

SUPPLY PROGRAM

FOR FIXED INSTALLATION



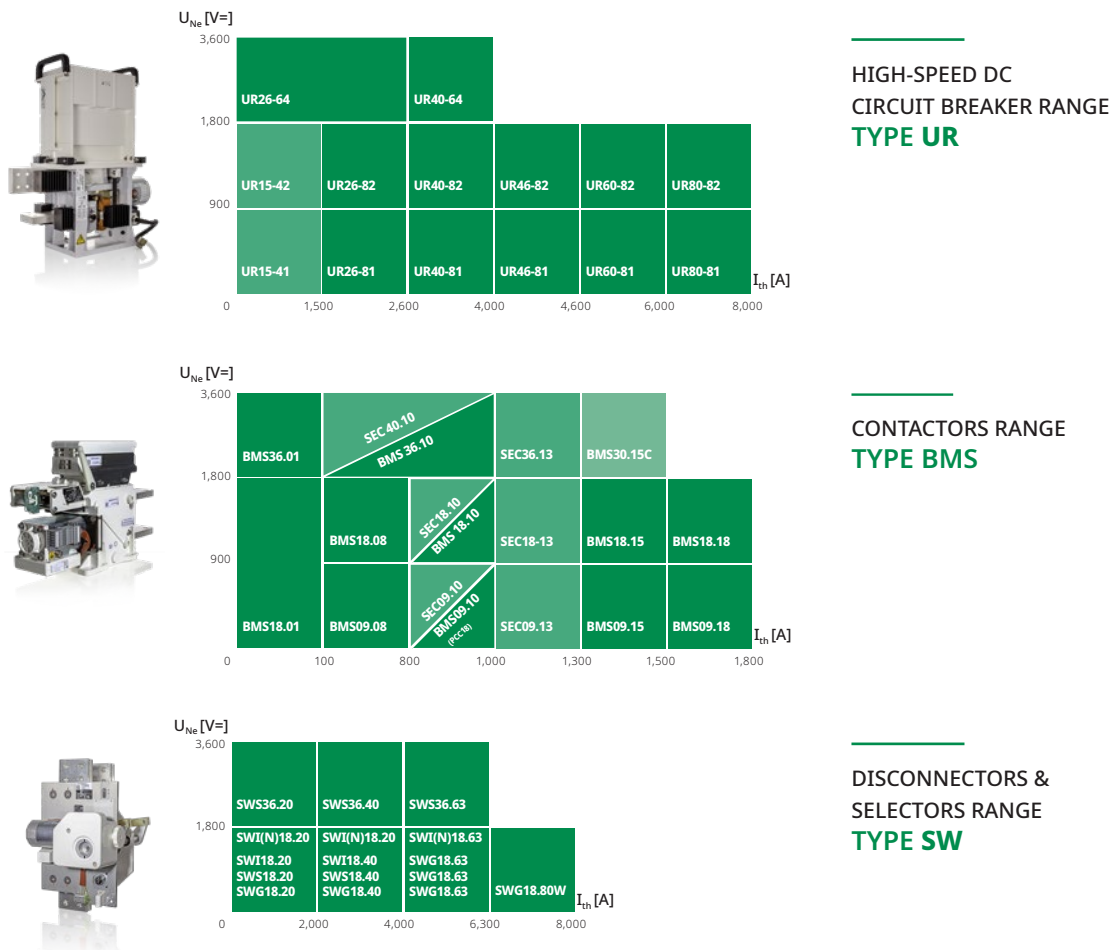
OUR VALUE PROPOSITION FOR
**FIXED INSTALLATION
 SOLUTIONS**

- Wide range of solutions for electrical switching and protection
- Standard product portfolio or customized solutions
- In-house key capabilities to address our business
- Accreditation of Sécheron's internal laboratories for railway electrotechnical components
- Decades of successful experience with our equipment around the world

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OVERVIEW OF SECHERON'S SAFETY & SWITCHING COMPONENTS FOR FIXED INSTALLATIONS

PRODUCT RANGES



MAIN BENEFITS

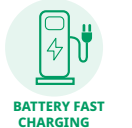
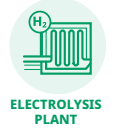
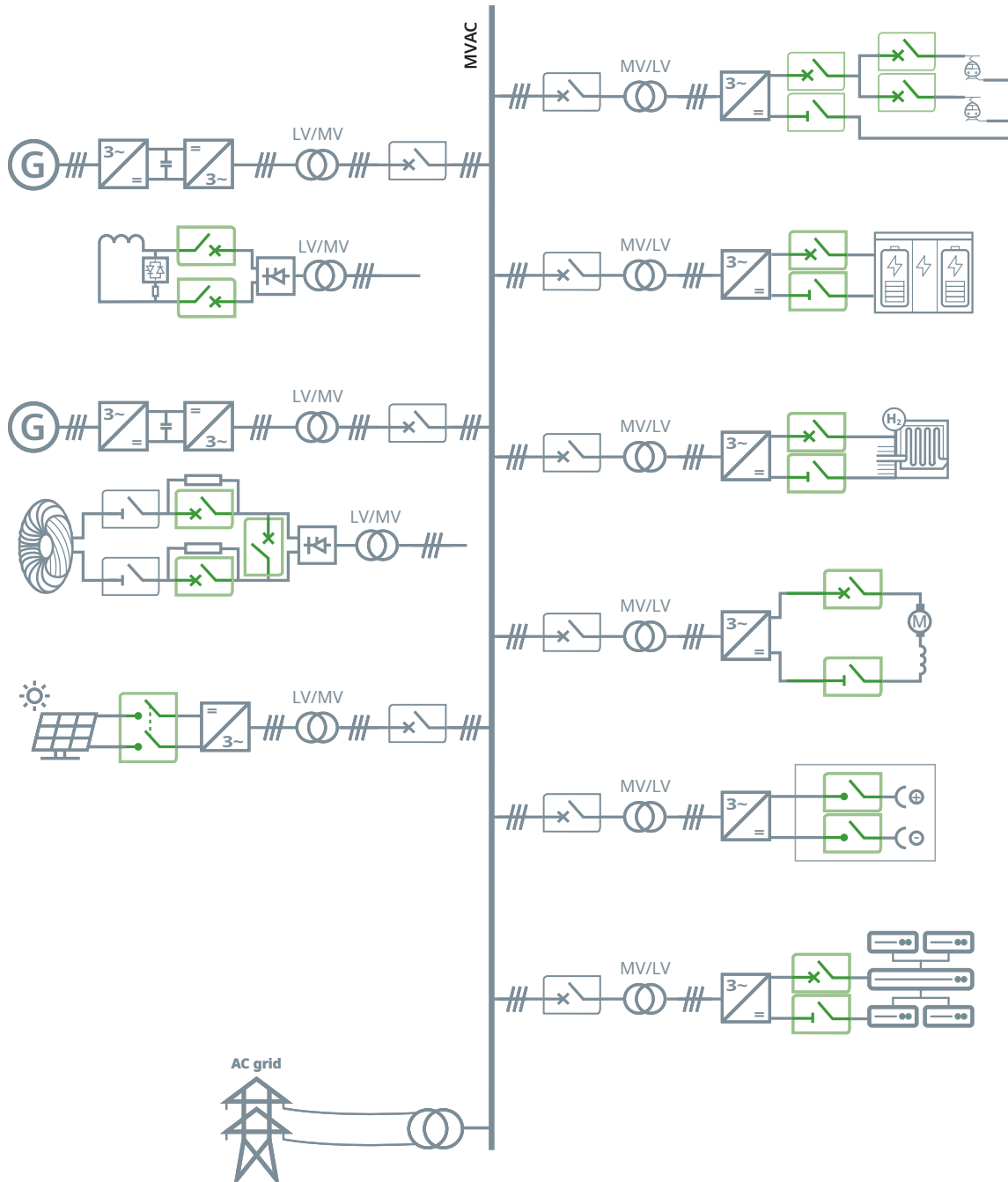
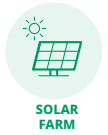
- ✓ Strong and deep expertise in DC medium voltage safety and switching components
- ✓ Strong testing culture at all levels to bring reliable and proven solutions to the market
- ✓ Continuous increase of the added value of our products & solutions through innovation
- ✓ Standard and customized products/solutions
- ✓ Strong and expert teams to support clients during all phases of their project
- ✓ Large installed base of products in operation worldwide
- ✓ Large worldwide sales & service network

APPLICATIONS

OVERVIEW OF HIGH POWER DC EQUIPMENT FOR MEDIUM VOLTAGE AC GRID

FROM CLEAN ENERGY SOURCES TO DC INDUSTRIES AND TRANSPORTATION

SÉCHERON SCOPE SUPPLY



OVERVIEW OF HIGH POWER DC EQUIPMENT FOR MEDIUM VOLTAGE DC GRID

FUTURE DEVELOPMENT OF MVDC GRIDS TO BRING MULTIPLE BENEFITS

SÉCHERON SCOPE SUPPLY



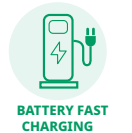
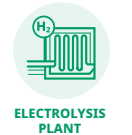
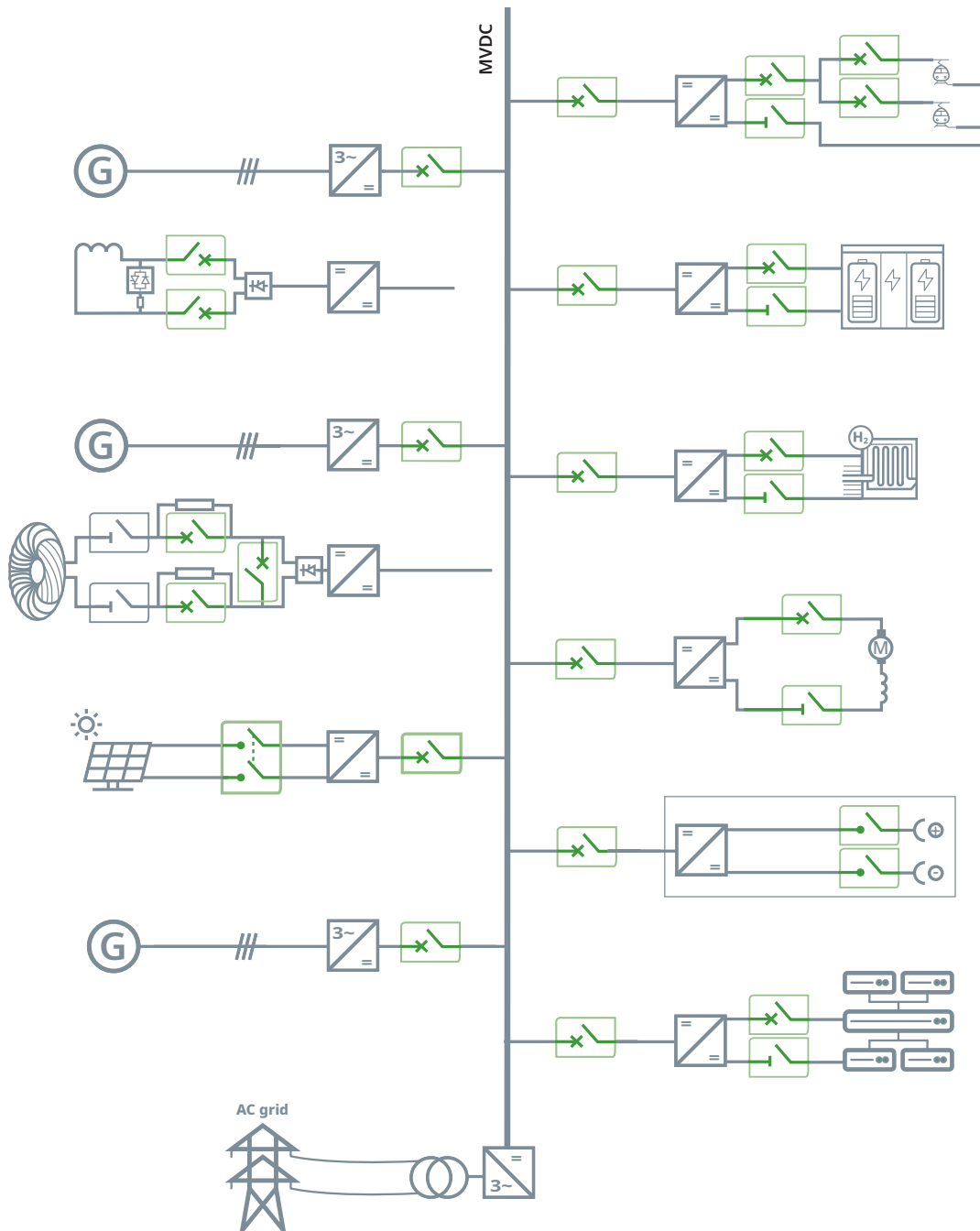
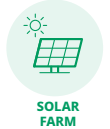
CONTACTOR



HIGH-SPEED DC CIRCUIT BREAKER



DISCONNECTER

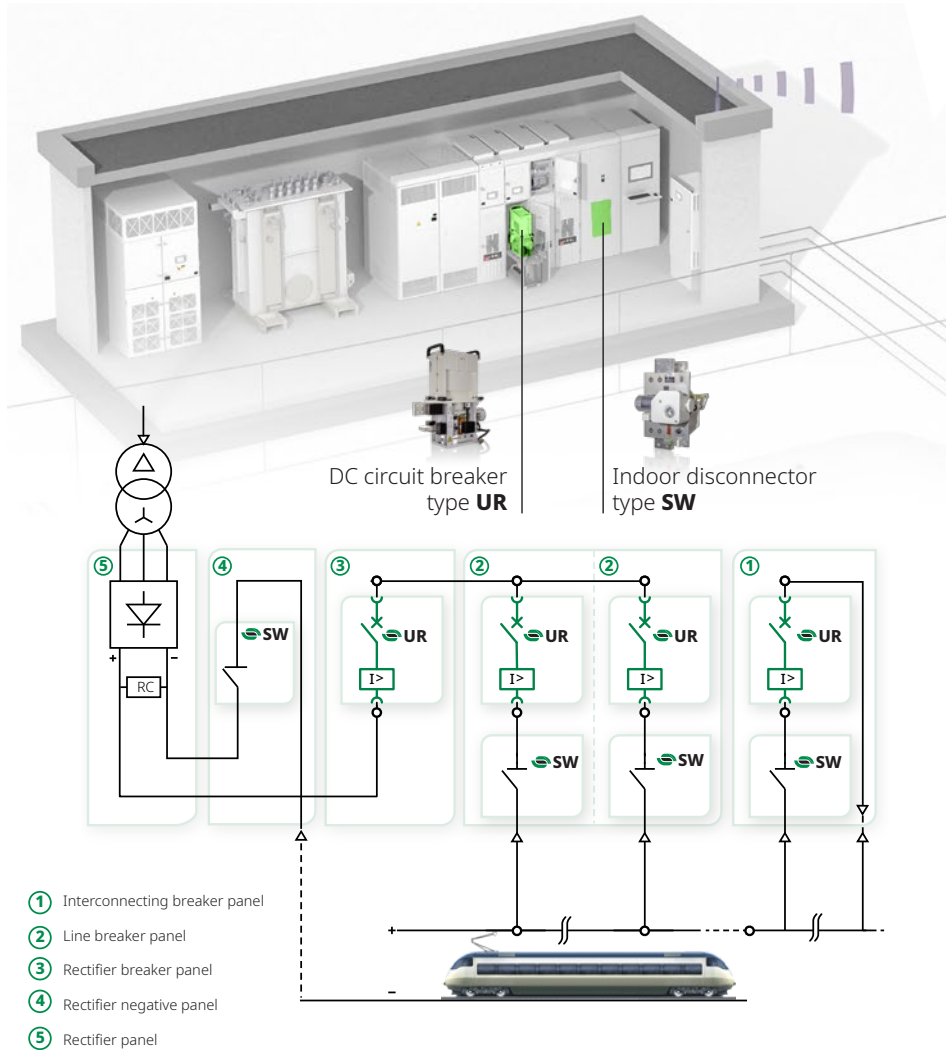




DC TRACTION POWER SUBSTATIONS FOR RAIL TRANSPORTATION

KEY POINTS OF THE APPLICATION

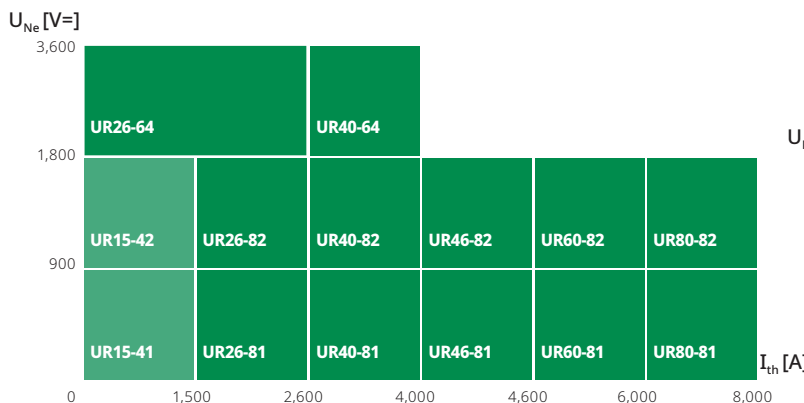
- High-speed current limiting DC circuit breaker.
- Reference standards EN 50123-2/IEC 61992 and IEEE C37.14 (USA).
- Bi-directional DC circuit breaker very efficient for both resistive and highly inductive short-circuits.
- maximum safety with opening in the event of loss of auxiliary power, and bistable version for traffic priority
- Proven design with an impressive track record around the world.



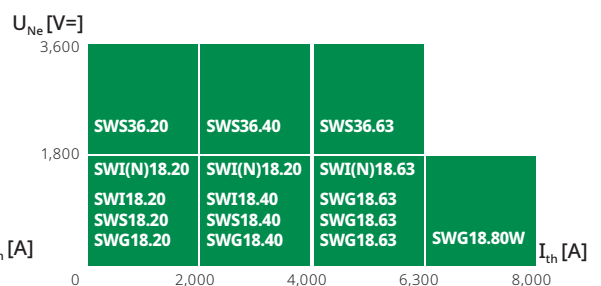
TYPICAL TRACTION SUBSTATION FOR DC RAILWAY NETWORK

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR



DISCONNECTORS & SELECTORS RANGE TYPE SW

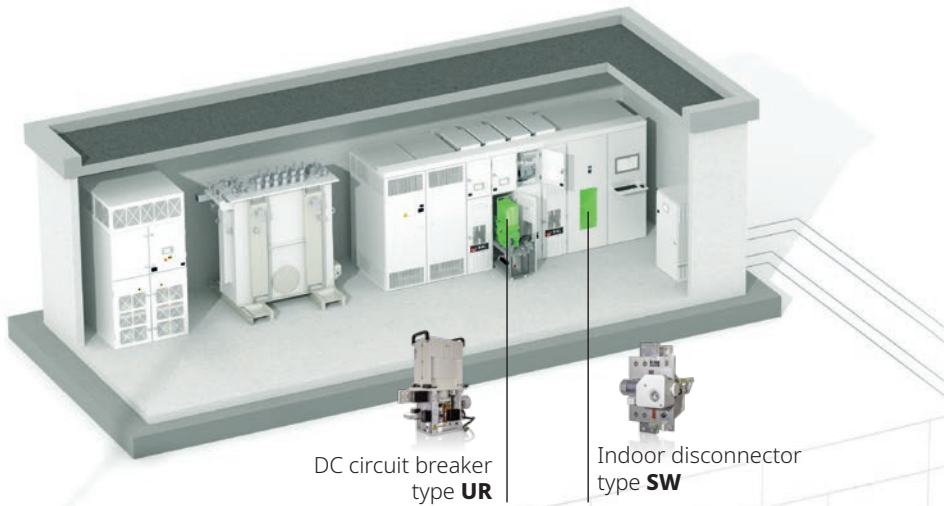




DC TRACTION POWER SUBSTATIONS FOR MINES WITH ELECTRIC TRUCKS

KEY POINTS OF THE APPLICATION

- High-speed current limiting DC circuit breaker.
- Reference standards EN 50123-2/IEC 61992 and IEEE C37.14 (USA).
- Bi-directional DC circuit breaker very efficient for both resistive and highly inductive short-circuits.
- maximum safety with opening in the event of loss of auxiliary power, and bistable version for traffic priority
- Proven design with an impressive track record around the world.



DC circuit breaker type **UR**

Indoor disconnector type **SW**

TYPICAL TRACTION SUBSTATION FOR DC NETWORK



PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR

U_{Ne} [V=]	3,600	UR26-64		UR40-64						
	1,800	UR15-42	UR26-82	UR40-82	UR46-82	UR60-82	UR80-82			
	900	UR15-41	UR26-81	UR40-81	UR46-81	UR60-81	UR80-81			
		0	1,500	2,600	4,000	4,600	6,000	8,000	I_{th} [A]	

DISCONNECTORS & SELECTORS RANGE TYPE SW

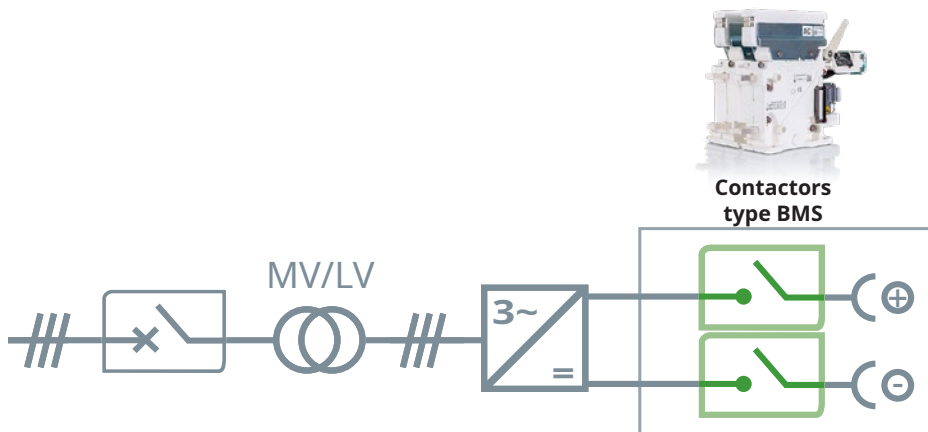
U_{Ne} [V=]	3,600	SWS36.20		SWS36.40	SWS36.63						
	1,800	SWI(N)18.20		SWI(N)18.20	SWI(N)18.63						
		SWI18.20	SWS18.20	SWG18.20	SWI18.40	SWS18.40	SWG18.40	SWI18.63	SWS18.63	SWG18.63	SWG18.80W
		0	2,000	4,000	6,300	8,000	I_{th} [A]				



FAST & ULTRA-FAST CHARGING STATIONS FOR BATTERY POWERED VEHICLES



TYPICAL SCHEME OF ULTRA-FAST CHARGING STATION

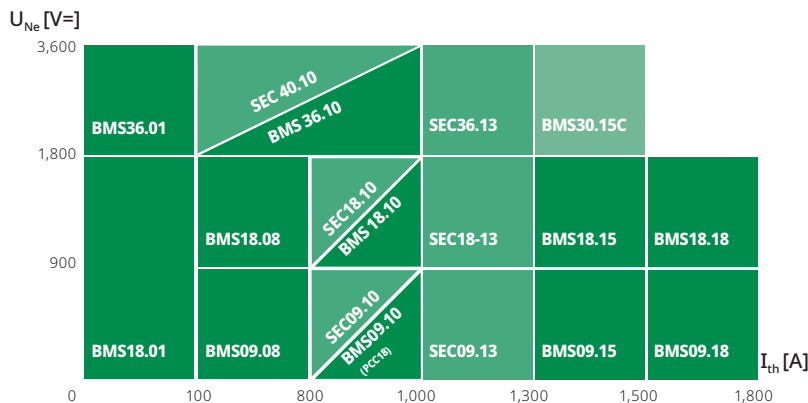


KEY POINTS OF THE APPLICATION

- Today ultra-fast charging stations are limited to 600 kW.
- With the soon coming super-fast Megawatt Charging System (MCS), the maximum charging rate is expected to grow up to 3.75 Megawatts (3,000 A at 1,250 V_{DC}).
- Double-poles, bidirectional high power contactors.
- High peak current during a very short time in case of failure.
- Technology with a large installed basis worldwide.

PRODUCT RANGES

CONTACTORS RANGE TYPE BMS

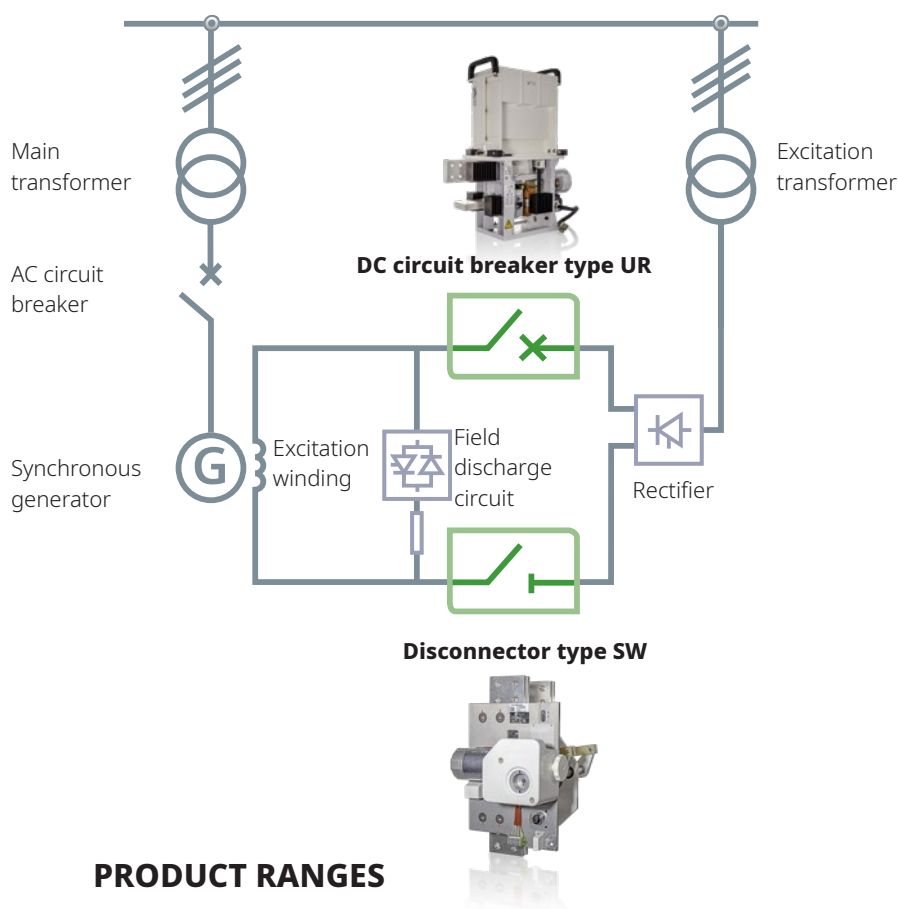




STATIC EXCITATION SYSTEMS FOR POWER PLANTS



TYPICAL EXCITATION SYSTEM FOR A POWER GENERATION TURBINE



KEY POINTS OF THE APPLICATION

- Opening of the DC breaker only in case of fault conditions on generator or excitation side.
- Generation of sufficient overvoltage by the DC breaker for a rapid switching of energy from the excitation winding to the discharge circuit.
- In case of short-circuit in the field circuit, the DC breaker limits and interrupts the fault current
- The disconnector isolates the rectifier negative pole for maintenance operations.

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR

U_{Ne} [V=]	1,500		2,600		4,000		4,600		6,000		8,000	
3,600	UR26-64		UR40-64									
1,800	UR15-42	UR26-82	UR40-82	UR46-82	UR60-82	UR80-82						
900	UR15-41	UR26-81	UR40-81	UR46-81	UR60-81	UR80-81						

DISCONNECTORS & SELECTORS RANGE TYPE SW

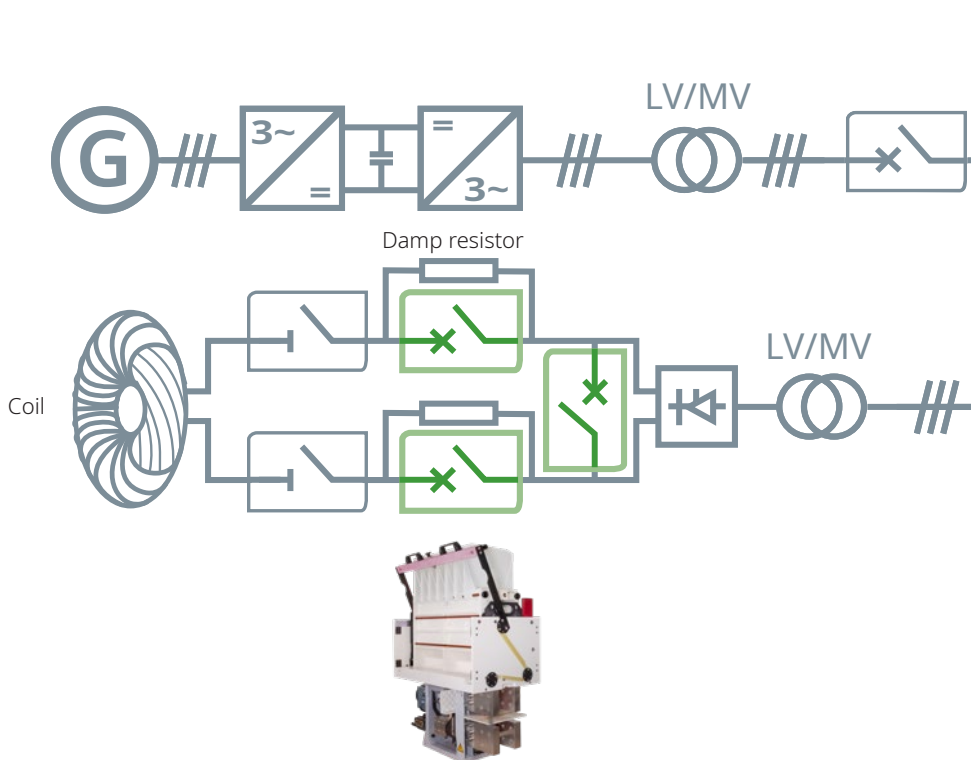
U_{Ne} [V=]	2,000		4,000		6,300		8,000	
3,600	SWS36.20		SWS36.40		SWS36.63			
1,800	SWI(N)18.20	SWI(N)18.20	SWI(N)18.63					
	SWG18.20	SWG18.40	SWG18.63	SWG18.63	SWG18.63	SWG18.80W		



FUSION POWER DEMONSTRATORS



**HIGH POWER SWITCH
FOR MAGNET POWER
SUPPLY**



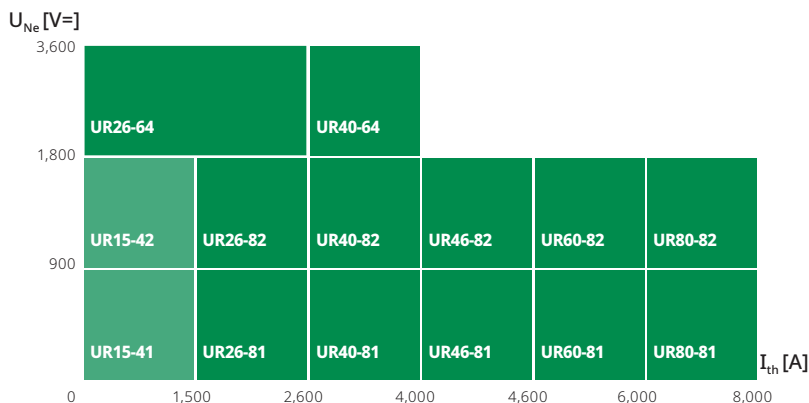
DC circuit breaker type UR

KEY POINTS OF THE APPLICATION

- DC circuit breaker opens only to isolate the coil in the event of a fault.
- After the converter has been blocked, the energy stored in the coil is dissipated through the damp resistors.
- The main function of the DC circuit breaker is to quickly switch high currents of the coil into the damp resistors.
- During the arcing process, the DC breaker forces the current to flow into the damp resistors, until the current reaches zero.

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE
TYPE UR

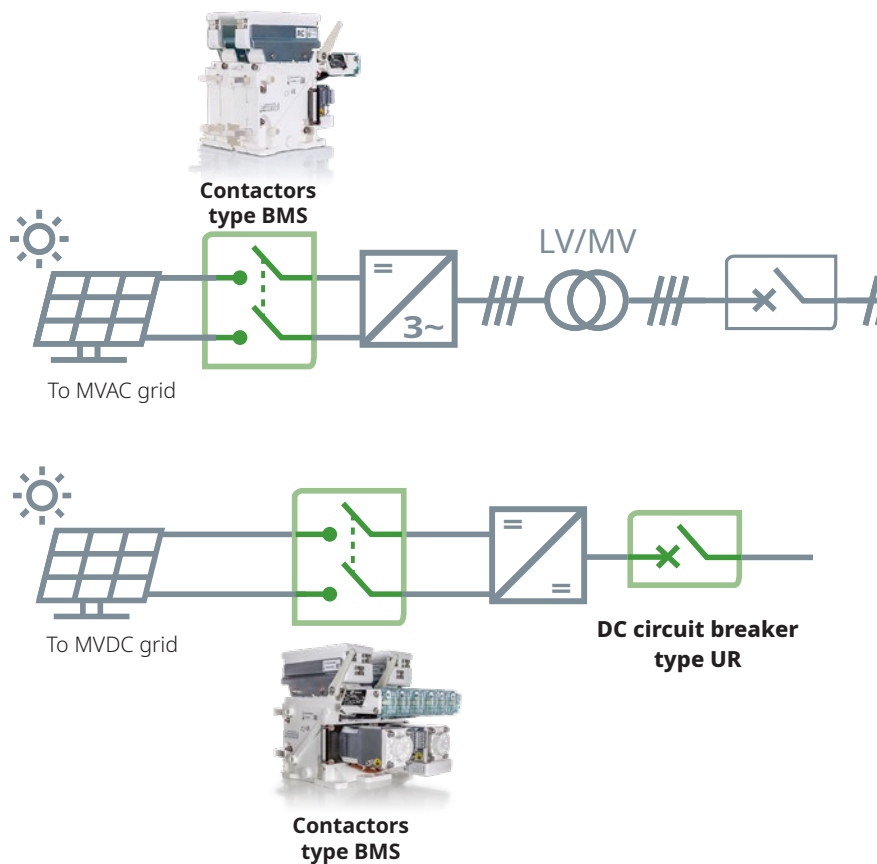




SOLAR FARMS



TYPICAL EXCITATION SYSTEM FOR A POWER GENERATION TURBINE

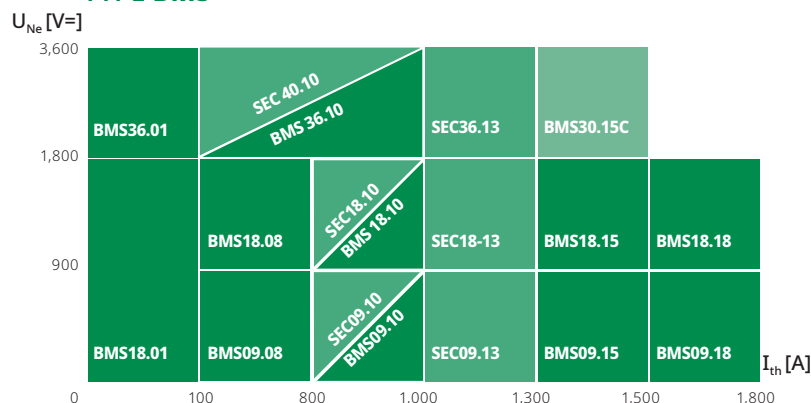


KEY POINTS OF THE APPLICATION

- Bipolar contactor to connect/isolate central or string inverters.
- Rated voltage up to 1,500 V_{DC} with current from 400 to 3,200 A.
- Making and breaking of ohmic loads
- High peak current during a very short time in case of fault conditions.

PRODUCT RANGES

CONTACTORS RANGE TYPE BMS

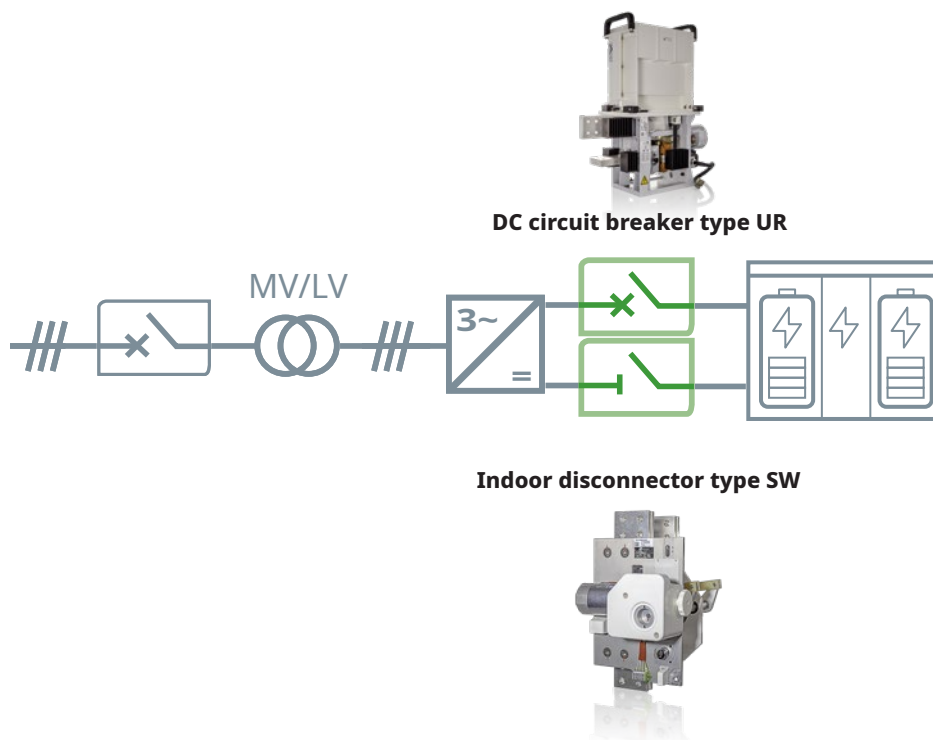




BATTERY ENERGY STORAGE SYSTEMS



TYPICAL SCHEME OF BATTERY ENERGY STORAGE SYSTEM

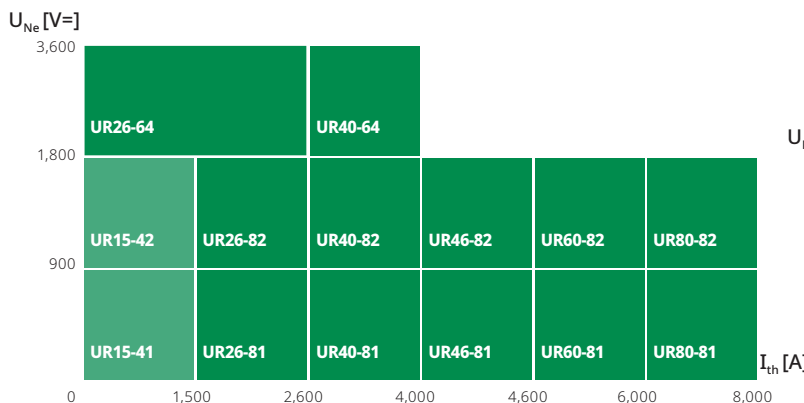


KEY POINTS OF THE APPLICATION

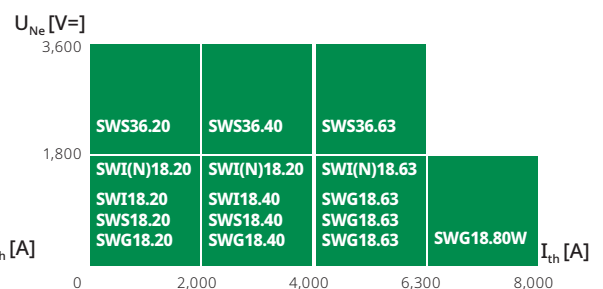
- Use of bipolar contactor or DC breaker and disconnecter.
- Bi-directional unit with ohmic load interruptions and high peak current in case of fault conditions.
- Rated voltage up to 1,500 V_{DC} with current from up to 6,000 A.

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR



DISCONNECTORS & SELECTORS RANGE TYPE SW

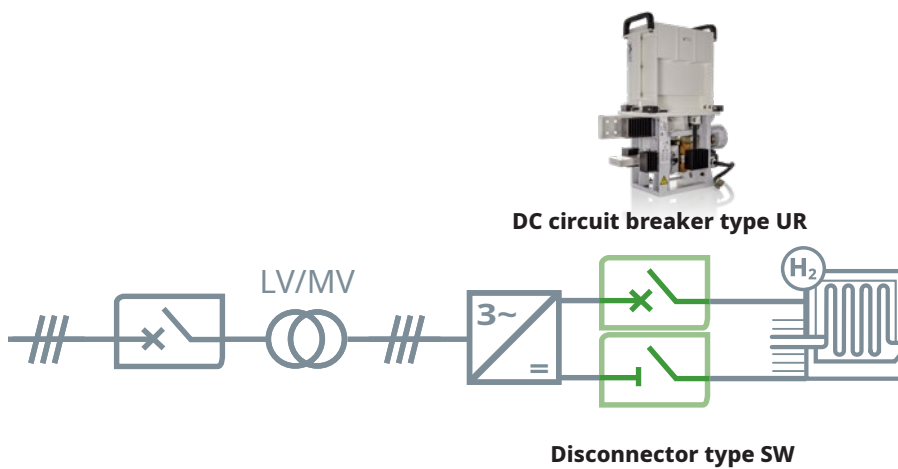




HYDROGEN PRODUCTION PLANTS



TYPICAL EXAMPLE OF DC PROTECTION IN H₂ PRODUCTION PLANT

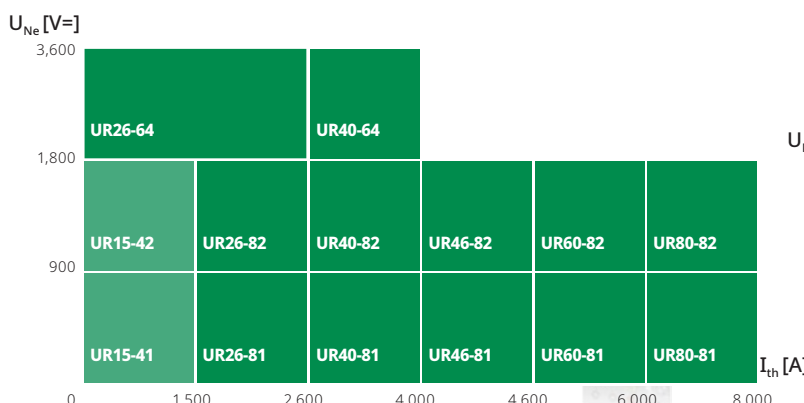


KEY POINTS OF THE APPLICATION

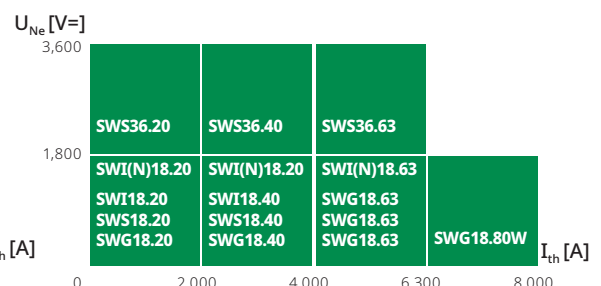
- To optimize your system's uptime, protect electrolyzers with DC circuit breakers and disconnectors.
- High-speed DC circuit breaker with high breaking capacity.
- Wide product ranges for current up to 8,000 A and voltage up to 3.6 kV_{DC}.
- Market well proven technology with a large installed basis worldwide.

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR



DISCONNECTORS & SELECTORS RANGE TYPE SW

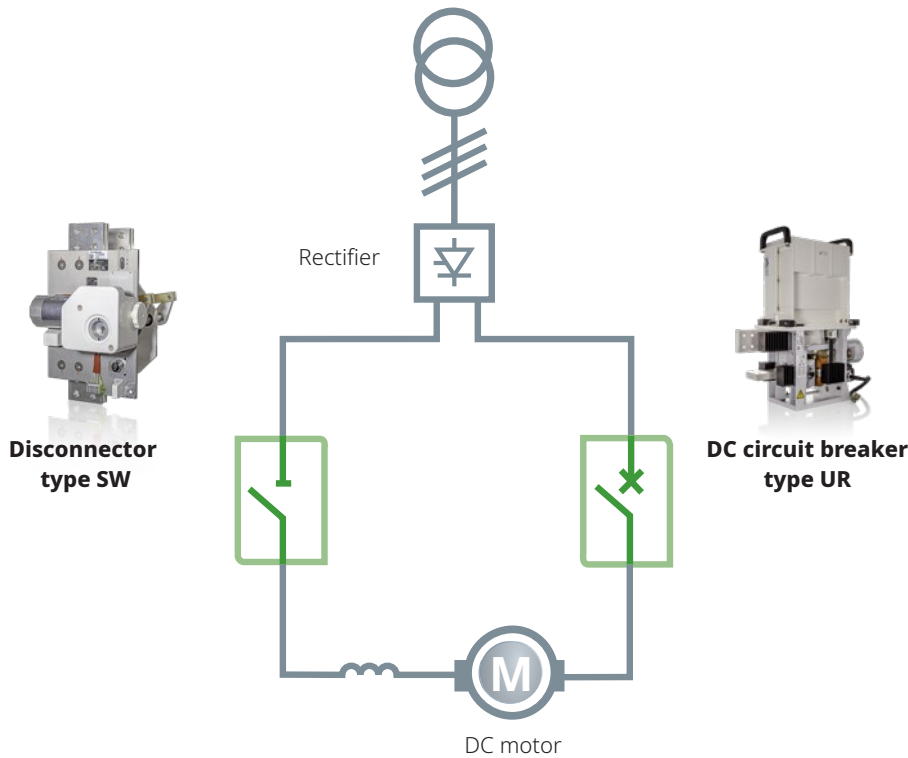




INDUSTRIES USING HIGH POWER DC MOTORS



TYPICAL PROTECTION SCHEME FOR DC MOTOR



Disconnector type SW

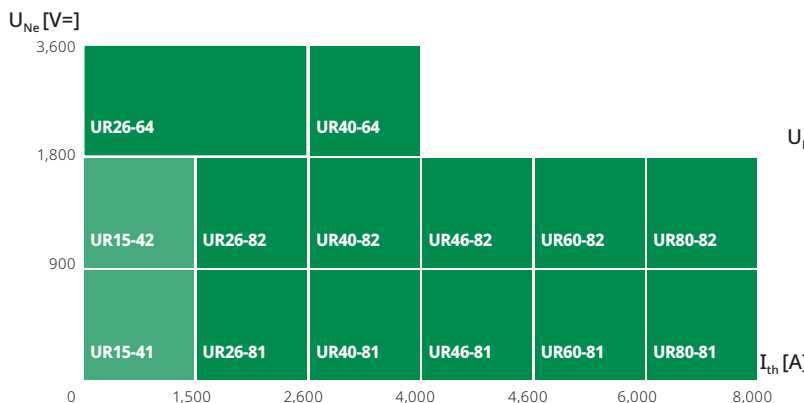
DC circuit breaker type UR

KEY POINTS OF THE APPLICATION

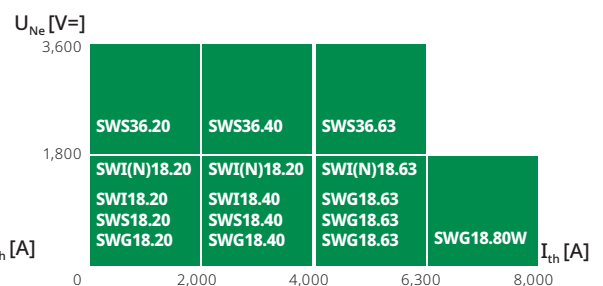
- DC circuit breaker protects the armature of the DC machine against overloads and short-circuits.
- Downtime of the production equipment minimized in case of failure or during maintenance operation. Production equipment operated 24/7.
- Equipment reliability is a key factor in maximizing production output.
- DC breaker's requirements include fast tripping, high breaking capacity, high mechanical and electrical endurance, very low maintenance.
- Applicable also to rolling mills, hoists machine, grinding mills and others.

PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR



DISCONNECTORS & SELECTORS RANGE TYPE SW





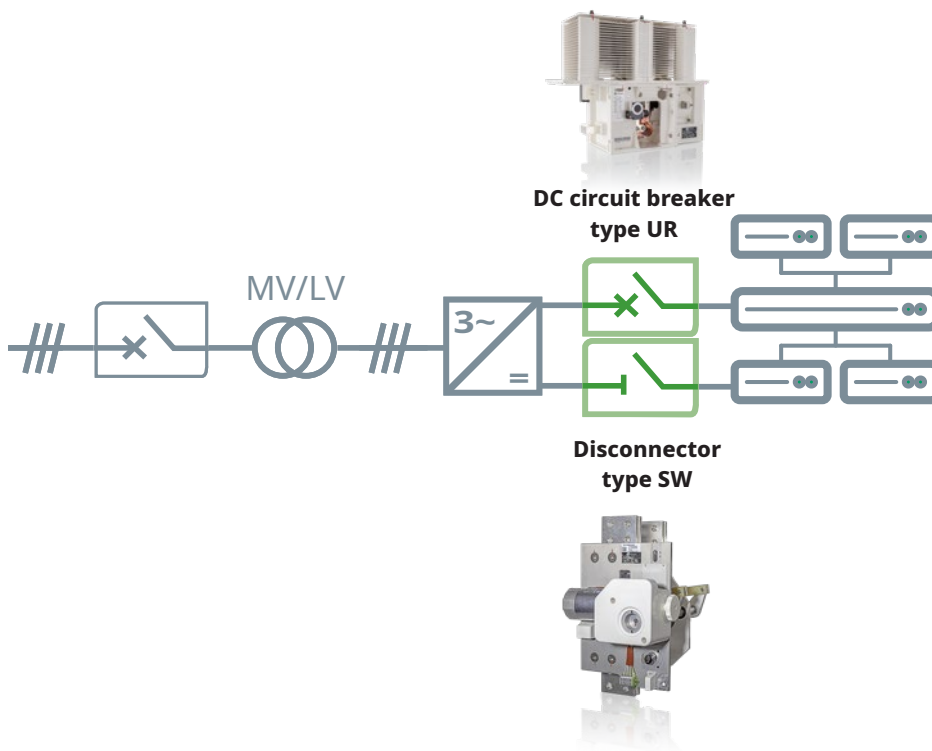
DATA CENTERS WITH DC POWER DISTRIBUTION



**DATA CENTERS
WITH DC POWER
DISTRIBUTION**

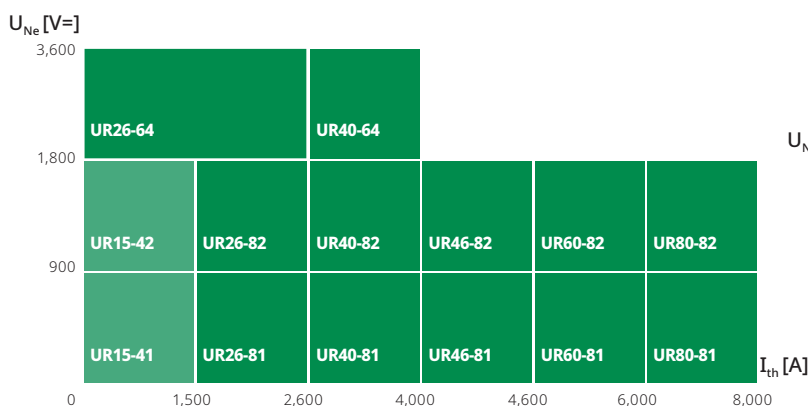
KEY POINTS OF THE APPLICATION

- AC current is used for the power distribution in the today's typical Data Centers.
- DC power data centers represent a great potential for the future for the benefits they offer.
- Significant savings on operating (less heat dissipation and cooling) and maintenance costs.
- Reduced physical space with elimination of AC/DC power conversion.
- Sécheron DC switching and protection components will support the development of DC power data centers.

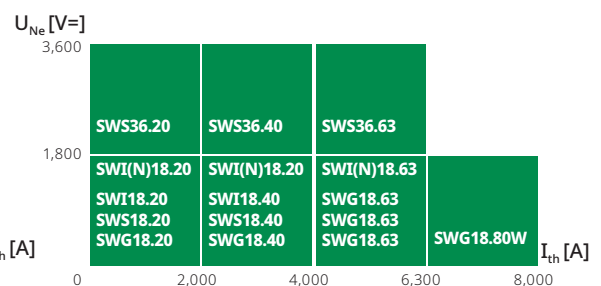


PRODUCT RANGES

HIGH-SPEED DC CIRCUIT BREAKER RANGE TYPE UR



DISCONNECTORS & SELECTORS RANGE TYPE SW



PRODUCTS

HIGH-SPEED DC CIRCUIT BREAKERS

UR type



Brochure UR26-80S IEC

Brochure UR26-80S ANSI

For DC applications, Sécheron proposes a complete range of high-speed current limiting circuit-breakers rated up to 8,000 A and up to 3,600 Vdc. These DC circuit-breakers are used in various applications to protect equipment against short-circuit currents and overloads.

The DC circuit-breakers UR range has achieved worldwide acceptance as a well proven design for use in fixed installations. The complete range has been regularly upgraded and adapted to new standard requirements and for different applications over the years, continuously improving the level of performance and functionality. These have led to an impressive service track record throughout the world for the UR product range.

Combining a compact design with a high making and breaking capacity, the UR range, with its low number of parts also guarantees high reliability and low maintenance requirements.



Product range

**IEEE / EN /
ANSI IEC**

U [V=]

3,600	UR26-64		UR40-64					
1,800		(1)	(1)	(1)	(1)	(1)	(1)	
900	UR15-42	UR26-82	UR40-82	UR46-82	UR60-82	UR80-82		
0	UR15-41	UR26-81	UR40-81	UR46-81	UR60-81	UR80-81		
0	0	1,500	2,600	4,000	4,600	6,000	8,000	I [A]
	0	0	2,150	3,200	4,000	6,000	8,000	

Standards

EN 50123 / EC 61992
IEEE / ANSI

All breakers are compliant to EN/IEC Standards

(1) DC circuit breakers also IEEE / ANSI compliant

AC/DC POWER & AUXILIARY CONTACTORS

/// BMS, SEC type



Brochure BMS..08_BMS..10
Brochure BMS..15_BMS..18
Brochure SEC

Sécheron brings decades of experience designing and manufacturing power contactor solutions for the railway industry as well as for energy intensive industries or renewable energy industries.

Power converter manufacturers, count on our contactor solutions for reliable performance.

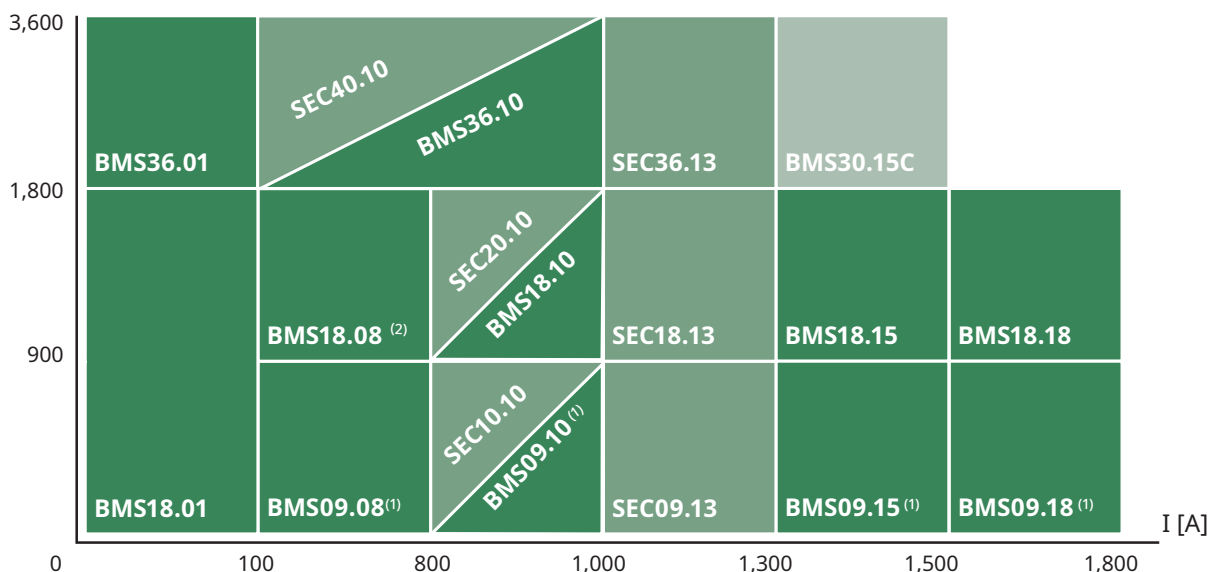
Our BMS, SEC, and HS contactors can be configured to meet a wide variety of needs, including converter switches or permanent-magnet synchronous motor (PMSM) switches.

Our contactors can be delivered on a stand-alone basis or in modules you can integrate into your own equipment.



Standard
EN/IEC60077

U [V= / V~]

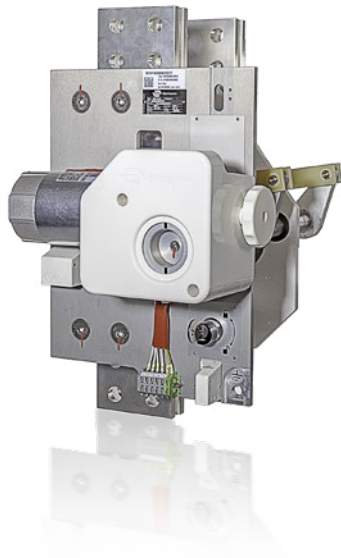


⁽¹⁾ BMS09... can be used for rated voltages up to 2,000 V_{AC}

⁽²⁾ A specific version of BMS18.08 can also be used for rated voltage up to 4,000 V_{AC}

DISCONNECTORS

SW type



Sécheron brings decades of experience designing and manufacturing electrical safety components and solutions for DC power substations.

Our **SW**-type off-load disconnect switch comes in a wide range of configurations and with optional features to meet the needs of all applications. Our switches ensure the safe isolation of the equipment from the power supply.

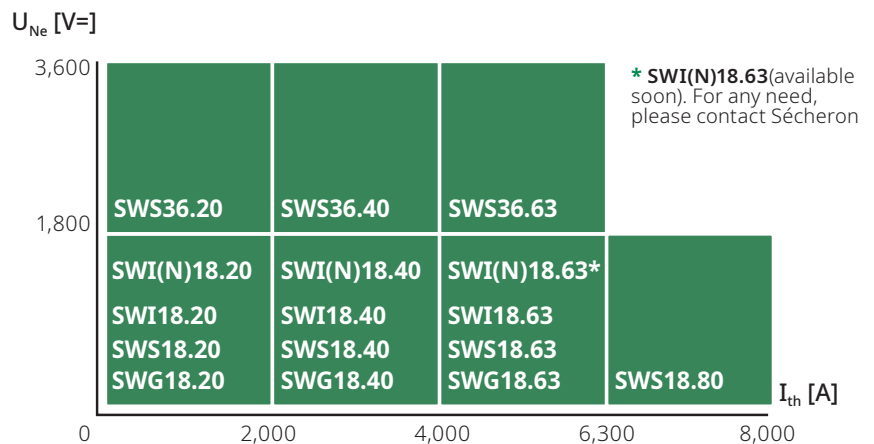
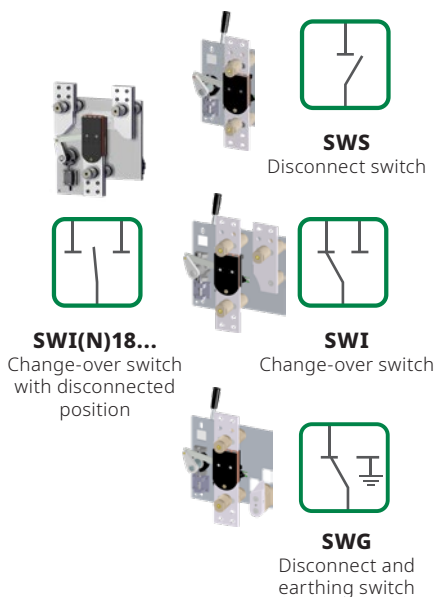
Our disconnectors for fixed installations can be integrated into your disconnecter panels to be used as converter, by-pass disconnecter, or as the disconnecter and earthing switch.



[Brochure SW](#)

Product range

Functional scope



All products available in 1- & 2-poles, except SWI/SWG18.63, SWS18.80, SWI(N) available only in 1-pole

SERVICES

Project management

Efficient teams, including Project Managers and Technical Specialists, support our customers throughout their projects and help them to select the most appropriate solutions within our standard product platforms, or propose customized products and complete integrated solutions for their applications.



Engineering support

Sécheron has developed unique core competences related to its activity and can provide our customers with high-value engineering services to support their projects.

The Computer Aided Engineering (CAE) multi-physics tool allows our experts to analyze, simulate and optimize the products and solutions we design, while reducing the technical risks and shortening development times and test cycles.

One of the things that makes us unique is our broad, deep knowledge of testing methods and our in-house testing labs and equipment. Our capabilities include: temperature-rise testing, dielectric and partial discharge measurements, complete electrical and mechanical endurance tests, short-circuit and low-current interruptions, vibration and shock tests, and functional and climate tests. Most of our testing facilities are ISO 17025-accredited as independent laboratories.



Documentation

Documentation to be delivered at different stages of a project has currently become more diversified and more substantial. It is also a key issue for our customers.

Here again, our team of specialists works to prepare and promptly provide customers with detailed Maintenance & Operations manuals, RAMS analysis, product material lists, type test certificates, fire & smoke certificates, structural simulations, when necessary, and all other useful documents.



After sales service

The strategy of Sécheron SA is to provide our customers with strong support and dedicated services throughout all equipment purchase and installation phases, as well as during the lifetime of the material once it enters service. To satisfy this commitment, Sécheron has set up a worldwide network of over 40 Sales and Service Points which enable our customers to find local support, whenever possible, and thus be able to address their requests in the most efficient way. The After sales service, provided on a global or local basis, covers at least the following requirements: Preventive maintenance and repair, E-learning & Training and retrofit & modernization project.



Sécheron original parts

In order to guarantee the reliability and the performance of Sécheron's safety devices, only Sécheron's original spare parts must be used through the complete product lifetime. These original parts, manufactured and checked following rigorous processes, are now stamped with the Sécheron's logo and the traceability number, either on the parts themselves or on their original packaging.



Contact Sécheron or our official partners (www.secheron.com/worldwide/) to be supplied with guaranteed original parts.

SÉCHERON'S WORLDWIDE NETWORK

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