

ABB Medium Voltage Days 2016

Asset service innovation Solutions along the lifecycle

Technical session 8

Asset service innovation

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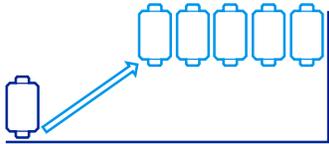
Service agenda

What to expect?

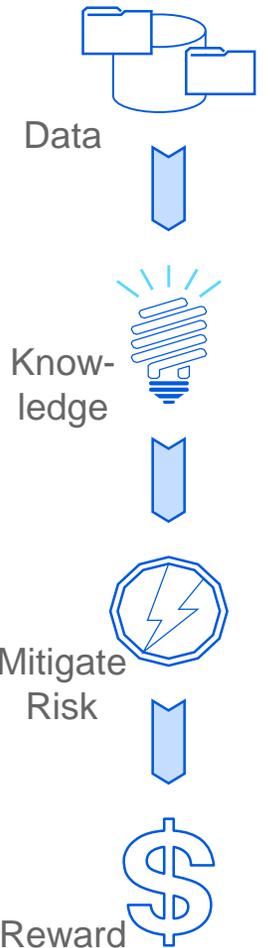
- Common challenges for MV asset operators and service personnel
- Data & knowledge: Active MV asset management for safe, reliable and predictive operation
- MV switchgear lifecycle management
 - Retrofit & upgrade of MV assets to protect your investments
 - Safety for your personnel and assets
- Takeaways: Safe, reliable, predictable
- Question and answer

Growing fleet and aging assets

Challenges for MV operators



- Growing and aging installed base due to electrification and industrialization
 - Rising amounts of equipment, systems, machinery and infrastructure
 - Industries and utilities have actively running products, systems, software – assets that constitute an investment of several decades and are worth of hundreds of billions.
- Know-How & skills
 - Increased complexity of applications, cost pressure on resources and erosion of engineering and services skills due to aging of workforce
- Safety, reliability and predictability – **A matter of risk management**
 - Asset management balances risk and reward to generate business value
 - Predict investments and asset behaviour



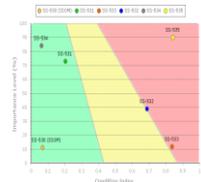
The service journey

Services to deliver data and knowledge to take decisions about the MV assets

Smart Asset Services

Status report of asset condition
Outlook on current and future performance
Documented, transparent decision-making framework to increase predictability
Optimized allocation of maintenance and modernization funds
Reduced risk of failure

MySiteCondition



MyRemoteCare



Maintenance support services

Parts, site- and workshop services to support customers keeping their assets available and reliable:

- Spare Parts
- Installation, Commissioning, Training, Repair, Maintenance
- Expert service to optimize maintenance strategies



Lifecycle Services

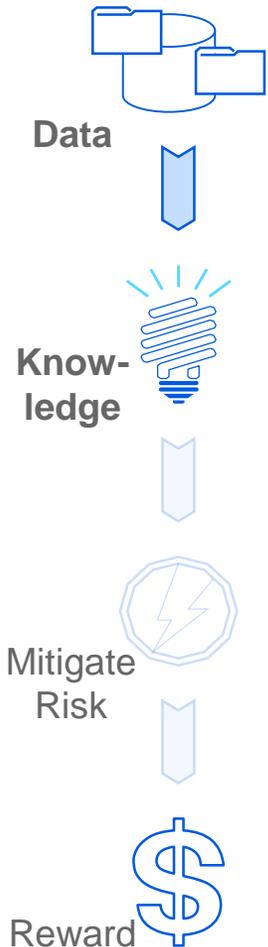
Extending the lifecycle of ABB and non-ABB switchgear by retrofitting the active parts (mainly circuit breakers and relays):

- Roll-in-Retrofits & OneFit solutions for non-ABB installed base
- Relays Retrofits & Replacements
- Switchgear arc flash safety upgrades and replacement projects

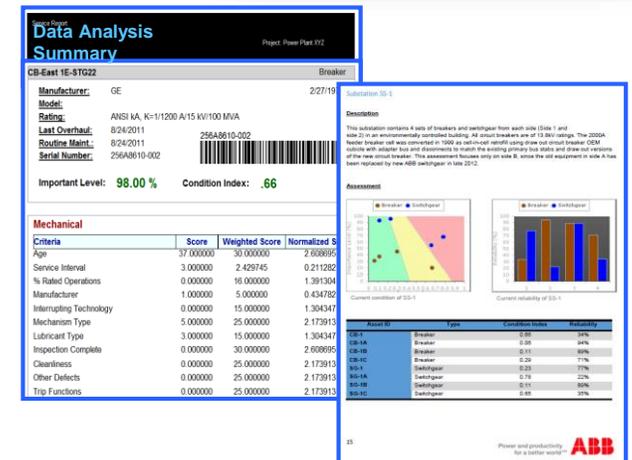


Smart asset services

MySiteCondition – Condition assessment solution

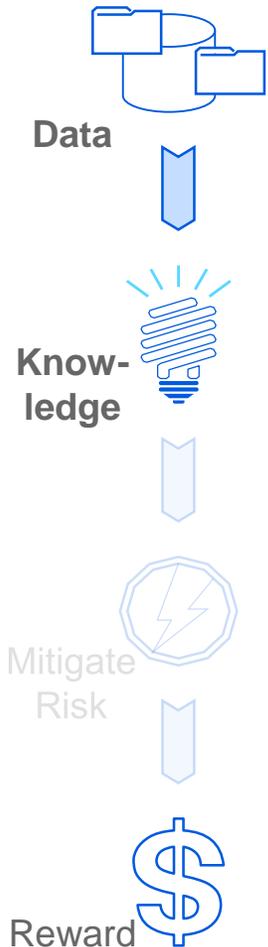


- Ensure electrical equipment availability
- Investment planning and funds allocation (maintenance, retrofit, replacement)
- MySiteCondition solution:
 - Covers a wide range of assets by age, type and brand, for MV, Trafo, LV
 - Allows ABB's engineers to collect relevant information by: observation, inspection and tests, by means of an tablet App
 - Structured data analysis and algorithms (>100 built-in criterias)
 - Assets condition calculation and risk assessment in a clear report, highlighting the mitigations actions and their benefits
 - Mitigation actions and impact to assets

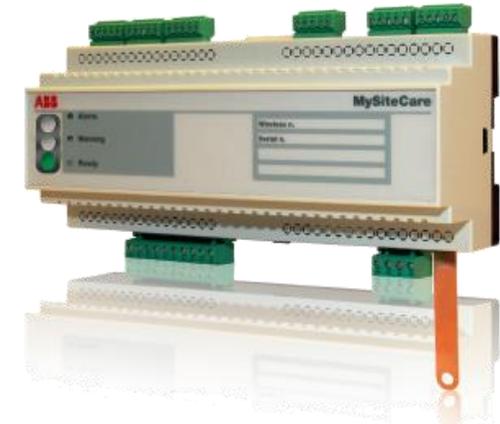
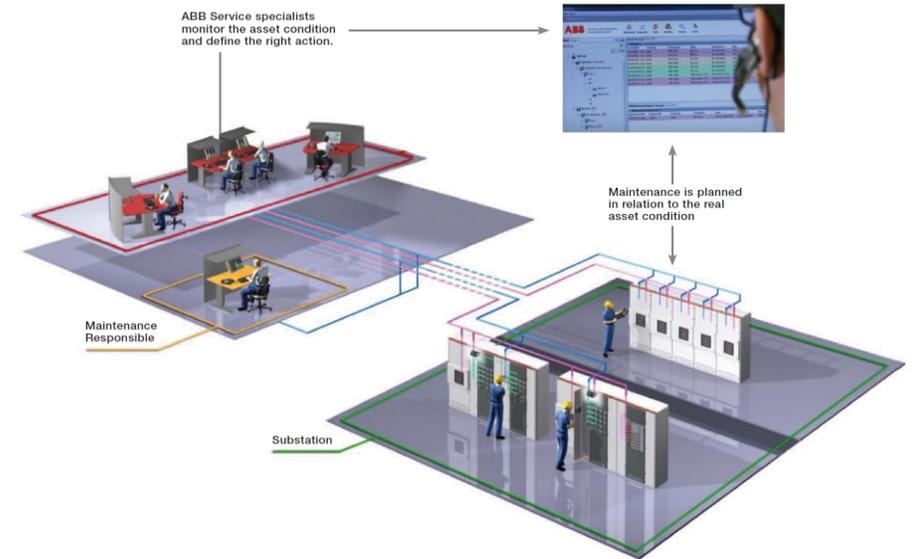


Smart asset services

MyRemoteCare – Condition monitoring solution

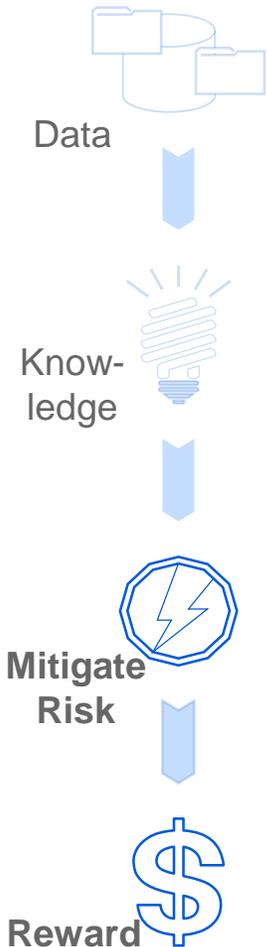


- Predict faults before they happen, improving assets availability
- Optimize maintenance costs
- MyRemoteCare
 - Non-intrusive asset condition monitoring solution (add-on existing and built-into new switchgears and breakers)
 - Condition-based maintenance (reports, alerts by mail, web access)
 - Proactive remote support by ABB service experts



Lifecycle management

Spare parts and retrofit solutions availability for obsolete products

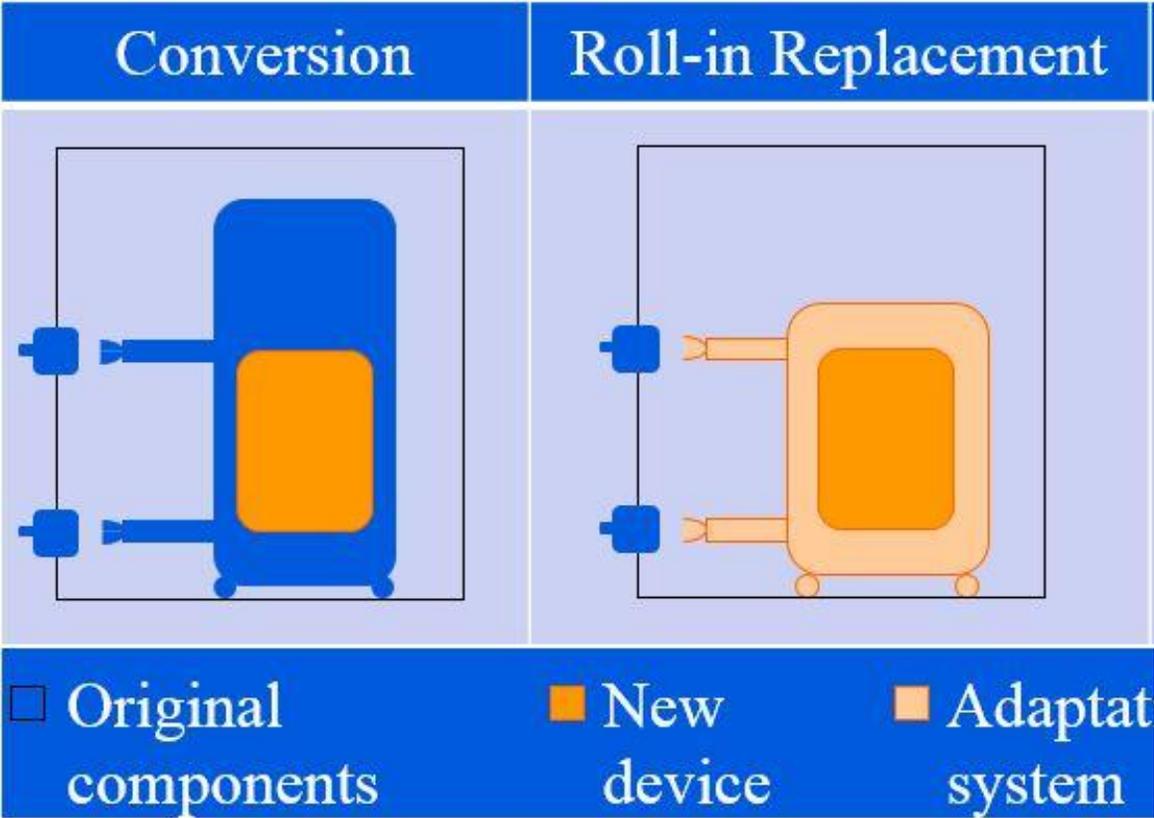
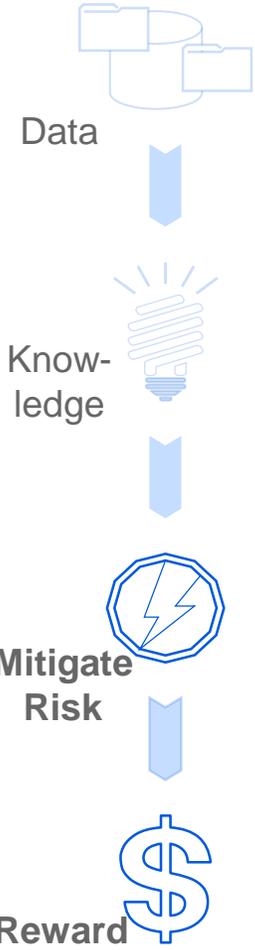


Obsolete products			Active products	Spare parts					Note	
Name	Product	Type	Retrofit solution	Poles	Mechanism	Auxiliary equipment	Tulip contacts	Complete device	Various	
DIARC	Circuit-breaker	Magnetic-air	HD4, VD4							1-6
RG	Circuit-breaker	Minimum oil	HD4, VD4							3-6
RGE	Circuit-breaker	Minimum oil	OHB (4)				n.a.			4
RM	Circuit-breaker	Minimum oil	HD4, VD4							3
HM1	Circuit-breaker	SF ₆	n.a							
HA1-2-3	Circuit-breaker	SF ₆	HD4, VD4							
HAD	Circuit-breaker	SF ₆	HD4, VD4							3

		Active products	Spare parts				
Type	Retrofit solution	Poles	Mechanism	Auxiliary equipment	Tulip contacts	Complete device	
Magnetic-air	HD4, VD4						
Minimum oil	HD4, VD4						
Minimum oil	OHB (4)				n.a.		
Minimum oil	HD4, VD4						
CSF2	Switchgear	RMU	SafeRing, SafePlus				
CSF1	Switchgear	RMU	SafeRing, SafePlus				
CSF2	Switchgear	RMU	SafeRing, SafePlus				
CSFU	Switchgear	RMU	SafeRing, SafePlus				

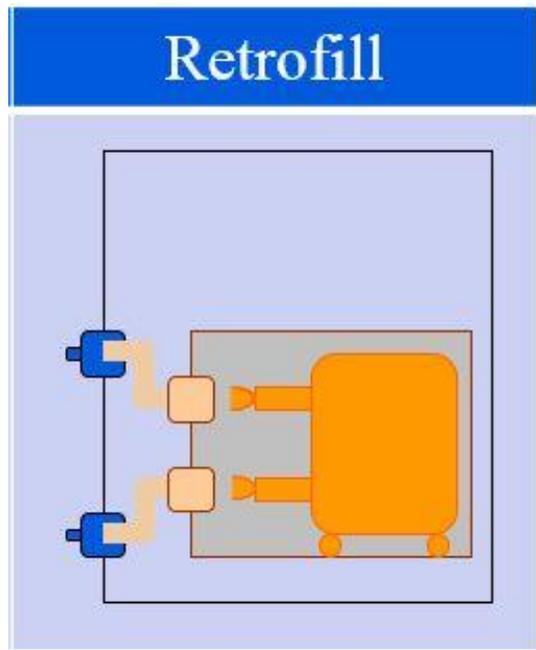
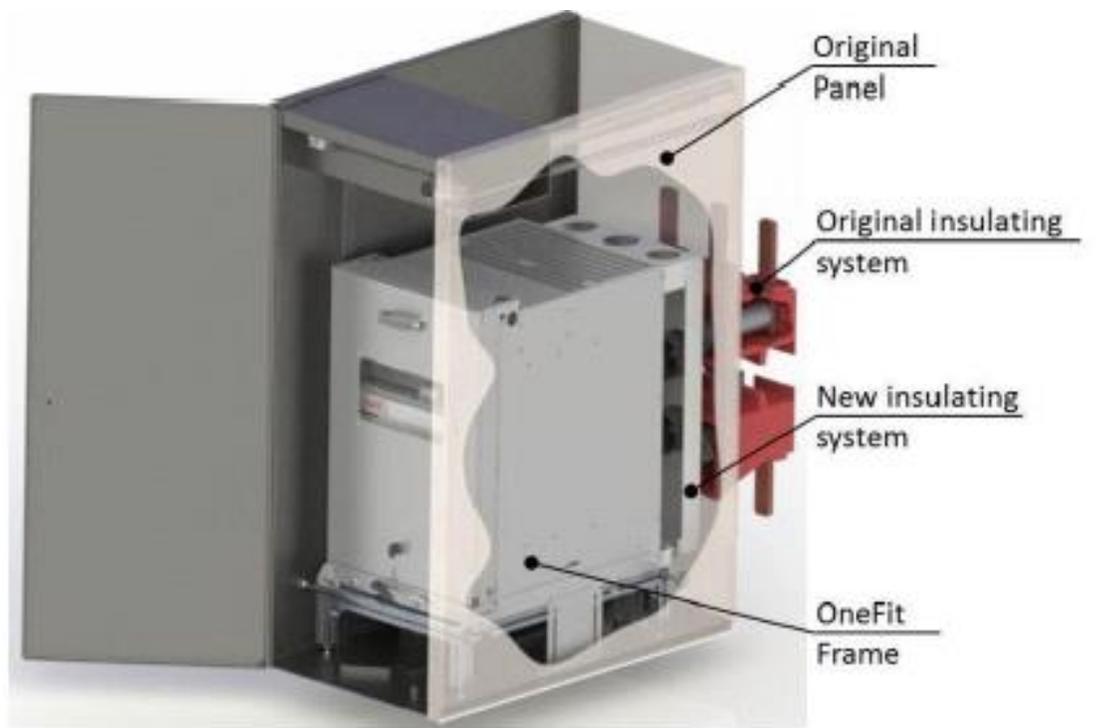
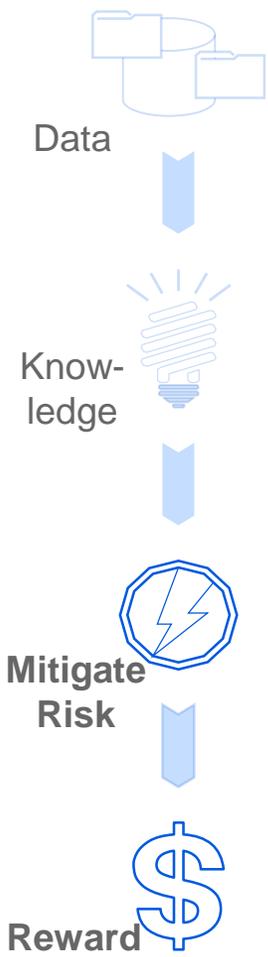
Lifecycle services

Circuit breaker retrofit – Life extension & investment protection



Lifecycle services

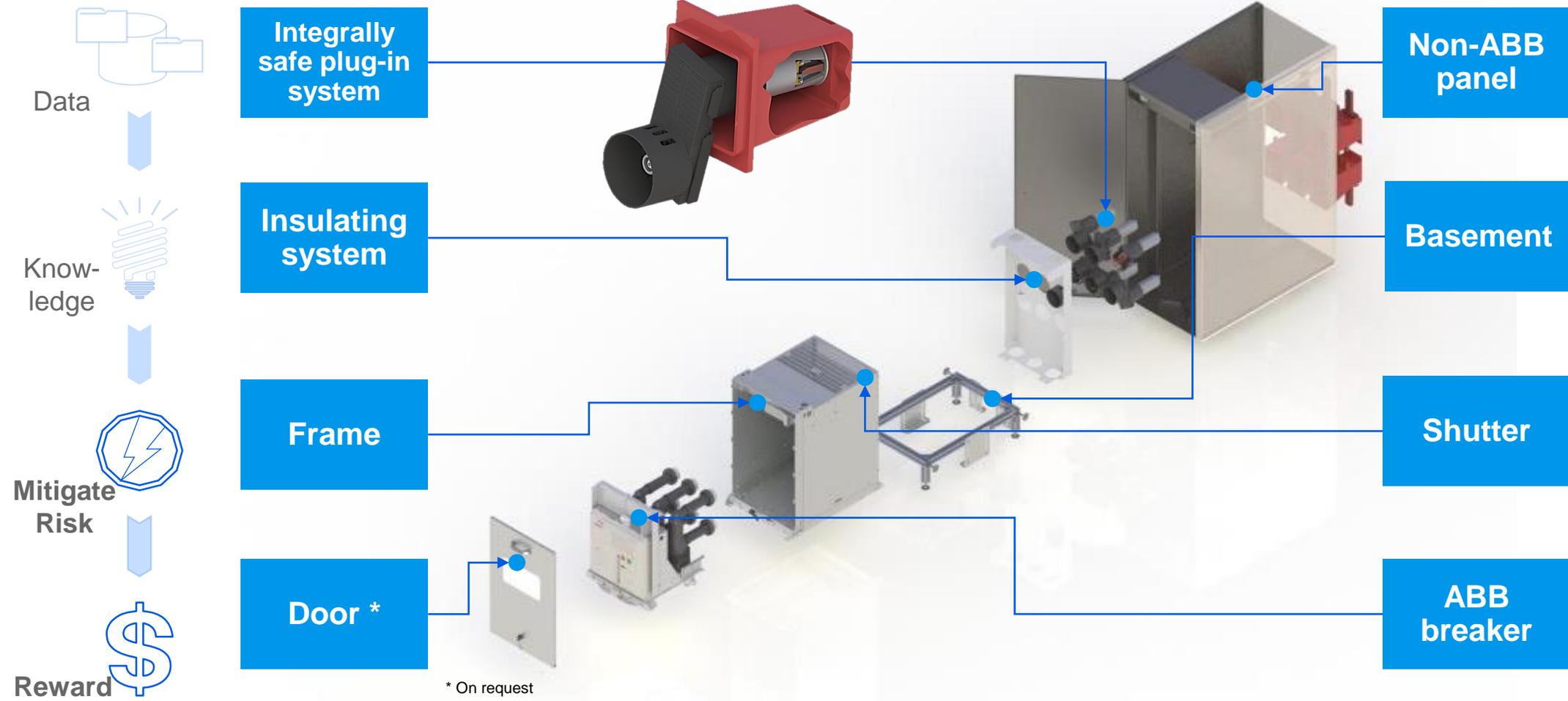
Circuit breaker retrofit - Life extension & investment protection



■ Original components
 ■ New device
 ■ Adaptation system
 ■ New frame

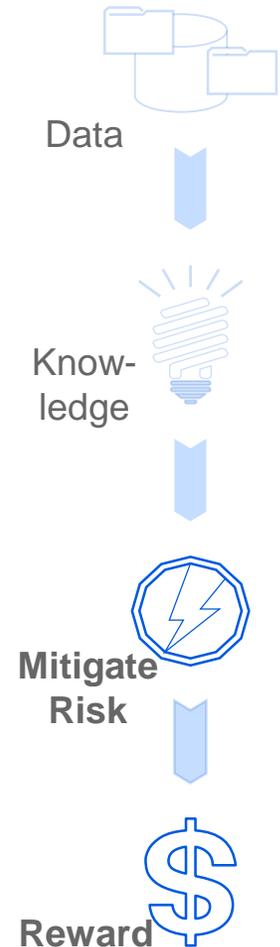
OneFit

Design concept for horizontal drawout breakers



Lifecycle service

Lifecycle services for the MV relays

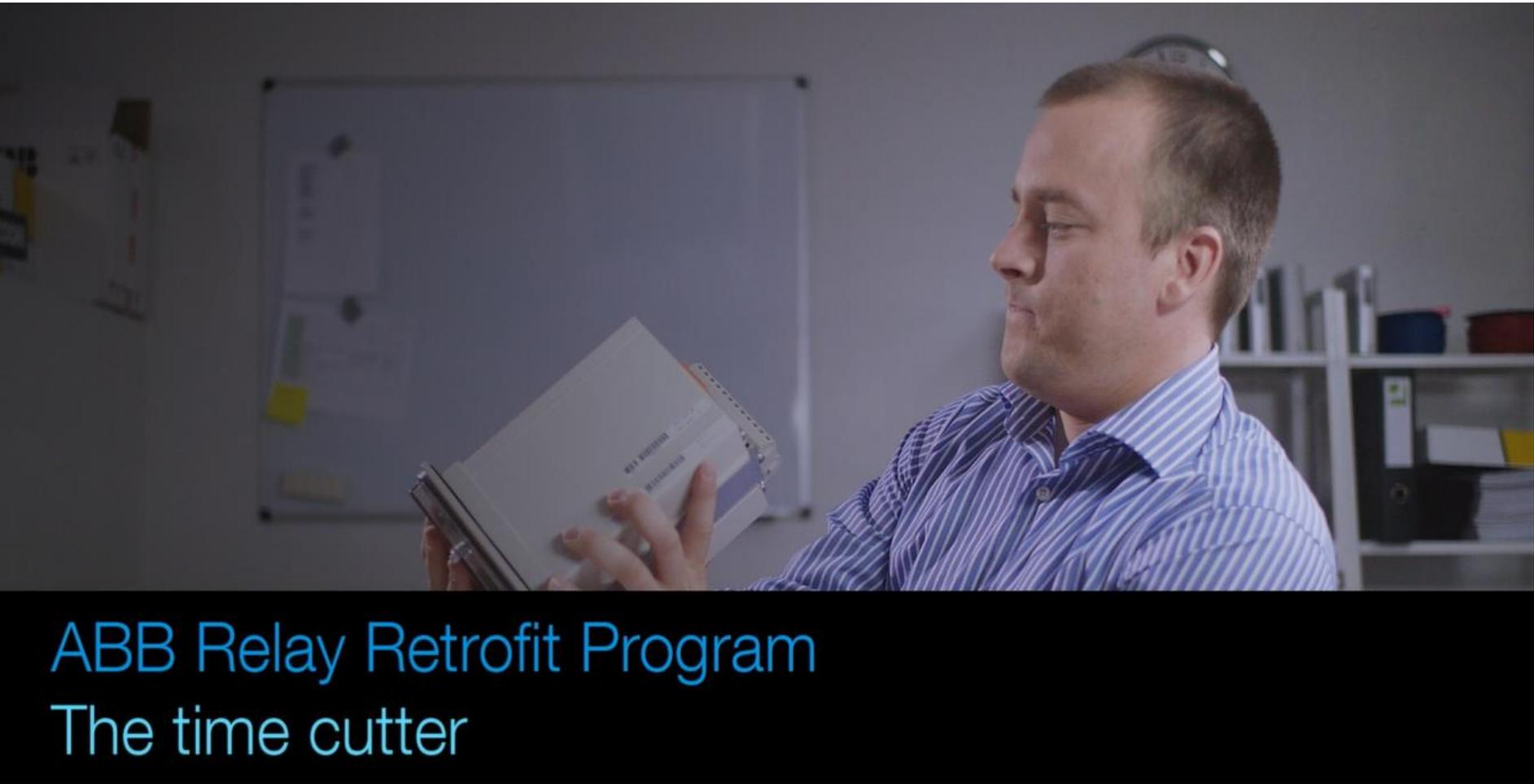
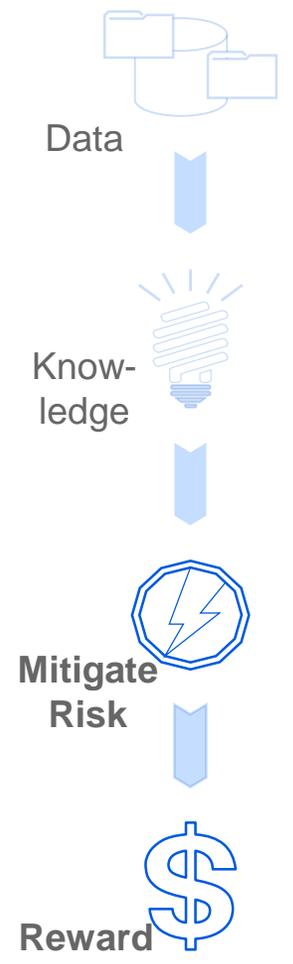


- More than 30 Years of installed SPACOM family devices in operation and supported with service products
- Lifecycle extension without changes on the switchgear
 - Maintain protection, minimized power system outage time and protection of the original investment
- Dedicated retrofit and maintenance products
 - Cost efficient and risk free upgrade and modernization of the protection to the latest standards



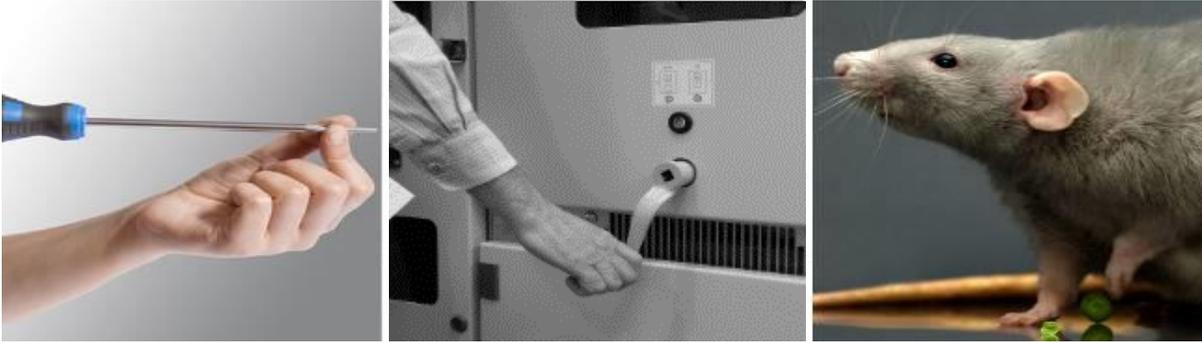
Lifecycle service

Relays Retrofit - The time cutter



Lifecycle services – Safety: Protect your personnel and assets

Arc flashes and the safety formula

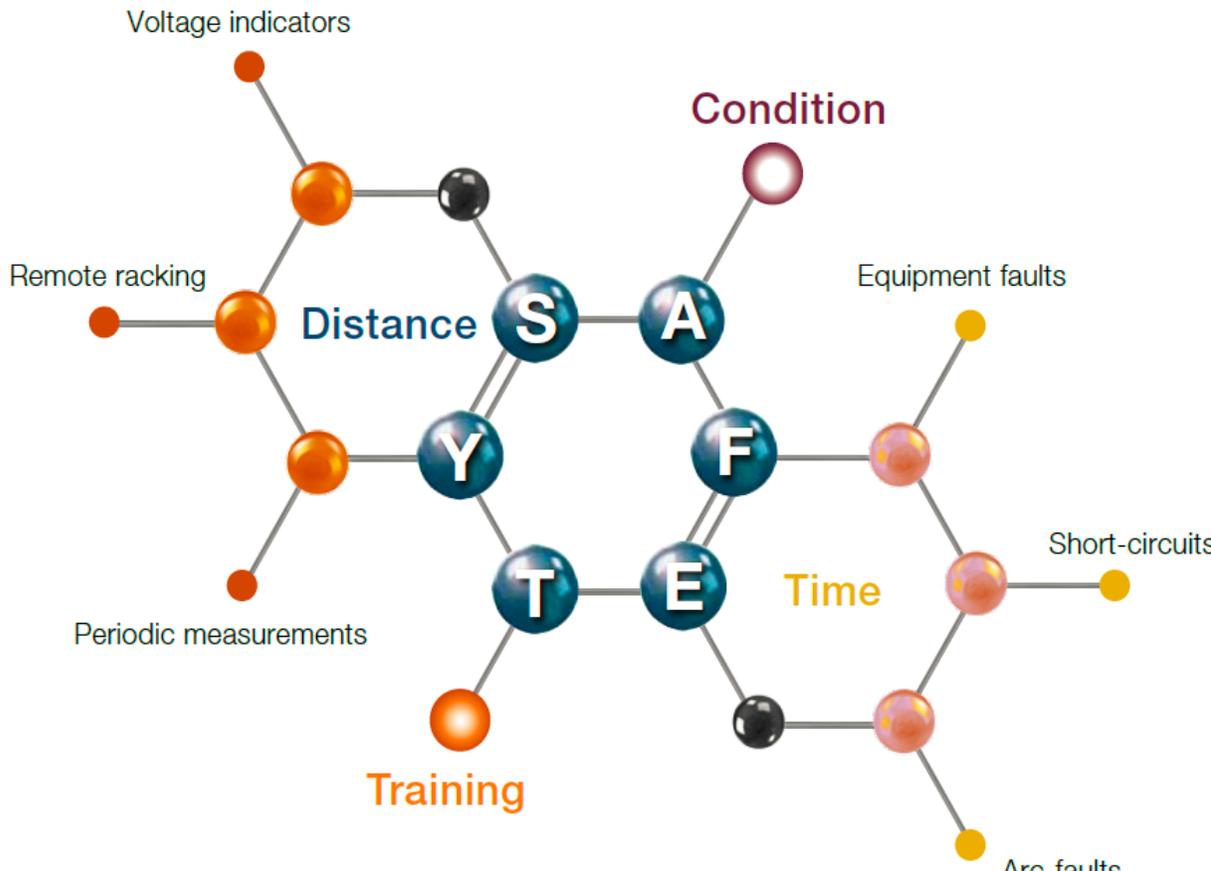


Most common reasons

1. Human errors
2. Mechanical faults
3. Bad connections
4. Pollution
5. Animals

When do they occur?

- 25 % without operator
- 10 % with operator in front of a closed door
- 65 % with operator working in the switchgear



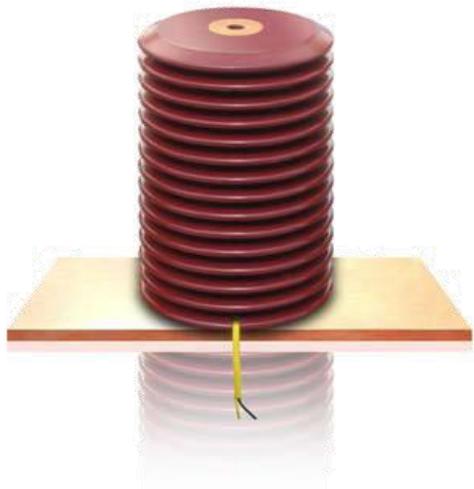
Switchgear Preliminary [Survey](#)
 PPMV Service [Safety Services Brochure](#)



Lifecycle services – Safety: Protect your personnel and assets

Time + Distance = UFES + Remote racking

Time – Ultra Fast Earthing Switch UFES



- Active protection unit
- Small as a 24kV post insulator.
- Drammatically reducing all internal arc effects.
- UFES converts an arc into a three phase fault to earth.
- 4ms after arc detection IA fault is estinguished

- Protection of site personnel in case of an arc flash
- Minimized financial and technical impact of an arc fault to MV switchgear
- Fastest recovery rate from failure
- Lowest loss of production for the powered process

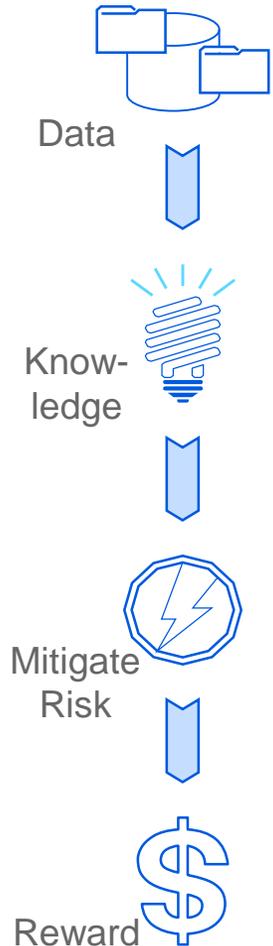
Distance – Truck Master

Type	Integrated	Portable (TruckMaster)
Design concepts		
Application	<ul style="list-style-type: none"> • OneFit 	<ul style="list-style-type: none"> • Conversion retrofit • Roll-in replacement

Available for new switchgear as well: Integrated or portable type depending on panel type.

MV Service takeaways

Safe, reliable and predictive asset operation



- Data and Knowledge for highest availability and optimized, predictable funds allocation
 - MySiteCondition and ABB asset assessment services
 - Allocation of funds to the most needed assets
- Investment protection and rewards by highest reliability of new and old MV assets
 - Relay & circuit breaker retrofit protect your switchgear investments and extend the lifecycle
 - Apply ABB OneFit technologies to all brand circuit breakers
- Safety for your personnel and assets
 - Apply time and distance of the safety formula with UFES and Truck Master solutions

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