

Dynamic Line Rating

Optimise the use of available grid capacity by providing better predictions for the early detection of congestion

The capacity of your overhead power line network is highly dependent on the cooling capacity of the weather. Transmission System Operators (TSOs) and Distribution System Operators (DSOs) face continuous planning and operational challenges and need proven, trusted, reliable and accurate weather information tailored to grid operator's needs. DTN developed DLR (Dynamic Line Rating) to address these challenges.

Benefits

DLR enables dispatchers to gain insight into grid capacity and avoid re-dispatching or even grid breakdowns. With DLR you can:

- **Reduce grid costs:** Through better managing and identifying potential congestion.
- **Increase available grid capacity:** Using weather cooling compared to static rating - 97% of the year extra capacity is available when taking weather cooling into account.
- **Improve dealing with fluctuating supply from renewables:** bridge gaps until new-build capacity becomes available without building new network

Customers

Leading Transmission System Operators (TSOs) companies, such as TenneT TSO B.V., Amprion GmbH, TransbetBW GmbH and Westnetz GmbH put their trust in us. Contact us to learn more about how we help these prestigious organizations safely and economically stabilize their systems, manage congestion and pinpoint critical spots in their power lines.

Users and key use cases

- **By using Hot Spot Analysis, dispatchers responsible for power grids will be able to:**
 - Identify weather-critical sections in powerlines
- **And with Dynamic Line Rating:**
 - Manage fluctuating wind and solar energy generation
 - Optimize the use of available grid capacity and avoid power line congestion

Features

The DTN Dynamic Line Rating (DLR) provides analysis and forecasts for weather-dependent transport capacity, allowing for better predictions for the early detection of congestion and the optimized utilization of available grid capacity. Hotspot Analysis and DLR offers the following features and functionality:

Dynamic Line Rating provides the following functionality:

Hotspot analysis - analysis DLR model using 10 years of historical weather data, calculating the weather - related cooling capacity for each section of a power line and determining the most critical spot for each hour; report on the most critical sections over the 10 years period to determine the so-called Hotspots.

Dynamic Lyne rating service - provision of observed and forecasted relative available capacity for the most critical part of a power line based on weather cooling; delivered via secure webservice to DSS, including archive function of all supporting calculated capacity values, weather observations and forecasts

DLR unique capabilities

DLR was built together with TSOs to ensure that the power supply is available at all times and supported by accurate weather information. We do this by providing:

- **Historical analysis to detect hotspots** - by putting weather stations at the Hotspots we can improve weather forecasts accuracy to reach the required accuracy of DLR forecasts
- **Operational weather forecast driven models** - which are often used instead of using observed weather only forecasts for DLR