

Medium Voltage Products Customer Service Plan

Globally committed to our customers improving a complete range of lifetime support services for all our products

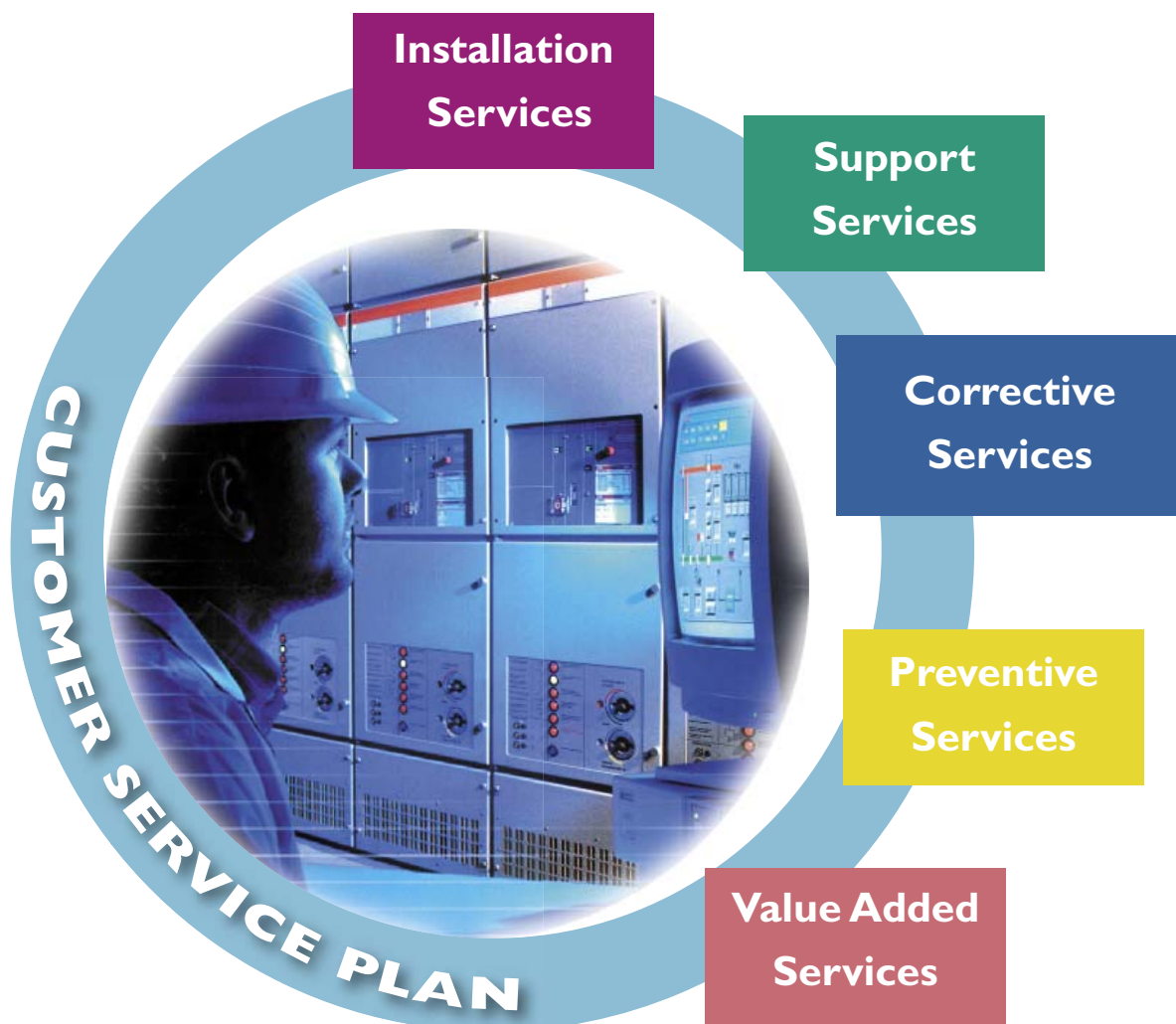


ABB Power Technologies

Unità Operativa SACE Medium Voltage Service



History

ABB Power Technologies S.P.A – Unità Operativa SACE ensue from SACE S.p.A. and joint the ABB group in 1988. The activities - also the experience - in the field of medium voltage starts in 1934. In Italy has two production facilities: Dalmine and Loreto Aprutino.

General Description

It's a Global Feeder Focused Factory and a centre of excellence for design and construction of medium voltage vacuum and gas-insulated circuit-breaker and medium voltage air-insulated switchgears. It's a leader on the global market and exports more than 75% of its production all over the world, which includes: circuit breaker, contactors, switching and isolation apparatus, distribution switchgears and services.

Together are in both locations 640 employees located.

The yearly volume of > 200 MEUR results of the production and sales of more than:

- 5.000 Primary panels
- 13.000 Secondary panels
- 30.000 Medium voltage circuit breaker
- 4.500 Medium voltage contactors
- Service & RETROFIT



Certifications and Standards

To guarantee the reliability of its production and services, the company bases itself on continual technological updating, constant research and application of a quality system which conforms with the serve international standards, certified by an independent organisation and complying with the ISO 9001 standard. As confirmation of its commitment to protection of the environment, the environmental management system of the facilities in Dalmine and Loreto Aprutino is certified by an independent organisation as complying with the ISO 14001 standards.

The health and safety management system is certified by an independent organisation as complying with the OHSAS 18001 standards.

Test Laboratories

The factory has advanced laboratories for carrying out tests and constantly ensuring the reliability of the products. The test laboratory is accredited by an independent organisation and complies with the UNI CEI EN ISO/IEC 17025 standards.



Service & RETROFIT

The service and RETROFIT centre of ABB in Dalmine, Italy offers around the world performances in the field maintain, RETROFIT, supply of spares, training, erection and commission of medium voltage switchgears.

The service team of the ABB Feeder Focused Factory in Dalmine is offering the performances in close cooperation with the world wide ABB service network.

In the follow we present the core activities, please contact your local ABB service centre for further information in accordance of your installed equipment.

Medium Voltage Products

Customer Service Plan

The “Customer Service Plan” is a package of services for after sales product support tailored to suit individual needs. These services range from basic product support to the full life cycle management of an installation, whereby customers may select a mix of services appropriate to their specific needs. All the support services offered are applicable to both ABB and SACE switchgear products, which are grouped into five main categories as follows:

Installation Services

Installation

Full installation services for our range of MV switchgear products include:

- Decommissioning and removal of old switchgear.
- Site supervision.
- Installation and erection of new equipment.



Commissioning

Certified technicians perform commissioning of switchgear, protection and control systems as part of our equipment supply, which includes:

- Cold commissioning to verify protection and control operation.
- Hot commissioning and energisation of the equipment.
- Supervision during plant start up.

Support Services

Training

In the location Dalmine is a training centre integrated. Here the local service units and also the end-user can be trained in the correct handling and maintain the products.

- Safety procedures and correct product operation.
- Routine product maintenance.
- Basic fault finding.

Training courses are for apparatus, relays and switch-boards from the actual product portfolio and also on phased out products

Service Exchange Units

In certain situations, following the failure of electrical distribution equipment, it is necessary to restore the power as soon as possible. Service exchange units can be provided to enable the quick restoration of power, while allowing the failed equipment to be repaired or replaced within an acceptable time frame.

Telephone and Website Support

For technical support or assistance, please contact our **24hr Technical Support Line (+39 335 750 5383)**, or log onto our website (www.abb.com/it).



Corrective Services

Spare Parts

ABB maintains a comprehensive stock of spare parts for current and phased out products. Spares are stocked throughout our global network of service units, which includes individual spares to complete assemblies. Spares may be purchased in the following ways:

- From our spares stocks, as and when required.
- ABB keeps a range of spare breakers for purchase, rental or inclusion in a service contract.
- Spare parts included in a service contract are provided on the following basis:
 - Stocking of selected spares at either our local service workshop or customer's site.
 - Payment for spares only when used.
 - Spare part warranty from date of use.
 - Monthly storage fee for the stocking of spares.

Emergency Site Call Out

Certified service technicians are available to repair equipment on site to reinstate the power supply with a minimum of downtime. Our **emergency call** centre service number (+39 335 750 5383) is available for site call outs and assistance on a **24hr, 7 days a week** basis.

This service may also be included in a service contract specifically structured to meet individual customer needs.

For emergency repairs outside Italy, please keep in touch with the local ABB service.



Workshop and Site Repairs

Our service have fully equipped workshop to repair or refurbish current or phased out ABB and SACE MV switchgear products. The Service workshop will provide a detailed report on the condition of equipment needing repair, and make recommendations on parts replacement and restoration to the original specifications. Site repairs may be performed on a call out basis.



Preventive Services

Preventive Maintenance

Preventive maintenance is the key to ensuring the reliability of installed switchgear. Accordingly, ABB offers a range of preventive maintenance services for our MV products.

Planned maintenance services are offered on either a call out basis, or as part of a maintenance contract.

Condition Monitoring

ABB has a number of condition monitoring solutions to measure key parameters of installed equipment.

Monitoring systems can be retrofitted into existing equipment to provide information on the condition of a system for increased flexibility in the planning of maintenance shut downs.

Value Added Services

Site Audits

As a world leader in the field of MV switchgear with many years of experience in different applications, ABB is able to conduct audits on the functional performance of existing equipment. A typical audit would include:

- Documenting substation equipment.
- Assessment on the condition of the equipment.
- Recommendations on maintenance, replacement or refurbishment.



Consulting

ABB provides a range of consulting services on MV Switchgear, which include:

- Recommendations on product application, upgrades or replacement.
- Fault finding and diagnostics.
- Switchgear decommissioning and disposal.
- Training.
- Safety.

Extended Warranty

Customers may require an extended warranty for their MV switchgear. This option may be purchased with new equipment, or taken up at any point during the original product warranty term.

Service contract

To guarantee our clients the availability of the installed ABB equipment, we can also offering our services on a contract base. This contract will be worked out individually for the requirements of the clients. Please contact here for the local ABB.

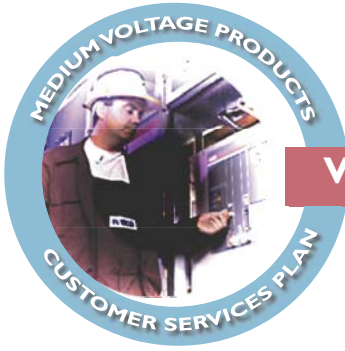
Services Offered	Contractual Service Options	X
Installation Services	•Installation	
	•Commissioning	
Support Services	•Training	X
	•Service Exchange Units	X
Corrective Services	•Spare Parts	X
	•Emergency Call Out	X
	•Workshop and Site Repairs	X
Preventive Services	•Preventive Maintenance	X
	•Condition Monitoring	X
Value Added Services	•Site Audits	
	•Consulting	
	•Life Extension & Upgrades	
	•Extended warranty	

Life Extension and Upgrades

Due to the demand for continuous improvements in the assets management of plants, ABB provides life extension solutions for MV switchgear. Options available include:

- Complete overhaul and refurbishment of switchgear to original specification with warranty.
- Equipment upgrades through the retrofitting of switching devices, protection and control.
- Protection and control upgrades for higher levels in the protection and control systems.
- Product upgrades to improve safety, such as the installation of arcdetection devices and systems.

In addition, an overview of some RETROFITS done by ABB SACE, Italy



RETROFIT General Information

Value Added Services

RETROFIT means the implementation of ultra modern components (primary switching devices and digital protection/control technology) in the existing MV installation with following benefits:

- Short implementation times for replacement
- Minimum interruptors to service
- Prolongation of remaining service life
- Increased system availability
- Improved operator protection
- Enhanced operator convenience
- Minimisation of maintenance costs
- Warranty on the conversion work
- Ensurance of spare parts supplies

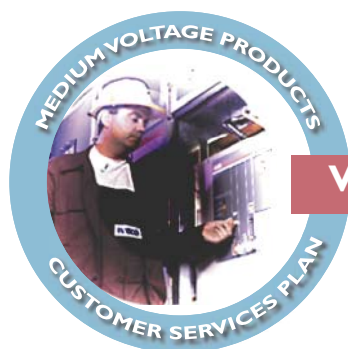


Our main customers are:

- Power Industry, City Substations
- Chemical, Petrochemical Industries
- Cement Works
- Steel Mills, Iron Works
- Aluminium Smelters
- Mining
- Harbors, Ports, Offshore and Vessels
- Transportation, Subways, Railways
- Automobile Industry

Wherever you need a continues power supply!





Value Added Services

ABB is able to offer both common arc breaking techniques SF6 and Vacuum. Herewith ABB is able to offer the best quenching technology for the customer application. For example protection of cable, inductivities like motors and transformer, generator and capacitor banks. The experts of the RETROFIT and Service centre can support in the decision – in the view of age and kind of the applications, periphery and main dimensions of the existing circuit breaker – which quenching technology should be used.

SF6 circuit breaker HD4 Series

HD4 medium voltage circuit - breakers for primary distribution use sulphur hexafluoride gas (SF6) to extinguish the electric arc and as insulating media. Breaking in SF6 gas takes places without any arc chopping and without generation overvoltages. These characteristics ensure long electrical life of the circuit - breaker and limited dynamic, dielectric and thermal stresses on the installation.



Vacuum circuit breaker VD4 Series

The new VD4 are asynthesis of the renowned technology in designing and constructing vacuum interrupters embedded in resin poles, and of excellency in design, engineering and production of circuit breakers



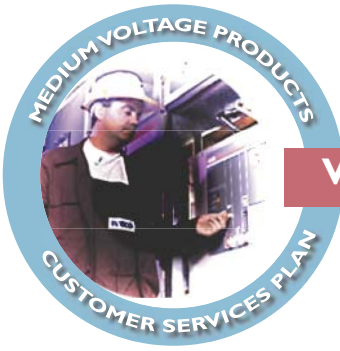
Standards and approvals of both circuit breaker technologies:

Comply with IEC 62271-100, CEI 17-1 file 1375 standards.
Sealed and maintenance free poles for life time. 10.000 mechanical operations.
Stored energy operating mechanism with anti-pumping device supplied as standard rapid re-closing cycle (O-0,3s-CO-3min-CO). Complete range of accessories which ful fill all installation requirements class M2 as refer to the mechanical endurance and class E2 as refer to the electrical life. Maintenance free during normal service. Inspection are after max. 10.000 operations / 10 years depending on the environmental conditions.

Standard ratings for RETROFIT application for both quenching technologies

kV	A	kA	kV bil	kV (60Hz x I min)
12	630+3600	16+50	75	28
17.5	630+3600	16+50	95	38
24	630+3600	16+40	125	50
36	630+2500	16+31.5	170	70
40.5	1250+2500	25+31.5	185	95

RETROFIT Plug in RETROFIT Solutions



Value Added Services

Circuit breaker

The new circuit breaker fulfills the same parameters like the existing one.

Switchtruck

The new switchtruck has the same dimensions and the same primary contact system like the existing.

Interlocking

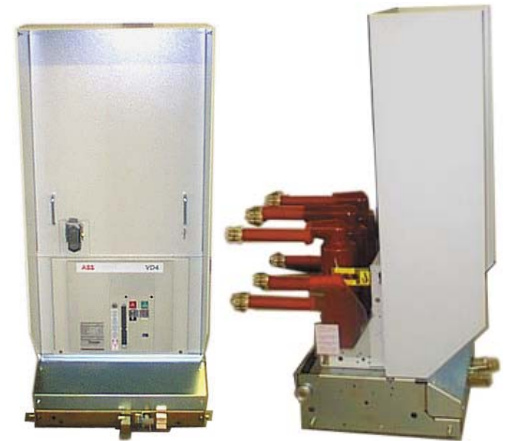
The function of the interlocking is identically to the old switchtruck. Incorrect and hazardous operations are prevented.

Secondary wiring and connection

The secondary wiring and the secondary function is analogous to the existing¹. Also the secondary plug is identically.

Summary

The RETROFIT solutions are a plug in solution for a direct replacement of the existing circuit breaker mounted on switchtruck. Modifications in the primary- and/or secondary compartment are not necessary. All certifications of the existing equipment continue to exist.



Solution based on VD4



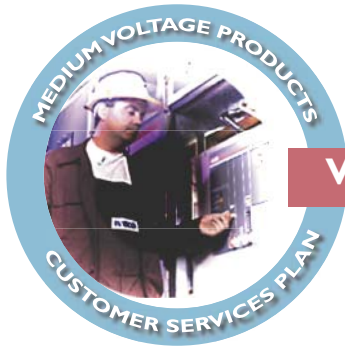
Solution based on HD4



RETROFIT solutions for a direct replacement of mag. air breaker Type DR, min. oil breaker Type RM and also SF6 breaker type SFA. For panel type Univer or enclosure MT.

Rated Voltage: 24kV
Rated current: 1250A
Short rated breaking current (3s): 25kA

¹In some limited special cases a reproduction of all auxiliary switches with the new breaking device is limited. Here for the specialist of the RETROFIT department work out a tailor-made solution.



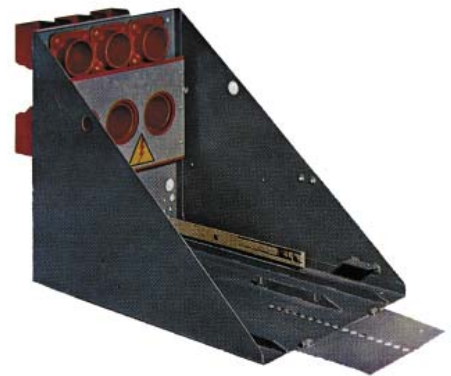
Value Added Services

RETROFIT For Panel Type Uniarc

RETROFIT for magnetic air blast breaker Type DIARC



Uniarc CR10 with circuit breaker DIARC



Fixed part for OEM panels



RETROFIT with HD4 12 25-50

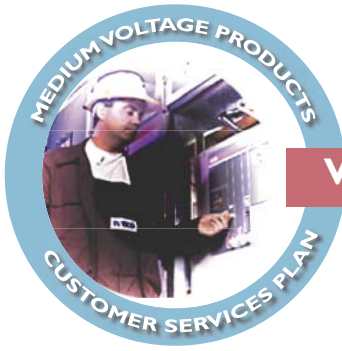


RETROFIT with HD4 12 12-31



Air breaker type DIARC

Breaker Type	Rated Voltage (kV)	Normal rating current (A)	Rated short breaking current (kA)
DR 7.2 -25...60	7,2	...4000	50
DR 12-25...75	12	...4000	40



Value Added Services

RETROFIT For Panel Type Univer

RETROFIT for magnetic air blast breaker Type DIARC, low oil breaker RM, RG and SF6 breaker type SFA



Panel Type Univer with DIARC breaker



MT enclosure for OEM panels



RETROFIT with HD4 24 12-25 RETROFIT with HD4 12 12-31



CB type RM



SFA



DR

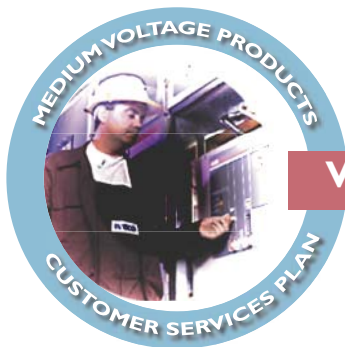


RETROFIT with HD4 17 31-40

Breaker Type	Rated Voltage (kV)	Normal rating current (A)	Rated short breaking current (kA)
DR	17,5 24	...3150	...31.5
RM	12 17,5 24	...800	...25
RG	12 17,5 24	... 2500	... 40
SFA	12 17,5	... 1600	... 25



RETROFIT with HD4 12 25-40



RETROFIT For Panel Type Univer G

Value Added Services

**RETROFIT for Vacuum circuit breaker Type VRB,
low oil breaker RM, RG and SF6 breaker type SFA**



Panel Type Univer G with SFAsG breaker



MT/G enclosure for OEM panels



RETROFIT with HD4 12 36-50



Vacuum breaker VRBsG



Low oil breaker RGsG



SF6 breaker SFAsG

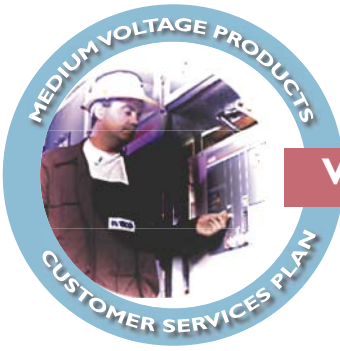


RETROFIT with HD4 12 31-40

Breaker Type	Rated Voltage (kV)	Normal rating current (A)	Rated short breaking current (kA)
SFAsG	12 17,5 24 36	...4000	...40
RMsG	12 17,5 24	...1250	...25
RGsG	12 17,5 24	... 2500	... 36
VRBsG	12 17,5	... 4000	... 50



RETROFIT with HD4 17 12-25



Value Added Services

RETROFIT For Panel Type Univer C

RETROFIT for SF6 circuit breaker Type HA



Panel Type Univer C with HA breaker



VD4/C



HD4/C



CBF enclosure for OEM panels



CBE enclosure for OEM panels



HA1/C

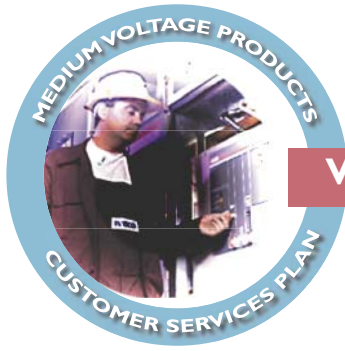


HA2/C

Breaker Type	Rated Voltage	Normal rating current (A)	Rated short breaking current (kA)
HA1/C	12	... 1250	... 25
HA2/C	12	... 1600	... 31,5
	17,5 24		
HA3/C	17,5	... 3150	... 50
	24		



HA3/C



Value Added Services

RETROFIT For Panel VHA Safesix

RETROFIT for SF6 circuit breaker Type HPA



Panel Type VHA 12 Safesix with breaker type HPA



RETROFIT with HD4 12 12-25

Breaker Type	Rated Voltage (kV)	Normal rating current (A)	Rated short breaking current (kA)
HPA	12 17,5 24	...1250	...25



Summary:

ABB Power Technologies developed over 50 different solutions for the replacement of obsolete products. Thousands of this RETROFIT solutions are in service around the world to ensure a continuous power supply. For further informations, please contact one of our specialists.



The customer service plan from **ABB**
ensure a continuous power supply

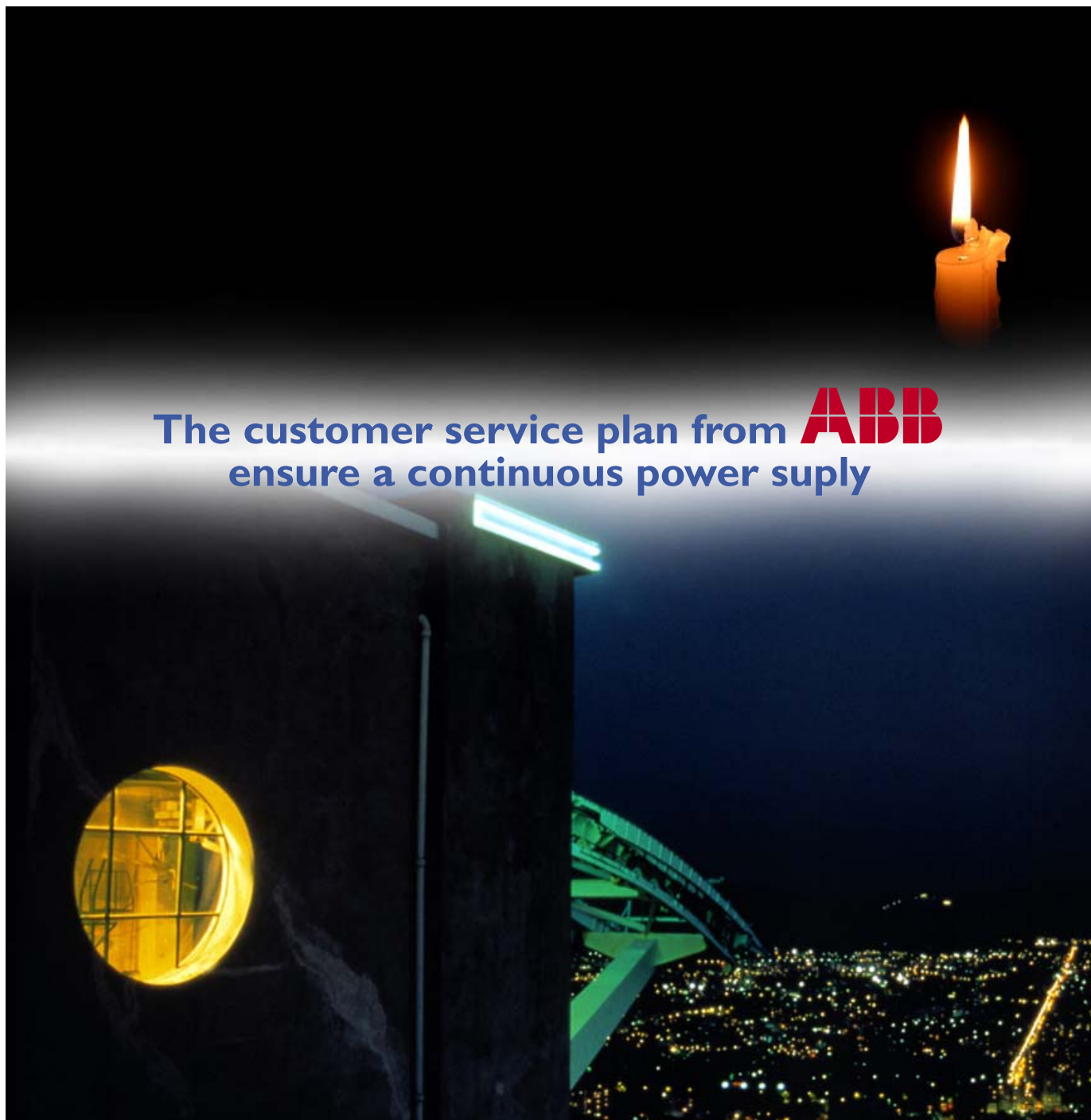


ABB Power Technologies S.p.A

Unità Operative SACE
An ABB Group company
Via Friuli 4 - I- 24044 Dalmine - Italy

Phone: +39 035 395 705 office hours
Phone: +39 335 750 5383 - after hours / emergency
Fax: +39 035395792

www.abb.com

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