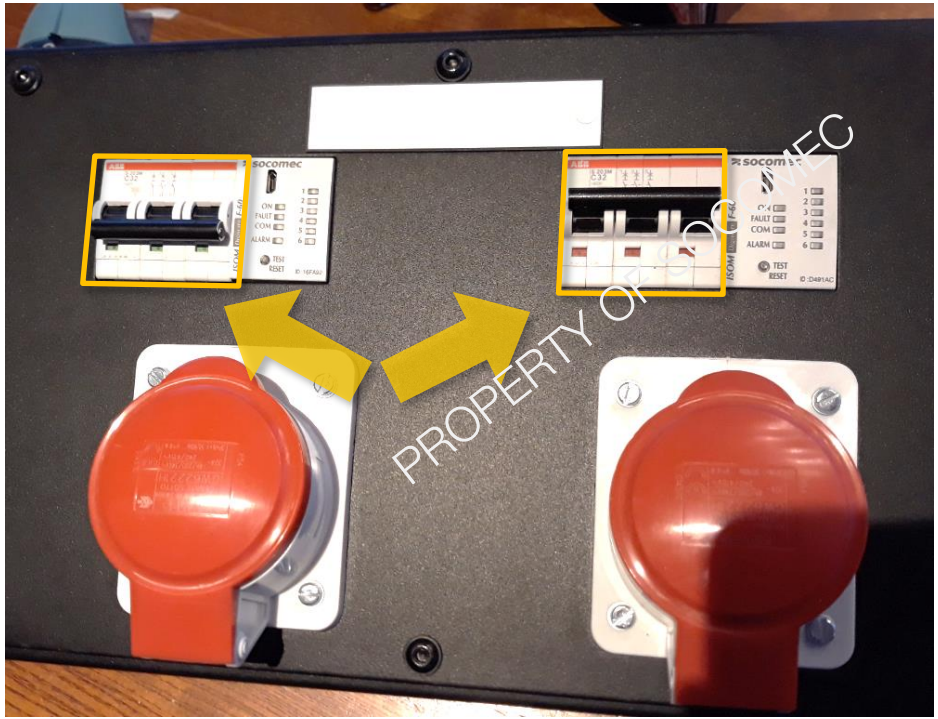
2

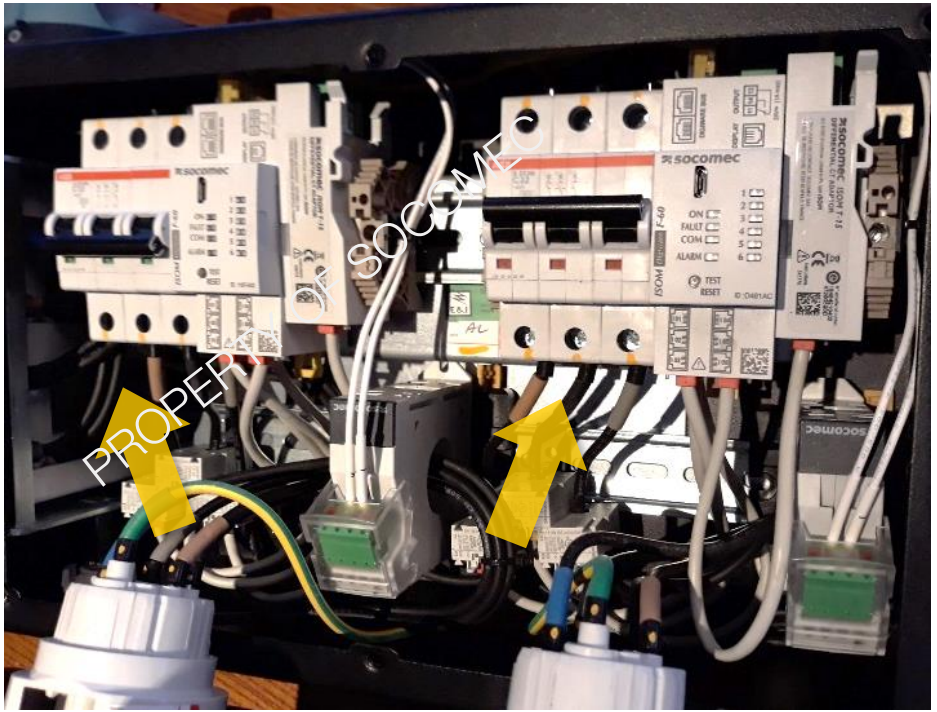


PROPERTY OF SOCOMEC

Anticipate insulation faults and remove RCD from data centers…

…thanks to Residual Current Monitoring systems (RCM)







Long time effects of leakage current

VYTENIS BABRAUSKAS, Ph.D.

Graduate

University of California, Berkeley, Ph.D., Fire Protection Engineering, 1976. Dr. Babrauskas was the first person ever to be awarded a Ph.D. degree in Fire Protection Engineering.

University of California, Berkeley, M.S., Structural Engineering, 1972.

Undergraduate

Swarthmore College, A.B., Physics, 1968. Also, concentration in electrical engineering.



PROPERTY OF SOCOMEC

How do electrical wiring faults lead to structure ignitions?

Vytenis Babrauskas, Ph.D.
Fire Science and Technology Inc.
9000 – 300th Place SE, Issaquah WA 98027, USA



Long time effects of leakage current

STRAY CURRENTS AND GROUND FAULTS

Stray currents occur when circumstances cause current to flow through paths not intended to carry current.
Ground faults are a well-known example.

They can occur if a conductor is abraded or damaged and contacts metal siding, roofing, etc.

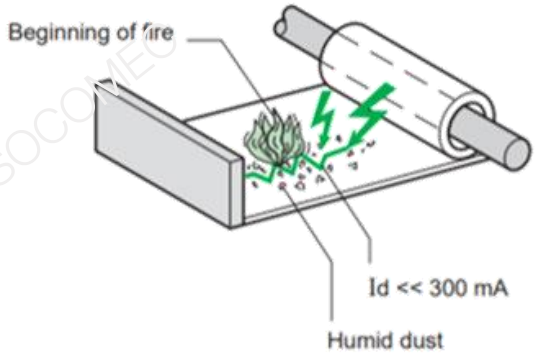
It was documented that **only 5 A was required for ignition** when a 3-conductor, PVC insulated cable contacted a galvanized iron roof.

PROPERTY OF SOCOMEC



Long time effects of leakage current

This overheating can be the origin of electrical arc in humid environment. These electrical arcs evolve when the fault current-loop impedance is greater than 0.6 Ω and exist only when an insulation fault occurs. Some test have shown that a **300 mA fault current can induce a real risk of fire.**



Some tests have shown that a very low leakage current (a few mA) can evolve and, from 300 mA, induce a fire in humid and dusty environment.

Source: Schneider installation guide

PROPERTY OF SOCOMEC

Prevent a trip…

…and guarantee the safety of the DTC !

1

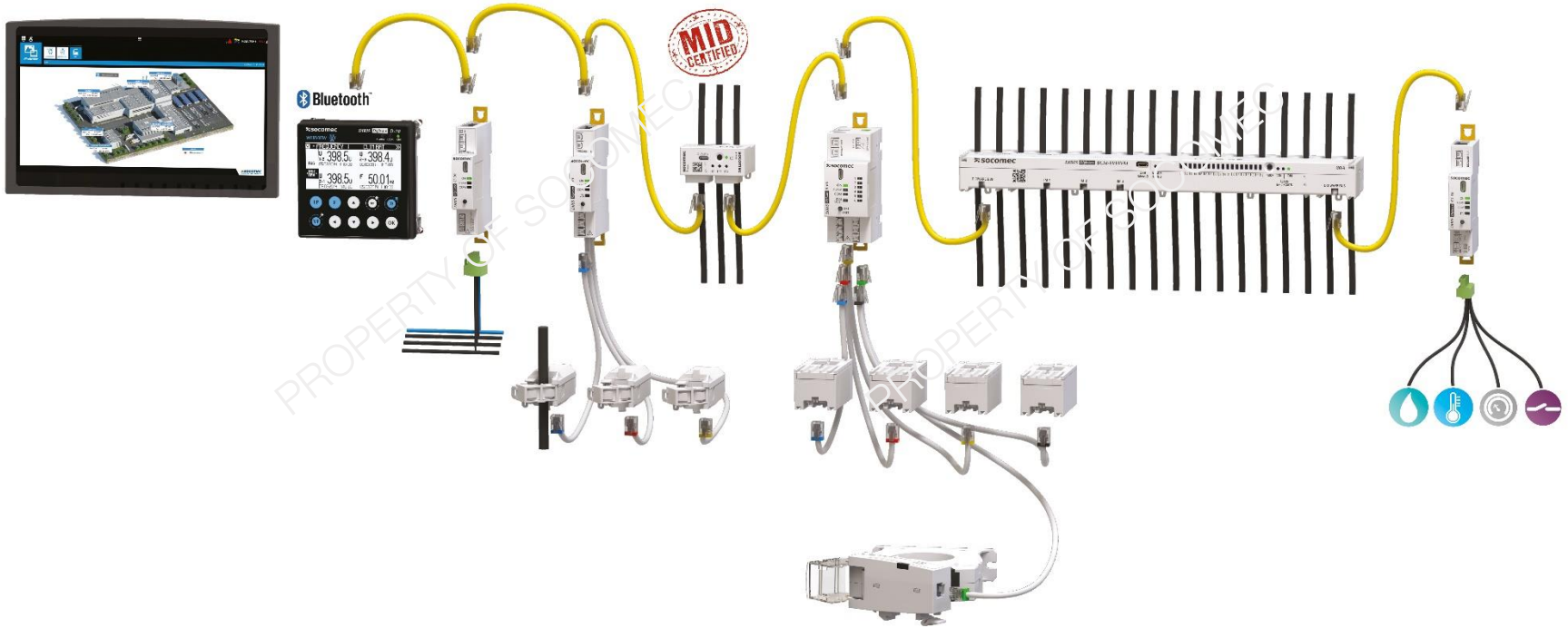


2



Taking metering and monitoring systems to another level

Diris Digiware plug & play systems



PROPERTY OF SOCOMEC



Residual Current Monitoring system

- ***DIRIS Digiware R-60***

- Residual Current Monitor
  IEC 62020
- Type A Transformer
  IEC 61869-1

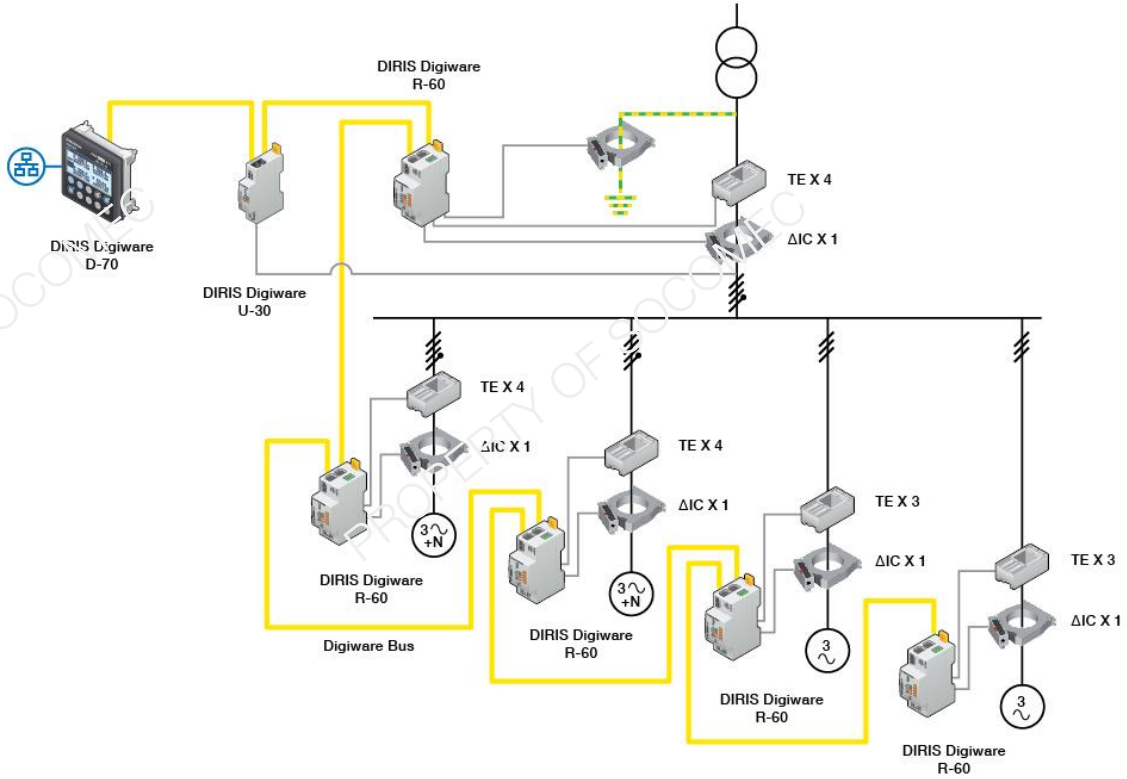




PROPERTY OF SOCOMEC

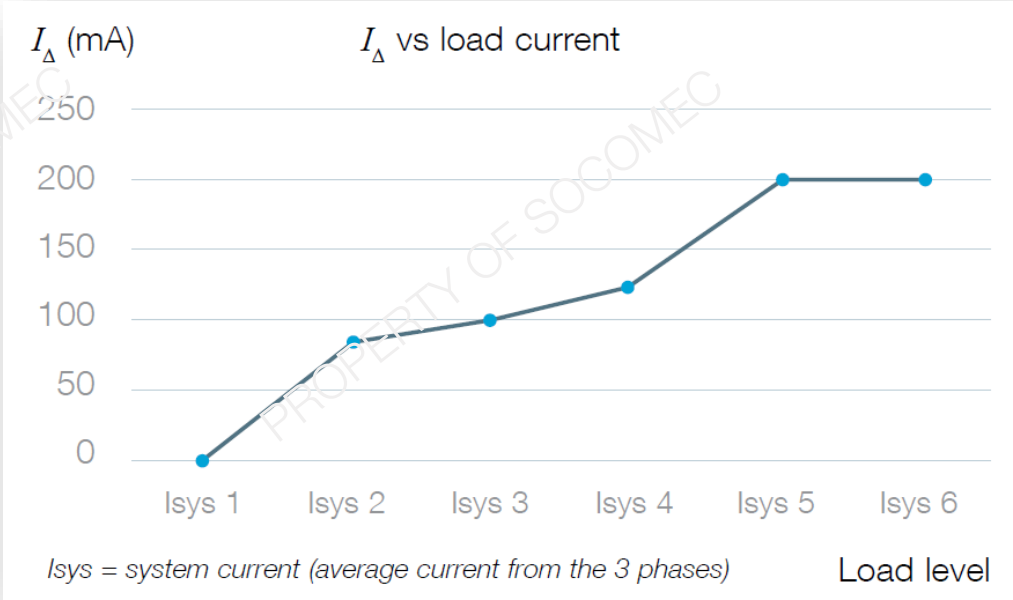


Residual Current Monitoring system



PROPERTY OF SOCOMEC

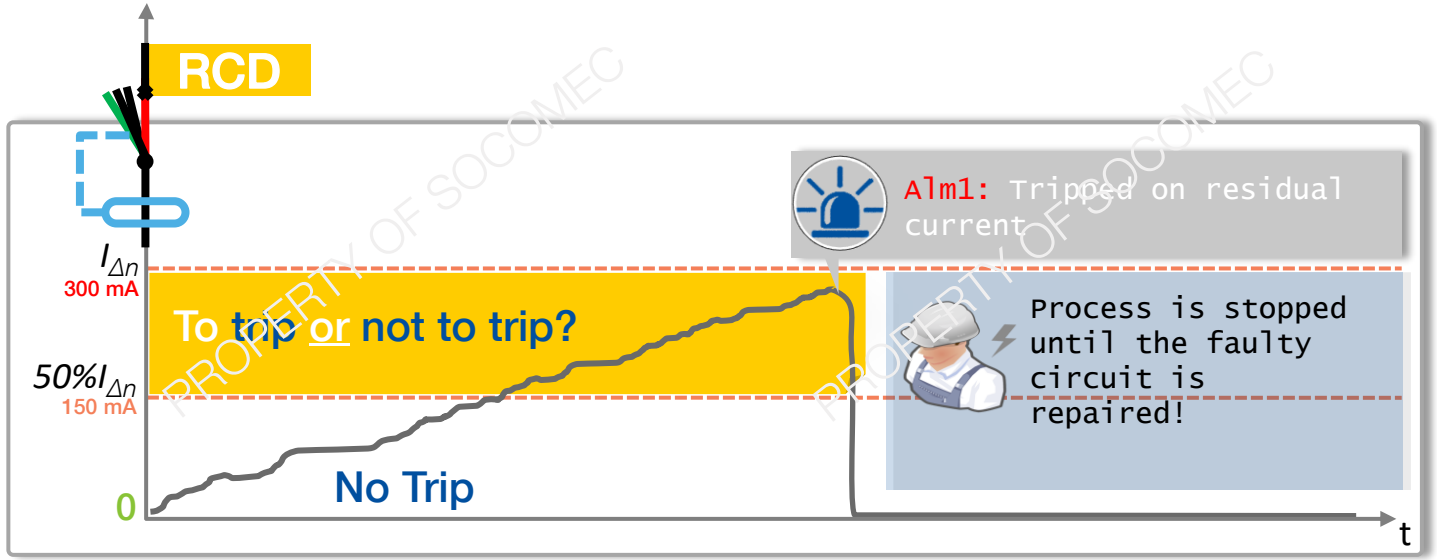
Residual Current Monitoring system



PROPERTY OF SOCOMEC

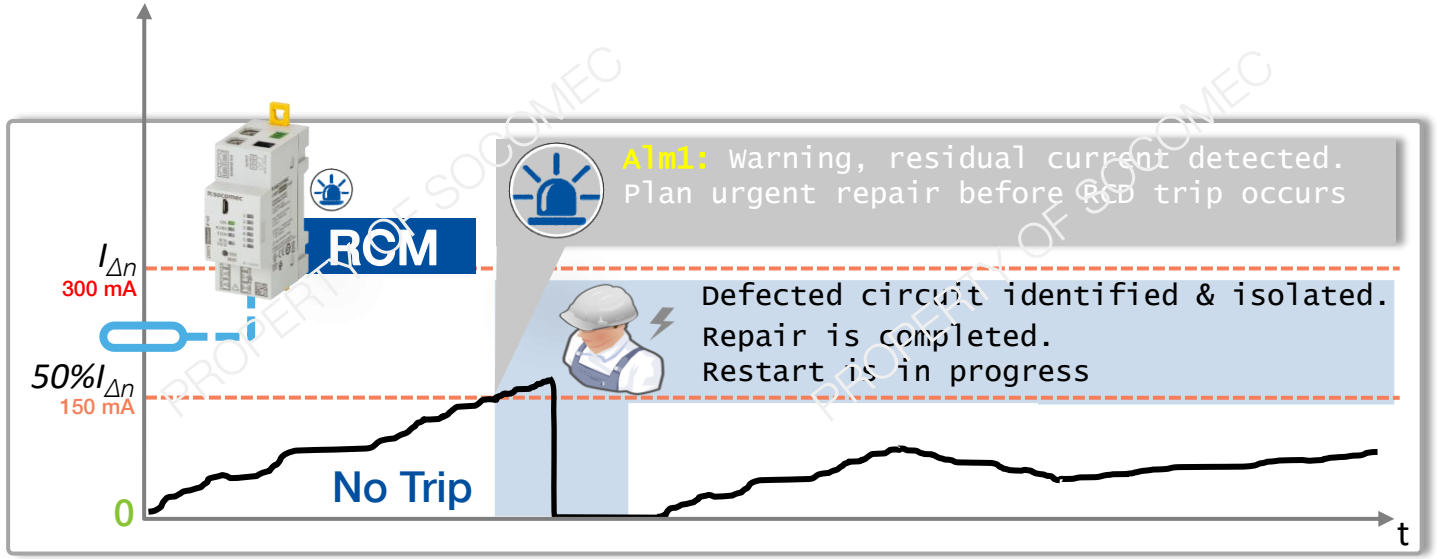
Anticipate insulation faults …

…thanks to DIRIS Digiware RCM



Remove RCD from the installation…

…thanks to DIRIS Digiware RCM



PROPERTY OF SOCOMEC

Leakage current monitoring



PROPERTY OF SOCOMEC
PROPERTY OF SOCOMEC

Periodic insulation resistance testing in IEC 60364

When RCM eases the life of DTC operators



thank you SO much!