

Air Circuit Breaker Retrofitting

Future proof your protection system with NHP retrofitting services

POWER DISTRIBUTION AND PROTECTION



Are you at risk?

Air Circuit Breakers (ACBs) are commonly used in low voltage (LV) switchboards and due to their typically passive operation, are often forgotten about until there is a power supply disruption.

This is a real issue as many ACBs that were originally installed in the 1960s, 70s and 80s are still in use today, operating well beyond their intended service life. If poorly maintained, this can result in catastrophic failure placing personnel and assets at severe risk.



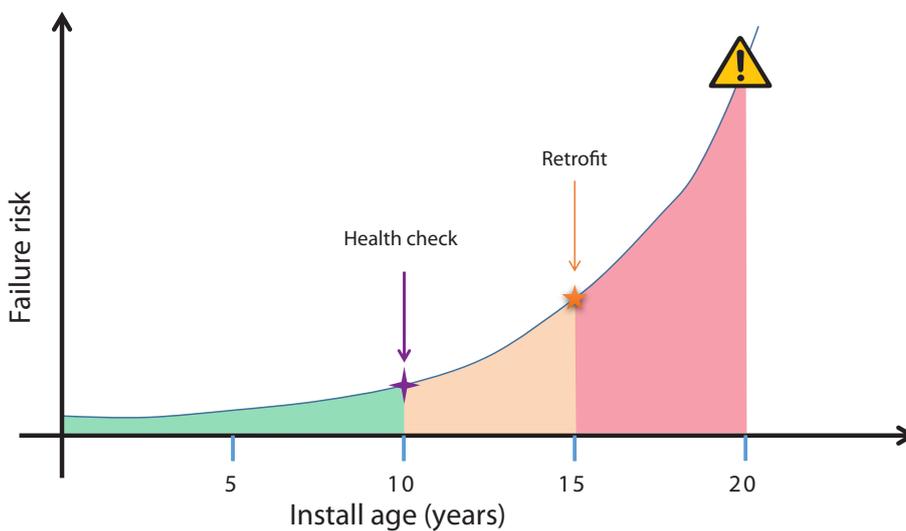
What are the risks?

ACBs are highly engineered, complex devices that require careful handling by users and regular maintenance to ensure longevity and reliability. Robustness and mechanical strength are key attributes of a high performing ACB as they are designed to withstand the extreme thermal stress and mechanical forces generated under a short circuit condition.

While they are not often called upon throughout their life-span, during an electrical fault they play a critical role, clearing the fault quickly and safely to minimise damage to the power reticulation system. If ACBs are not performing at their highest level, loss of production, significant down time, costly repairs and potential injury to maintenance workers are likely.

It is common to find legacy LV switchboards containing ACBs that have reached the end of their service life and are in many cases working far beyond it.

The graph below indicates how reliability of an ACB decreases with time and operation.



The Benefits of Retrofitting

As previously described, the consequence of ACB failure can be financially costly and potentially dangerous to personnel. To help address this issue, NHP provide cost effective 'retro-fit' solutions which allow end users to modernise their ACBs with minimal downtime and reduced investment requirements. Retrofitting of ACBs offers increased cost savings compared with the replacement of an entire switchboard as the key components of the system can be quickly replaced, leaving the existing copperwork and steelwork intact. Retrofitting is typically 80% cheaper than switchboard replacement with minimum downtime.

As well as improved safety and functionality, modern ACBs also clear short-circuits much faster than older models. This means that during a short circuit the incident arc energy is correspondingly lower, which results in improved safety of the switch room environment for electrical workers.

Advantages of using NHP retrofit kit solutions:

- Proven method and cost effective way of installation
- Reduced likelihood of any un-anticipated problems occurring
- Easier to determine costs and shut-down time
- Minimal requirement of switchboard shut down during conversions



Outdated ACB

RETROFIT



State of the art ACB

Top 5 Reasons to Retrofit with NHP

1. Increased system reliability

New retrofitted Terasaki ACBs provide much higher system reliability, which minimises production downtime and therefore mean lower operational cost.

2. Modernise the protection system

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

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

3. Improve safety and functionality

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

4. Significant cost savings

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.

5. Serviceability

Terasaki guarantee spare parts availability for at least 10 years after the withdrawal from sale of a circuit breaker, which make a new retrofitted ACB future proof.



Increased
reliab



Modernise
protection system



Improved safety
and functionality





Terasaki Air Circuit Breakers

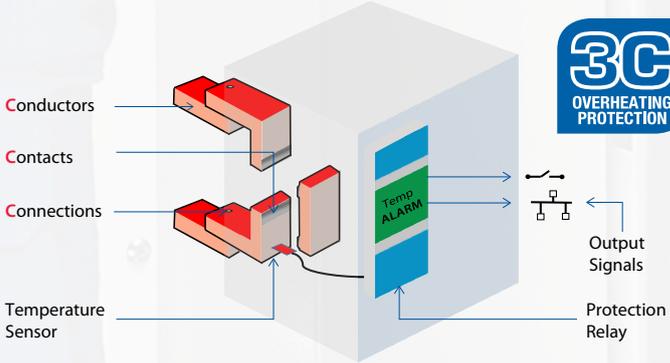
The highest levels of safety, performance, protection and reliability are achieved when retrofitting with the Terasaki TemPower 2 ACBs.

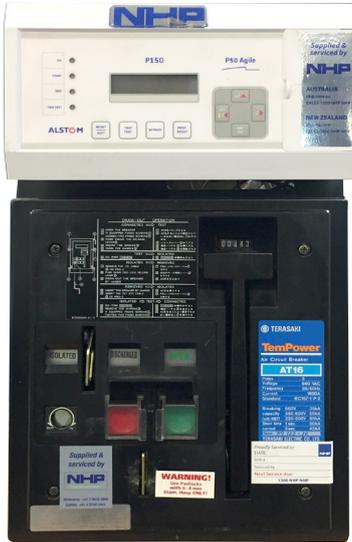
There is no other ACB on the market that can out perform the TemPower 2's perfect mix of superior short circuit clearance times, outstanding mechanical strength and durability. The TemPower 2's ease of maintenance and level of integrated SMART intelligence are all combined within a small compact design.

The design of the Terasaki TemPower 2 Air Circuit Breaker is based on a unique modular 'double break' contact mechanism, which provides a large range of benefits which include:

- Super fast 30ms fault clearance times reduce let through energy ($=I^2T$) and potential arc flash during a fault, improving the safety of the switchroom environment for electrical workers.
- Increased service life. Electrical and mechanical endurance ratings are the best available and exceed the requirements of AS/NZS 60 947-2.
- Easy on-site maintenance with built in trip unit tester and modular 'body mount' contact and cluster design, minimising power disruption and production stoppages
- Fully Integrated protection (i.e. reverse power, over voltage etc) and energy management functions (including harmonic analysis), resulting in a simplified, easy to use all in one system
- Wide variety of industrial communication protocols available allowing for integration into to BMS or SCADA systems facilitating energy management and general operational reporting
- Reduced risk of fire with breakthrough 3C overheat protection technology that monitors status and wear of the contacts using integrated thermistors. Insurance costs can potentially be reduced
- The '3C' integrated monitoring system continually monitors the temperature condition of the ACB's main contacts which are heavily affected by the condition of the connections and conductive paths (3C). Real time temperature data of the hottest contact is available to be viewed via the LCD and the Modbus communications. This allows end users to extract the real time contact temperature for reporting and analysis purposes.

Reduce Fire Risk for Critical Buildings with Integrated 3C Technology





ACB upgraded with new Over Current Relay (top)



Protection Trip Unit Upgrade - Exclusive to NHP

If you have a legacy Terasaki AT series ACB that is still in good mechanical condition but requires a new protection trip unit, NHP can easily retrofit your AT with a modern state of the art trip unit with minimal disruption to your facility. This is a fast and economical way to extend the life of mechanically sound Terasaki AT series ACB without the need to fully upgrade the switchgear, saving you cost and increase reliability.

Once upgraded, the Terasaki ACB is compatible with existing building management systems and has the capability to integrate with energy management systems or site SCADA networks.

No modification is required to the switchboard, the upgraded AT ACB is installed within the existing cubical footprint. Enhanced features delivered by this upgrade include:

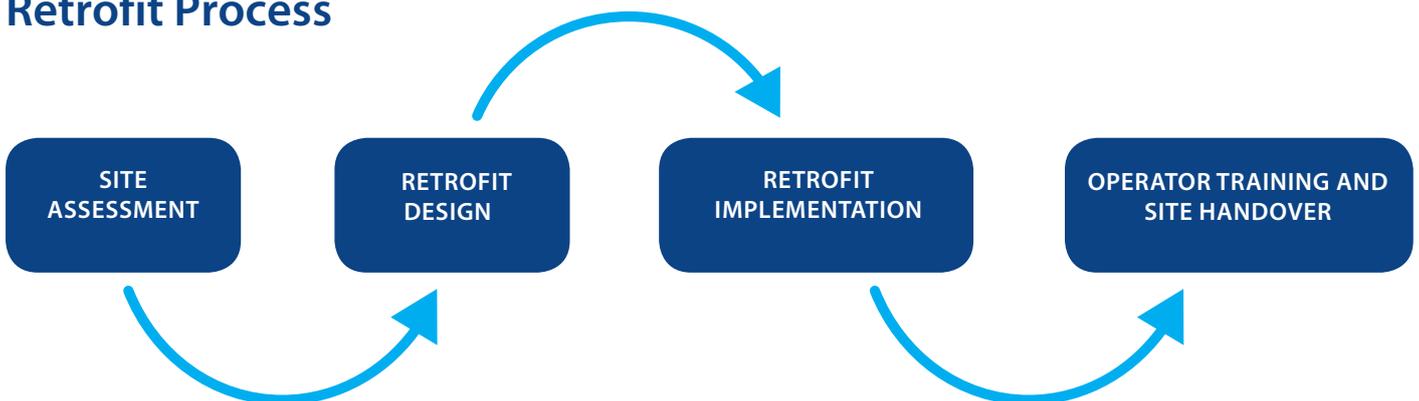
- On-board energy management
- Trip history/log
- Configurable I/O
- Optional Comms (Ethernet/RS485)
- Remote breaker isolation capability
- Easy fault finding

This solution is supported by a 12 month warranty and 10 year parts availability guarantee.

Any Brand, Any Model

With retrofit and upgrade options for nearly all brands and models of ACB, NHP can work within your existing switchboard environment to provide a cost effective solution

Retrofit Process



NHP Service is the reliable choice

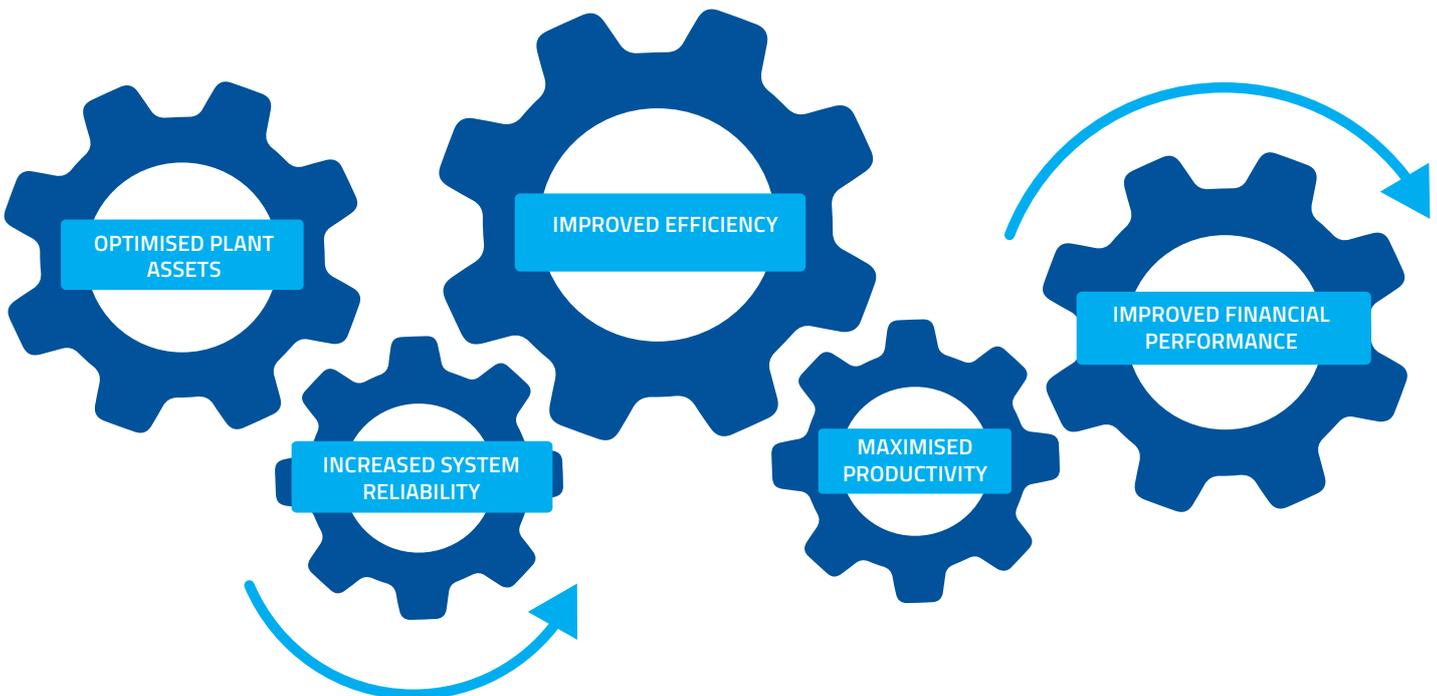
With close to 50 years of experience in the electrical and engineering industry our specialist teams work collaboratively to design and deliver solutions to maximise the success of your project.

NHP Service has an extensive infrastructure including Repair Centres, Test Rooms, Field Service Technicians, Application Engineers and a team of Project Coordinators.

Our team of service technicians hold tertiary and/or trade qualifications and regularly participate in supply line partner training programs to ensure our services are completed in line with manufacturer specifications. Equipped with comprehensive product knowledge, our technicians are committed to delivering the best practice of electrical services, whilst providing exceptional customer experience.

NHP prides itself on its customer excellence. We at NHP are committed to look after our customers for the life of their project and beyond.

NHP have created a new type of comprehensive service package for NHP's Terasaki Air Circuit Breakers (ACBs) - NHP ACB Total Care Package (TCP). NHP's ACB Total Care Package is more than just a service; it is a peace of mind warranty. For more information please contact NHP.



Achieve significant cost savings and higher performance while increasing safety of personnel and assets!

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