Life cycle services for protection and control relays - If it breaks, we're there to support

Mika Kauppinen, Marketing and Sales Manager
Content

- Introduction
- Product Life Cycle Management
- Life Cycle Services and Business Potential
Full support from start to finish

Business Opportunity

1.5 million relays installed

Global network
100 countries
50 service centers
2000 service experts

- J-series (Late 60's)
- SPACOM (1985)
- RE 500 (1995)
- Relion (2009)

Life cycle services for protection and control relays
Full support from start to finish

Installed Base
Life cycle services – to secure your investments

- The main purpose of protection and control relay is to protect both human lives and equipment as well as ensure uninterrupted power supply.
- Safety
- Operations
- Assets
- Economy

Estimated lifetime of assets in distribution network

<table>
<thead>
<tr>
<th>System</th>
<th>Estimated Lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substation</td>
<td>50-60 years</td>
</tr>
<tr>
<td>Switchgear</td>
<td>30-40 years</td>
</tr>
<tr>
<td>Relay protection</td>
<td>20-30 years</td>
</tr>
<tr>
<td>Control system</td>
<td>10-20 years</td>
</tr>
</tbody>
</table>
Industry Leading Life Cycle Policy ABB's products are designed for continuous evolution.

It is ABB's goal to protect our customers' investment beyond the life-cycles of the underlying platform products.

Products will continue to be supported by ABB for at least 10 years from the start of the Classic stage, although exceptions to this may occur if components or technologies needed are no longer available to ABB.
# Product Life Cycle Management and Services

## Life cycle services for protection and control relays

<table>
<thead>
<tr>
<th>Preventive Maintenance</th>
<th>Preventive Maintenance</th>
<th>Preventive Maintenance</th>
<th>Maintenance Exchange Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare Parts</td>
<td>Spare Parts</td>
<td>Spare Parts</td>
<td></td>
</tr>
<tr>
<td>Repair</td>
<td>Repair</td>
<td>Repair</td>
<td></td>
</tr>
<tr>
<td>Warranties</td>
<td>Warranties</td>
<td>Warranties</td>
<td></td>
</tr>
<tr>
<td>Modifications</td>
<td>Modifications</td>
<td>Modifications</td>
<td></td>
</tr>
</tbody>
</table>

* For selected products

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## Active
- Full range of life cycle services and support

## Classic
- Limited range of life cycle services and support

## Limited
- Replacement and end-of-life services

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February 8, 2018 | Slide 132  Life cycle services for protection and control relays
Portfolio

- Clionet – Online Service
- Clionet – Data Care
- Classic Products
- Modification Services
- Maintenance Exchange Units
- Relay Retrofit
- Preventive Maintenance
- Spare Parts and Repair
- BIO-Testers

- Local Field Service
Portfolio

- Clionet – Online Service
- Clionet – Data Care
- Classic Products
- Modification Services
- **Maintenance Exchange Units**
  - Relay Retrofit
  - Preventive Maintenance
  - Spare Parts and Repair
  - BIO-Testers
- Local Field Service
Life cycle services for protection and control relays

Background
The customer identified the need to replace old relays to avoid unscheduled operation downtime due to aging equipment. Further, the customer had also identified a need for additional relay functions and the necessity to increase maintenance scheduling predictability. Short maintenance break was the challenge.

ABB Response
Maintenance Exchange Unit service for REF 542plus relays provided a perfect fit to ensure the fast and easy installation of the new version of the same relay. With this service, the customer gained the assured availability of life cycle services and new functionality.

Customer Benefits
Upgrade to a newer version of the same product is convenient for the maintenance and operations personnel

- Future retrofit and upgrades for the relays becomes easier
- Improved reliability of the electric power system for the oil platform
- Minimized shutdown time thanks to fast and easy installation, migration of existing configuration and no major new wiring

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Project name: Life cycle extension of protection relays, Statoil’s Kvitebjorn offshore platform
Scope: Upgrade of aging REF 542plus relays
Product: REF 542plus Maintenance Exchange Unit Service
Customer: Statoil
Industry: Oil and Gas
Country: Norway

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Kvitebjorn capacity
190,000 BOE/D (barrels of oil equivalent per day)
# Life cycle services for protection and control relays

## Maintenance Exchange Unit service (MEU)

<table>
<thead>
<tr>
<th>Key elements</th>
<th>Customers challenge</th>
<th>Benefits and key results</th>
</tr>
</thead>
<tbody>
<tr>
<td>- New relay (same type but latest HW &amp; SW)</td>
<td>- Installed base with obsolete version of the device where spare parts are not available any longer</td>
<td>- Extended life time of the protection solution – secure the process</td>
</tr>
<tr>
<td>- Existing configuration, setting, wiring is used</td>
<td>- Need for the additional functionality</td>
<td>- Easy, fast and cost effective installation</td>
</tr>
<tr>
<td>- Installation, testing and recycling supported (optional)</td>
<td>- Fast replacement – short shutdown time</td>
<td>- Risk of malfunctions minimized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Familiar to maintenance and operating personnel</td>
</tr>
</tbody>
</table>

ABB offers easy replacement for the obsolete versions of the products

- REF 542plus
- RE500
- REX 521
Portfolio

- Clionet – Online Service
- Clionet – Data Care
- Classic Products
- **Modification Services**
  - Maintenance Exchange Units
  - Relay Retrofit
  - Preventive Maintenance
  - Spare Parts and Repair
  - BIO-Testers

- Local Field Service
Success Story – Upgrade, Modification and Spare Parts

Life cycle services for protection and control relays

Background
KOGAS identified the need to change their protection relay communication from LON to IEC 61850, to benefit from the advanced functions available through the IEC 61850 protocol BUT they wanted to keep the already installed RE500 series protection relays.

ABB Response
To meet the hardware requirements for IEC 61850 communication, it was necessary to replace the central processing unit (CPU) and the human-machine interface (HMI) in the relays. Solution built on the modification, upgrade and spare parts service available for the RE500 series relays was the perfect fit.

Customer Benefits
• Shortened shutdown time to perform the upgrade project, as using the same protection relay required no new wiring or modification of the switchgear panels
• A harmonized installed base lead to minimized amount of engineering required on site
• Annual maintenance activities within budget for this upgrade and modification project
• Access to the latest software developments and new optional features and functions
• Extension of product’s life cycle and assured availability of ABB’s life cycle services

<table>
<thead>
<tr>
<th>Project name</th>
<th>Upgrade of protection relays, ~300 pcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Upgrade and Modification of RE500 series relays</td>
</tr>
<tr>
<td>Product</td>
<td>Modification and Upgrade Services</td>
</tr>
<tr>
<td>Customer</td>
<td>Korea Gas Corporation (KOGAS)</td>
</tr>
<tr>
<td>Industry</td>
<td>Oil and Gas</td>
</tr>
<tr>
<td>Country</td>
<td>South Korea</td>
</tr>
</tbody>
</table>
### Life cycle services for protection and control relays

**Modification services – for new functionality or upgrades**

<table>
<thead>
<tr>
<th>Key elements</th>
<th>Customers challenge</th>
<th>Benefits and key results</th>
</tr>
</thead>
</table>
| - To adapt to changes in protection requirements  
- Software (additional functionality; version changes) and hardware (change or add modules) upgrades | - Need to harmonize the installed base with several versions of same relay type  
- Need for additional features or functions even years after original purchase | - Same product can be used even if protection requirements and functionality change  
- Low investment costs  
- Ecological option |

ABB offers extensive selection of alternatives, replacement of the complete device is not always needed
Portfolio

- Clionet – Online Service
- Clionet – Data Care
- Classic Products
- Modification Services
- Maintenance Exchange Units
- Relay Retrofit
- Preventive Maintenance
- Spare Parts and Repair
- BIO-Testers

- Local Field Service
**Project name**  Life cycle extension of protection relays for Vaasan Sähköverkko Oy

**Scope**  Maintenance of aging SPACOM relays (20+ years) in all substations

**Product**  SPACOM Preventive Maintenance Service

**Customer**  Vaasan Sähköverkko Oy

**Industry**  Utility

**Country**  Finland

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**Background**
Unexplained power cuts and trips for no reason on different substations made the customer evaluate the condition of their protection relays.

**ABB Response**
The relays that caused the trips were analyzed and faults were detected on aging components. ABB made a preventive maintenance offer for all the relays on the distribution network.

**Customer Benefits**
All the relays protecting the network were maintained at the same time at site. This factor and promise of ten years reliable operation, gave the network company more time to spread the investments and confidence in the future.
Life cycle services for protection and control relays

Preventive Maintenance – for preventing malfunction due to aging

**Key elements**
- Modules affected by aging components are replaced - recommended for relays > 10 years
- Replaced modules are based on the fault statistics
- Spacom and RE500 series

**Customers challenge**
- Aging installed base - risk of malfunction
- Critical impact on the process

**Benefits and key results**
- Extended life time of the relay
- Lower the risk of device failure – lower impact on the process
- Additional service costs can be avoided

ABB offers preventive maintenance to lower risks due to aging
Portfolio

- Clionet – Online Service: Knowledge base – open to all, free of charge
- Clionet – Data Care: Cloud service for data sharing and back-up of protection relays
- Classic Products: Post manufacturing after Active stage
- Modification Services: Sw/hw modification, functionality changes
- Maintenance Exchange Units: Obsolete product version -> Active stage, REF 542plus, RE500, REX 521
- Relay Retrofit: Concept to retrofit Spacom relays with Relion products
- Preventive Maintenance: Recommended activity after 10 years of use, Spacom and RE500
- Spare Parts: Available even within 48 hours
- Repair: Cost effective way to restore relays
- BIO-Testers: Equipment to support engineering and comissioning
- Local Field Service
## Life cycle services for protection and control relays

### Demo Sessions and Exhibition Area

<table>
<thead>
<tr>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>• REF 542 Plus Maintenance Exchange Unit</td>
</tr>
<tr>
<td>• Relay Retrofit Program, Configuration Migration</td>
</tr>
<tr>
<td>• 615 BIO Testers</td>
</tr>
</tbody>
</table>

### Contacts

<table>
<thead>
<tr>
<th>Mika Kauppinen</th>
<th>Antti Imppola</th>
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</thead>
<tbody>
<tr>
<td>Anssi Kukkonen</td>
<td>Paresh Mandpe</td>
</tr>
</tbody>
</table>

### Wednesday Factory Tour

Please contact above persons for individual discussions and/or EP Service factory tour (13:00-14:00)

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*ABB offers an extensive portfolio of life cycle services for protection and control relays*
EP Service Finland

Portfolio

**EP Service - extensive portfolio of life cycle services for low and medium voltage equipment**

**EP Service Finland**

**Portfolio**

**PG 3442**
- DA Service
- MV Apparatus
- MV Switchgears

**PG 3107**
- LV Switches

**PG 3102**
- LV Switchgears
- LV Busducts
EP Service Finland
Where to find more information


Full Support from Start to Finish