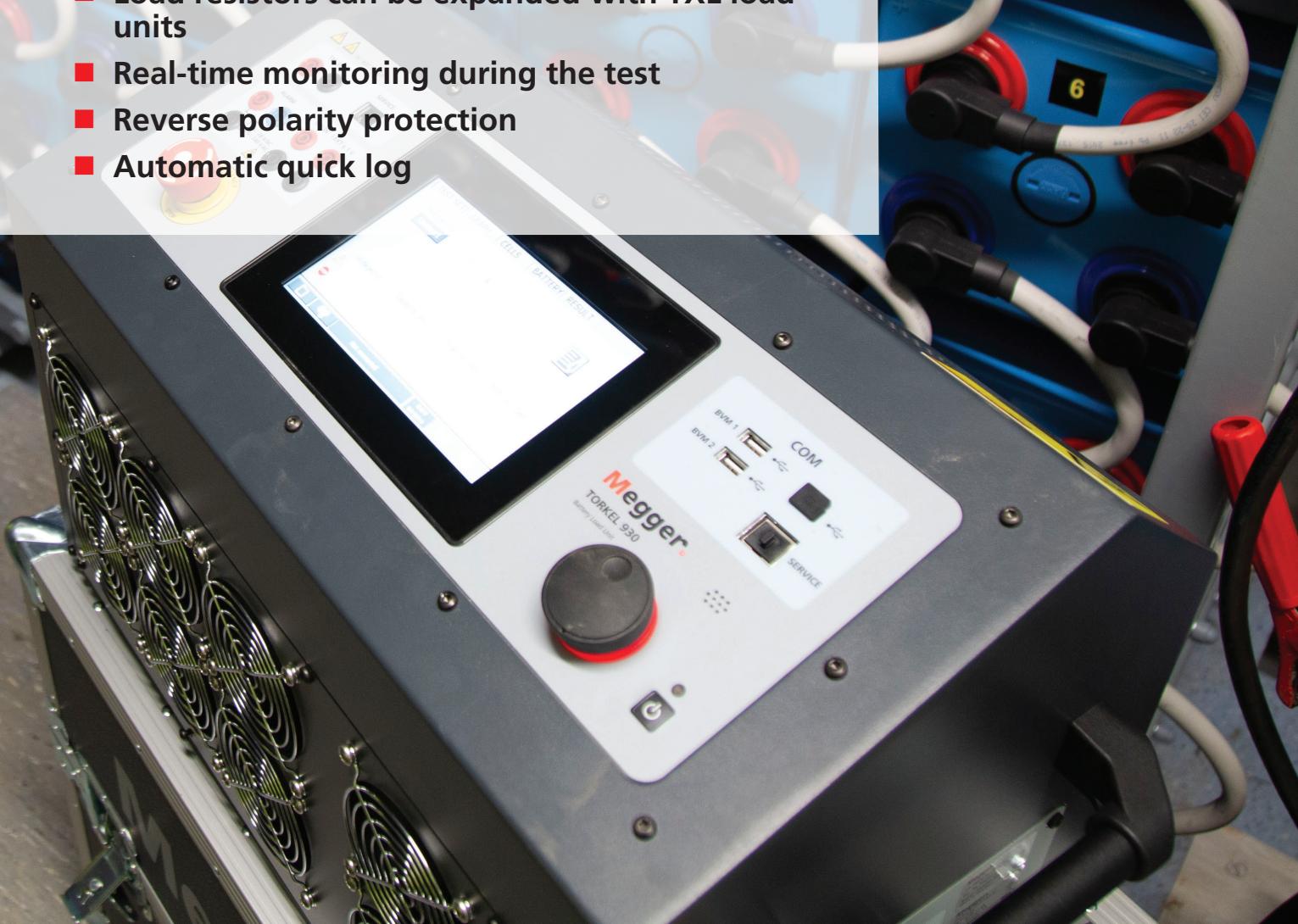


TORKEL 900

The capacity test is the most important of all the battery tests

- Testing batteries, including during operation
- Dynamic discharge technology — full power at all voltages
- Safety thanks to warning systems and automatic shut-off, for example in the event of blocked air flow
- Load resistors can be expanded with TXL load units
- Real-time monitoring during the test
- Reverse polarity protection
- Automatic quick log



The capacity test

TORKEL 900

Battery systems must be capable of constantly supplying electricity over a specified period of time. This defines their capacity. The capacity is the multiplication of the current by the time specified in hours — the ampere hour (Ah). The manufacturer's specifications are decisive; they specify the nominal value of the battery capacity. Only the capacity test allows an overall assessment of battery systems. Therefore, the capacity test is the most important test of all.

The capacity of a battery decreases steadily over time, so it cannot continue to supply the same amount of power for as long as was originally planned. Age and temperature play an important role. Insufficient charging, uneven charging levels, corroded clamping bolts, internal connections, or an unfavourable ambient temperature can shorten the life of a battery cell significantly. Under favourable conditions, a battery can have a service life of decades — but this is the exception rather than the rule. Under unfavourable conditions, the capacity of the battery cells decreases much more rapidly than originally anticipated. And, because the individual battery cells are connected in series, just one single battery cell can cause the failure of an entire neighbourhood or the collapse of ongoing industrial production processes. A battery installation is only as strong as its weakest cell.



TORKEL 900 is the most advanced and lightest capacity testing system in its class.





Expand capacity

Expanding the load resistor with TXL load units

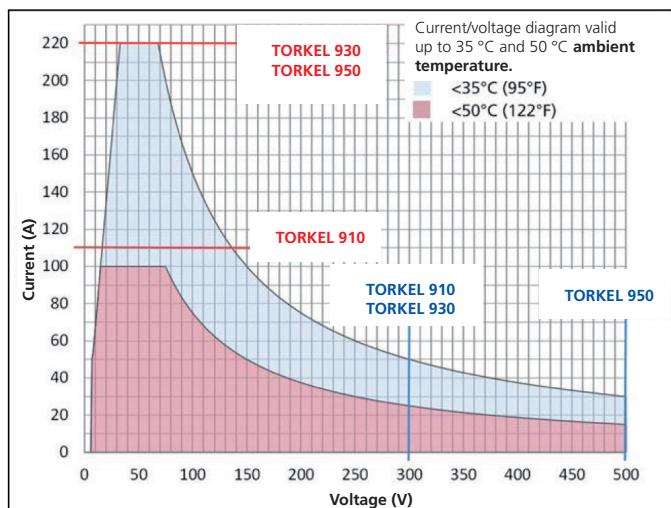
TORKEL 930 and TORKEL 950 are ideal for battery systems ranging from 7.5 to 300 V or 7.5 to 500 V. These are typically found in switchgear and also in facilities with UPS backup power systems, such as data centres and hospitals, where a reliable power supply is vital. The TORKEL 910 is a low-cost, simpler unit that can be used, for example, if there is no need to export logs.

TORKEL devices can perform capacity tests up to 220 A. If higher currents are required, two or more TORKEL and extra load units (TXL units) can be connected via the practical LDU box.



Extra TXL load units, such as TXL 850, are a very convenient solution for increasing the load resistors

These tests can be performed at a constant current, constant power and constant resistance, or in accordance with a pre-selected load profile. The test can be performed without disconnecting the battery from the equipment it serves. Via a DC clamp-on ammeter, TORKEL measures the total battery current while regulating it at a constant level.



The diagram provides quick reference for clearly determining which TORKEL is suitable for the load profile in question.

| Model overview | TORKEL 910 | TORKEL 910 | TORKEL 910 |
|-------------------------------|-------------|-------------|-------------|
| Current (max.)/voltage (max.) | 110 A/300 V | 220 A/300 V | 220 A/500 V |
| Exportable logs | No | Yes | Yes |
| Discharge measurement | No | Yes | Yes |
| Exportable logs | No | Yes | Yes |

Regular capacity testing is complex. We recommend the following maintenance routines to ensure that the facility is fully under control between test phases:

Ideally carried out once a month

- Visual inspection of the acids (Pb) and bases (NiCd) for ridge formation and levels
- Visual inspection to check for corroded connections
- Ventilation and room temperature

Ideally carried out once a year

- Screw connections

Ideally carried out twice a year

- Overall battery voltage
- Cells and block voltage
- Charge current in a charged state in order to recognise thermal runaways
- Superimposed AC current and voltage
- Acid density of the cells (not possible for sealed lead batteries)
- Acid temperature in the cells (not possible for sealed lead batteries)
- Impedance comparison measurement
- Load function test (30 to 60 min) with original load—or safer—using TORKEL 900

Every two to four years, depending on the age of the battery

- Constant current discharge to assess the total capacity
- Before the battery system warranty expires



Features and benefits

Device overview

1. TXL STOP
Output used for stop discharging from an external device (TXL); galvanically isolated
2. SERVICE
Connector for service purposes only
3. ALARM
Output equipped with relay contact for triggering an external alarm device
4. DC OUT
9 V output for external current clamp
5. I EXT \leq 1 V
Input used to measure current in an external path using a clamp-on ammeter or a current shunt
6. Display
Touch screen 7"
7. BVM1, BVM2
USB connections for BVM devices
8. USB connection
For USB memory stick
9. Ethernet connection
For servicing devices
10. EMERGENCY STOP
**Push to stop;
Reset by turning clockwise**
11. Control knob
For entering settings etc. — press to confirm a setting
12. Buzzer
For alarms
13. ON/OFF switch



Optional accessories

Optional accessories

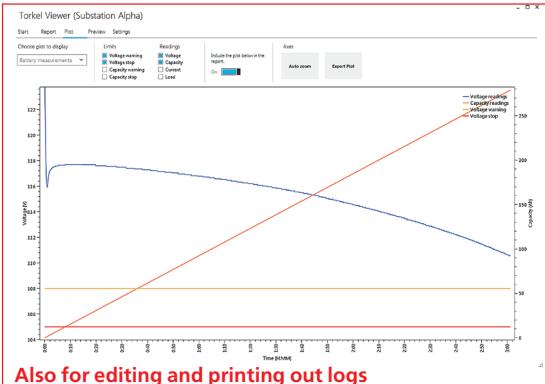
Extra load units

Four extra load units available:

TXL 830
TXL 850
TXL 870
TXL 890



Software for evaluating TORKEL and BVM



BVM — single cell testing

Battery cell voltage can be automatically measured during capacity tests.



Battery voltage monitoring for up to 2 x 120 battery cells (ladder network; detailed information about this topic can be found in the BVM data sheet)

LDU 300 — cable connector

Load distribution unit for distributing DC load. Cable connection with quick release, plus test cable set and current clamp.



For quickly and securely connecting peripheral cables

Battery tester — TMC 2001 RTS

Measures AC and DC voltages, battery impedance, database software and database connection, communicates with Bluetooth, IrDA and RFID.



Compact and practical design

DMA35 — density and temperature meter

Precise electronic density measuring device with temperature measurement.

Easy to transfer measured values to the TMC 2001 RTS database

Ideal for battery maintenance



ORDERING INFORMATION

| | |
|---|----------|
| TORKEL 910 (110 A/300 V/no viewer) | CS-19191 |
| TORKEL 930 (220 A/300 V) | CS-19390 |
| TORKEL 950 (220 A/500 V) | CS-19391 |
| TXL 830 (max. 28 V) | BS-59093 |
| TXL 850 (max. 56 V) | BS-59095 |
| TXL 870 (max. 300 V) | BS-59097 |

| | |
|------------------------------------|------------|
| TXL 890 (max. 480 V) | BS-59099 |
| DC clamp-on ammeter, 1000 A | XA-12990 |
| DC clamp-on ammeter, 200 A | XA-12992 |
| BVM | On request |
| TMC 2001 RTS | GJ-200400 |
| DMA35 | On request |



Find out more about our TORKEL training programme

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