TERASAKI
Innovators in Protection Technology

RETROFIT

RE-USE

RECYCLE RETROFIT

FASTER SWITCHGEAR UPGRADES

Our Retrofit ACB replaces:

- Merlin Gerin
- Ellison
- GEC
- ABB
- Hager
- AEG
- UNELEC
- MEM
- Schneider
- Mitsubishi
- Sace
- and many more!

to IEC/BS EN 61439

RETROFIT CONCEPT

Retrofitting refers to the addition of new technology to older systems. Retrofit ACBs can replace ageing, unsafe switches and circuit breakers.

TOP FIVE REASONS TO USE RETROFIT

1. IMPROVE SAFETY AND FUNCTIONALITY

Modern circuit breakers offer safer interlocks, remote switching and circuit monitoring.

2. REDUCED RENEWAL COSTS

Static components in a switchboard (the steelwork and busbar system) can be retained. Only the functional, moving parts (the circuit breakers) are replaced. Retrofitting is typically 80% cheaper than switchboard replacement with minimum downtime.

3. GUARANTEED SPARES AVAILABILITY

Terasaki guarantee spare parts availability for at least 10 years after the withdrawal from sale of a circuit breaker.

4. MODERNISE THE PROTECTION SYSTEM

Old protection relays can be removed and replaced with modern microprocessor protection which is integral to the ACB. It is then easier to interface the ACB with automatic plc controls.

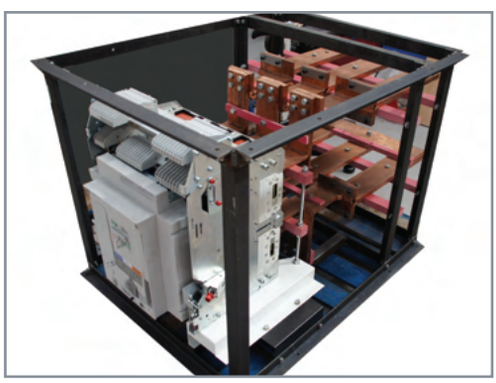
5. REDUCE ARC FLASH HAZARD

Modern ACBs clear short-circuits much faster than older types. This means that the incident arc energy is correspondingly lower.

THE PERFECT FIT

Mounting brackets are designed and manufactured from site measurements to ensure a perfect mechanical interface. Where possible our designs pick up original switchboard fitting locations, thereby avoiding cutting and drilling on site.

RELIABLE CONNECTION



Copperwork interfaces are designed using short-circuit evaluation software. Electrical connection busbars and supports can be tested to IEC 61439 (busbar withstand test).

FULL FUNCTIONALITY

Withdrawable functionality and safety interlocks of original devices can be retained and improved. Fixed pattern devices can even be replaced with withdrawable devices.

TERASAKI'S TEMPOWER 2 RETROFIT ACB

- Terasaki
- Ellison
- GEC
- Merlin Gerin
- Hager
- Siemens
- Unelec
- Square D
- Mitsubishi
- SACE
- ABB
- Hyundai
- AEG
- English Electric
- MEM

We design retrofit ACBs on request. If you are interested in a brand which is not shown above we would be happy to examine it. New designs are continually added to our portfolio. Check the latest list by clicking the "application notes" download at http://www.terasaki.co.uk/services/1414_retrofit.html

We also produce retrofit MCCBs and replace fuse switches with MCCBs.

TERASAKI AH6B

MERLIN GERIN SELPACT

TERASAKI TEMPOWER AT

TERASAKI'S TEMPOWER 2 RETROFIT ACB

UNELEC CN-CS2

TERASAKI TEMPOWER 2 RETROFIT ACB

SCHNEIDER MASTERPACT

ELLISON GEA

TERASAKI'S RETROFIT SERVICES

We prefer to conduct a site survey for every retrofit project - even if the breaker to be replaced is already on our design database. This ensures that the installation is as quick as possible, with minimum disruption to the client's supply.

Mechanical and electrical interfaces are modelled using state-of-the-art 3-D CAD.

We can arrange for busbar interface connections to the switchboard to be independently short-circuit tested. This provides reassurance to the client that the fault capability of the retrofitted circuit breakers and connections will equal or exceed that of the original system.

Manufacture, assembly and routine testing is carried out at Terasaki's facility in Glasgow, Scotland. The factory and processes are certified to the ISO 9001 quality management standard.

Our engineers are renowned for fast and efficient working. Some of our retrofit designs can be installed without a shutdown. Where this is not possible, our team will ensure that disruption is minimised.

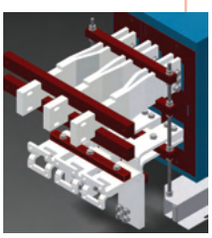
CLIENTS

INDUSTRIAL

EdF AND MAGNOX NUCLEAR POWER PLANTS
STANDARD LIFE
RIO TINTO
RBS
TELEVISION DE CATALUNIA
CONOCO PHILLIPS
BANK OF CANADA
CREDIT SUISSE
ADNOC
ETISALAT
EGA
ALBA

MARINE

BP SHIPPING
CONVERTEAM
CALMAC
WIGHTLINK
FML SHIP MANAGEMENT
ANGLO EASTERN
GC RIEBER SHIPPING
TIDEWATER MARINE
SHELL



TESTED TO CURRENT STANDARD

ASTA tested to IEC 61439 for short-circuit withstand (Icw)
Compliance with BS6423

LOW VOLTAGE ARC HAZARD REDUCTION

1. Remote switching using umbilical cord controller

2. Faster opening time reduces incident arc energy. TemPower 2 ACB can be set to open a short-circuit in less than 30 milliseconds (typically at least twice as fast as the device it will replace).

3. Remote Racking Lifter, Loader

MODERN PROTECTION

The AGR protection relay can replace the functions of several devices in an existing switchboard to provide:

- restricted earth fault protection
- overcurrent protection
- data communication to BMS or SCADA
- plc control

VERIFIED DESIGNS

Third Party Technical Report

SAFER SWITCHGEAR OPERATIONS

TemPower 2 ACB Autoracker

Insertion and withdrawal of Air Circuit Breakers are arc flash hazards in installations under certain industry regulations. The autoracker inserts and withdraws Terasaki ACBs from outside the designated arc flash boundary, this means you can:

- Comply with Health & Safety Guidance*
- Reduce PPE requirements.

Preparation of Autoracker is as safe as possible since:

1. the Autoracker can be mounted and operated without opening the compartment door;

2. it is not necessary to drill, cut or modify the ACB or switchboard;

3. the Autoracker clamps to any Terasaki TemPower 2 ACB without mounting brackets or additional fixings.

Clamp the autoracker to the ACB

Plug in the umbilical cable

Retreat to a safe distance with the pendant controller.

* "The provision of remote operating facilities should be considered in order to minimise the risks to personnel operating the equipment." - Paragraph 148, Keeping Electrical Switchgear Safe. HSG230 (2nd Edition) 2015. The Health and Safety Executive (UK). HSE Books.

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