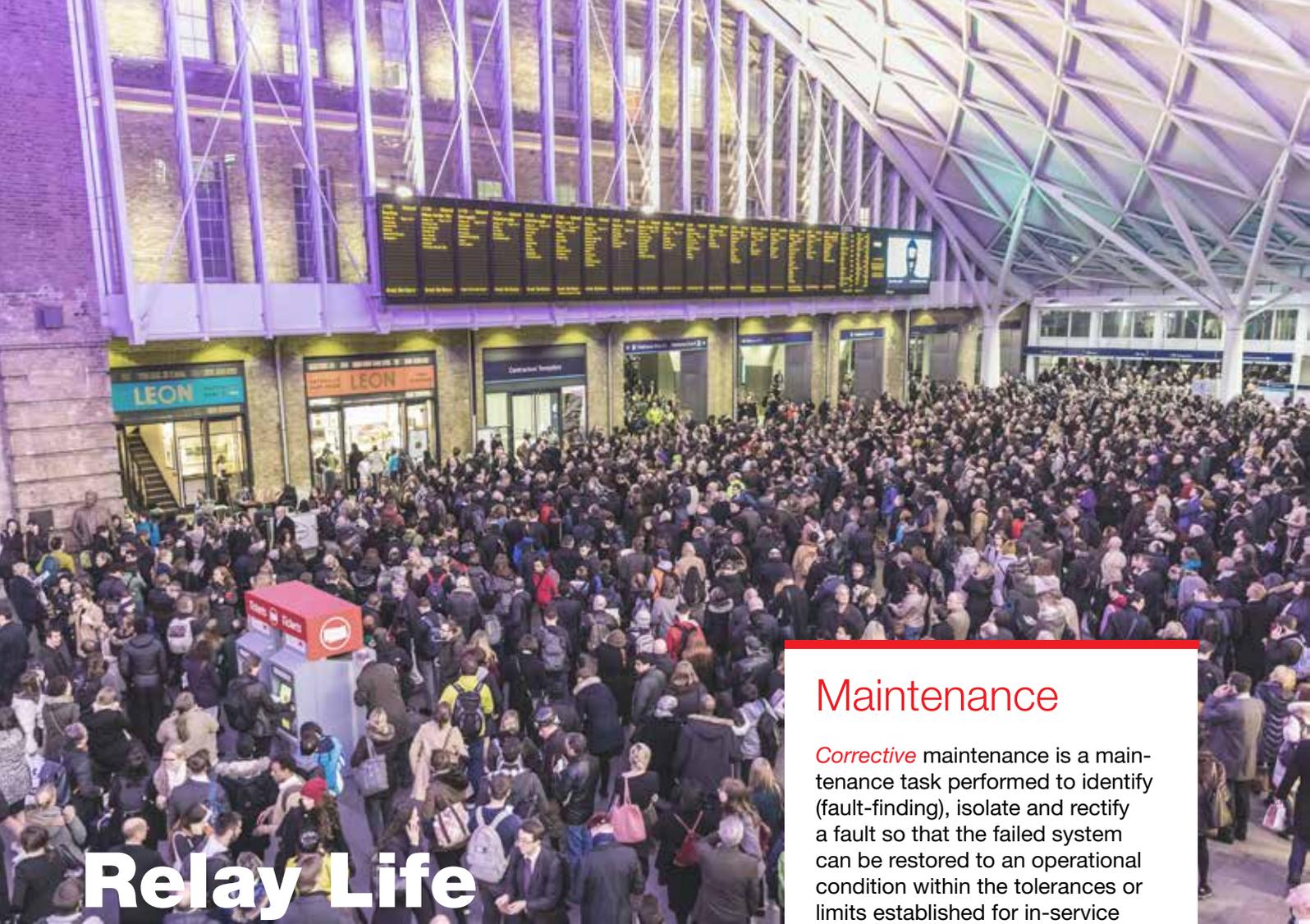




Prioritizing
safety
through
protection
& control

Relay Life Services



Relay Life Services

To minimize Life Cycle Cost of products and systems it is important to perform maintenance at exactly the right moment: not too early when the product has enough remaining lifetime and not too late when the lifetime is over.

Maintenance

Corrective maintenance is a maintenance task performed to identify (fault-finding), isolate and rectify a fault so that the failed system can be restored to an operational condition within the tolerances or limits established for in-service operations.

Preventive maintenance is a planned service activity designed to improve equipment life and avoid any unplanned maintenance activity. It preserves and restores equipment reliability by replacing worn components before they actually fail.

Condition-based maintenance is maintenance when need arises. It is based on using real-time data to prioritize and optimize maintenance resources.

Condition-based maintenance will allow maintenance personnel to do only the right actions at the right time, minimizing spare parts cost, system downtime and time spent on maintenance.

Corrective maintenance must be avoided by all means. Now the market is changing from preventive maintenance to condition-based maintenance.

Maintenance and Test Equipment

Mors Smitt offers a comprehensive set of maintenance and test equipment for in-service inspection, fault finding, and verification of relay conditions for optimum Life Cycle Cost:

D-Dock

Test tool for non-intrusive, in-service inspection and fault finding of relay circuit performance for D-relays.

A/B-Dock

Test tool for non-intrusive, in-service inspection and fault finding of relay circuit performance for A- and B-relays.

Portable Relay Tester

Relay test system for very fast verification of relay condition.

D-Test Switch

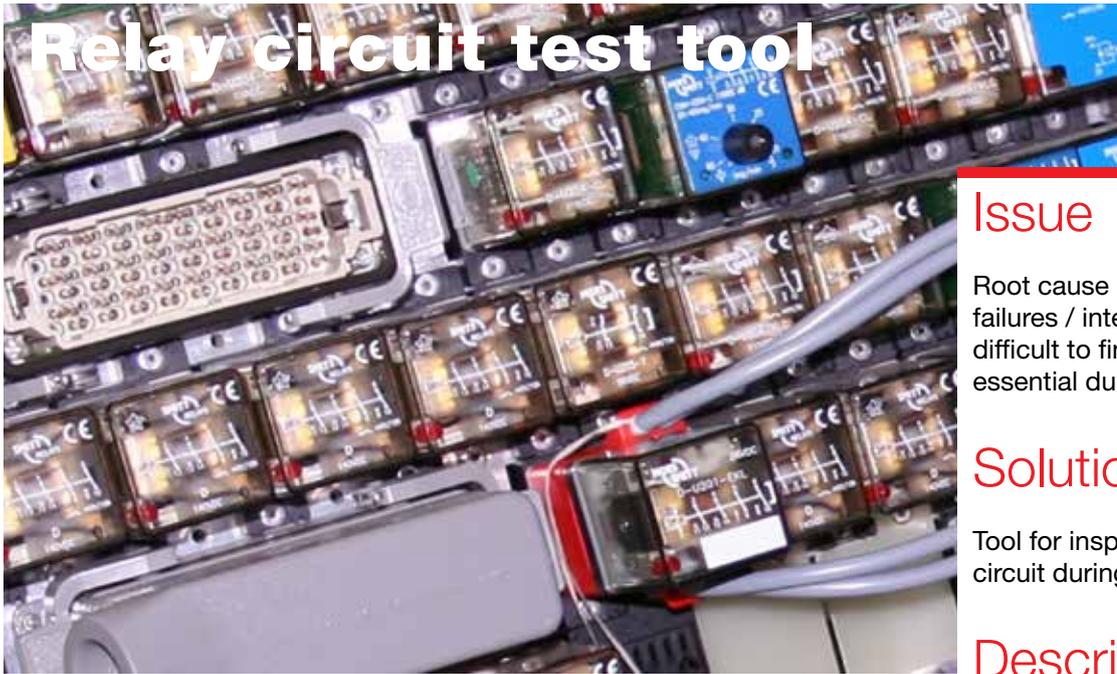
Manual relay for testing electrical installations. Switch for testing and commissioning electrical installations, simulating a D-relay operation.



Quality and safety are the drivers of our thinking and doing



D-Dock & A/B-Dock



Relay circuit test tool

Issue

Root cause of repetitive system failures / intermittent faults are difficult to find. Fault finding is essential during train operation.

Solution

Tool for inspection of relay and circuit during train operation.

Description

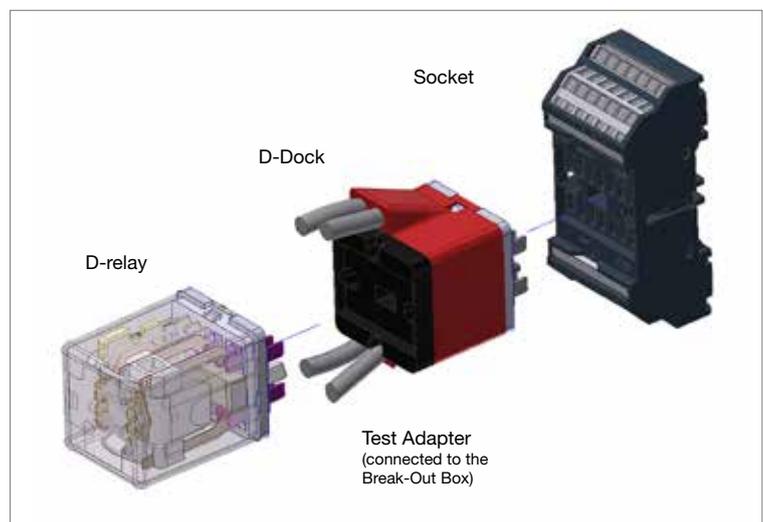
Pull out relay, insert adapter in socket, plug in relay again. Adapter is connected to break-out box enabling the user to connect measuring equipment like multi-meters, scope meters or data analyzers to log operations during longer period. This makes fault finding easy.



Test tool for non-intrusive, in-service inspection and fault finding of relay circuit performance

Train fault finding made easy

- Non-intrusive system, the train system remains fully functional
- Monitoring relay operation: voltage and current per relay contact and coil
- No special tools required
- Suitable for unattended multi-day monitoring and data storage (no more than one week)
- Compact design to fit in tight train cabinets
- Suitable for any D-relay type (D-Dock) or A/B-relay type (B-Dock)



PRT-MS1



Portable relay tester

Issue

Difficult to quickly verify the condition of installed relays when trains are in depot for only a short time.

Solution

Portable relay tester which verifies all important parameters in just a couple of seconds.

Description

The system allows the operator to perform tests on both instantaneous and timer relays, checking minimum operating voltage, contact quality and delay times. Defects such as jammed contacts or too high coil power are also identified.

The tester is battery powered (lasts 8 hours standard use).



Very fast verification of relay conditions

Low cost relay testing capability to service engineers for onboard train applications

- Fast & easy field testing
- Fault finding
- PASS / FAIL indication
- Test & calibration of timer relays
- Electrical contact cleaning function
- Incoming goods inspection
- Language: English and Chinese

Test parameters

- Working of relay
- Pull-in voltage
- Contact quality
- Coil power
- Operating times



D-relay before testing



CU-relay passed the test
(green LED: passed, red LED: failed)

D-Test Switch



Manual relay for testing electrical installations

Issue

Difficult to test electrical installations without energizing the relay.

Solution

Manual plug-in test switch with 4 change-over contacts, to simulate D-relay operation in an electrical installation.

Description

Manual relay for testing electrical installations.



Testing electrical installations

- Latchable manual operation
- Voltage presence indicator
- Testing and commissioning electrical installations
- For maintenance purposes and fault finding

Switch for testing and commissioning electrical installations, simulating a D-relay operation



Test for voltage presence:
No voltage present
(LED indicator OFF)



Test for voltage presence:
Voltage is present
(LED indicator ON)



Test system by simulating energized relay: Contacts are manually switched

Mors Smitt



Onboard & trackside components & solutions

Mors Smitt is serving both the railway rolling stock and signalling / infrastructure markets. The railway market demands compliance to the strictest standards.

Many of the world's largest rolling stock manufacturing enterprises, the main railway operators and network companies rely on our products.

New solutions are co-designed with railway operators and contractors

Proactive project management mandates close teamwork, precise flow charts, the acceptance of responsibilities, open communication and smooth implementation. Type testing and commissioning are undertaken by the same committed engineers who have signed off on design and product integrity.

Serving safety

We highly value our customers and put service first. We are committed to quality excellence to create reliable products and services, serving the stringest reliability, availability, maintainability, safety, health and environmental demands from our customers. This commitment will result in lower life cycle cost.

Mors Smitt is a trusted partner in your supply chain. Worldwide availability of products is assured by a network of professional, trained and dedicated subsidiaries, distributors and agents offering local service and support.

Mors Smitt is a total supplier for onboard and trackside safety-critical solutions. Combining electro-mechanical ultra-high dependability relays with safety-critical electronics.

All is manufactured to the strictest standards.

Figures

>10 million relays
in service worldwide

120 years
of experience

5 factories
& 500 employees

Most rail car builders and operators use Mors Smitt relays and solutions

Business unit: Relays, Train Protection & Energy

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