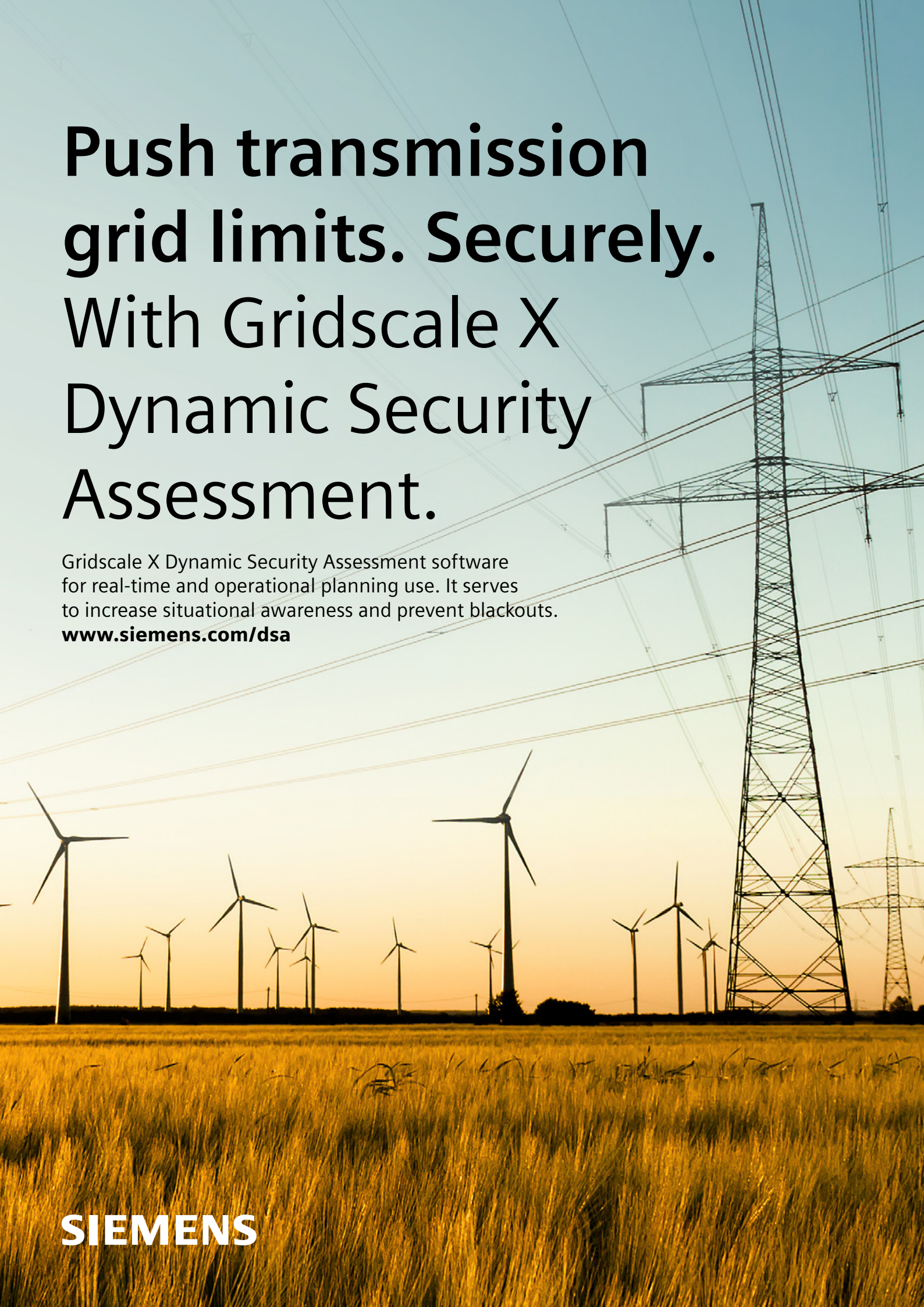
Push transmission grid limits. Securely.
With Gridscale X Dynamic Security Assessment.
Gridscale X Dynamic Security Assessment software for real-time and operational planning use. It serves to increase situational awareness and prevent blackouts.
www.siemens.com/dsa
SIEMENS

Transport **up to 30% more power** through your existing transmission lines. **Securely.**

To correctly assess a power system's stability, you as the operator need to know the stability margin and have assistance during the decision-making process when it comes to finding the most sufficient solution in case of stability problems.

This is where Gridscale X Dynamic Security Assessment software comes into play, helping you to increase your situational awareness in the control room. This fully automated and integrated stability assessment solution gives you an automatic, intelligent security assessment in real time. You are then able to make fast and accurate decisions to reliably deliver power. Concepts like Dynamic Line Rating allow you to run grids closer to their limits by leveraging current local weather and ambient conditions to calculate the actual line capacity. Being able to assess dynamic security continuously and foresightedly allows you to mitigate stability risks and maximize grid capacity – securely.

An online application to support you in making critical decisions

Gridscale X Dynamic Security Assessment considers all possible stability phenomena – voltage, transient, and small signal stability – and features an extremely fast power system simulator running in the background. This means Gridscale X Dynamic Security Assessment can be executed on a computation cluster and, hence, is able to perform a comprehensive contingency study of the largest existing networks. A fully integrated model-based inertia assessment module allows you to address the rapidly increasing gap in required inertia.

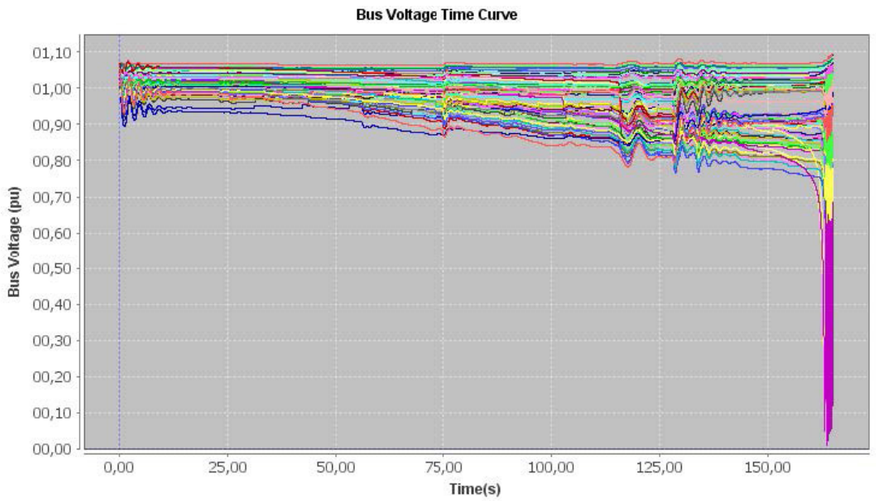

Figure 1: Long-term stability simulation with final voltage collapse

Push transmission grid limits. Securely. With Gridscale X Dynamic Security Assessment.

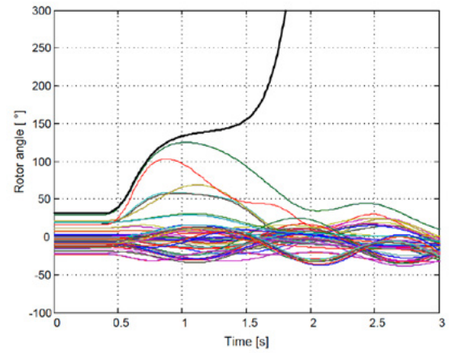

Figure 2: Transient stability after a severe fault, a generator becomes unstable and is separated from the synchronous group

The contingency study cycles automatically, taking the most current snapshot from the SCADA system as the basis. The results from this study are analyzed and presented to you as the operator. The procedure of intelligent results analysis is based on the experience of power system dynamics experts and is customized to suit the specific needs and technologies of different power systems.

By considering short-term forecasts of loads, generation, and switching actions, Gridscale X Dynamic Security Assessment can even prepare for future situations, leaving you more time to study the situation and the proposed remedial actions.

Automatic case creation

Gridscale X Dynamic Security Assessment automatically adds all the relevant dynamic data such as machine and controller data. It is also able to change topological data like adding block transformers, auxiliary loads, or other details. It can even disaggregate generators according to their type of primary energy like wind, solar, or biomass. Of course, all the changes are performed without changing the power flow solution coming from the state estimator.

Consideration and verification

In more than 75% of blackouts in the past, the protection system was part of the event. Mitigations are needed to avoid major outages, with remedial actions set to support and minimize the impact. But only if wisely choosen.

When stability problems are detected, Gridscale X Dynamic Security Assessment can verify the remedial actions. You immediately see the result, assisting you during stressful system situations.

Figure 3: Examples of the Gridscale X Dynamic Security Assessment interfaces

Visualization

The Gridscale X Dynamic Security Assessment user interface provides a clear visualization of the transmission grid stability at all times. The displays show results of the assessment on multiple levels: from very high aggregation to very high detail. Operators get basic results at a glance, whereas dynamic experts and planners can deep-dive into the stability phenomena.

- **Overview:** See the risk of instability for the past, present, and future with an intuitive, interactive traffic light visualization, and view the contingencies causing the disturbance, ranked according to the severity of the issue
- **Index results:** Get a detailed representation of the physical phenomena creating the stability issue, e.g. voltage collapse
- **Detailed results:** Review details of the core element(s) involved, e.g. level of single generators or bus voltage currents

Gridscale X Dynamic Security Assessment **benefits at a glance**

Stability

- Operate below stability limits at all times
- Increase transmission capacity by up to 30% when combined with Dynamic Line Rating
- Prevent blackouts with real-time stability assessments
- Handle all stability phenomena in one application
- Ensure and report regulatory compliance with NERC and ENTSO-E

Guidance

- Improve situational awareness
- Have reliable guidance on actions to take
- Clearly see results in a user-centric UI

Speed

- Benefit from faster workflows with automated stability assessment
- Benefit from one of the fastest dynamic simulation engines on the market
- View simulations across several CPU cores and servers simultaneously

Interoperability

- Have flexibility thanks to no vendor lock-in
- Use any SCADA
- Link it with Spectrum Power™ and PSS®E

Push transmission grid limits. Securely. With Gridscale X Dynamic Security Assessment.

Comprehensive project support

From commissioning and training to operational and full life-cycle support, including software patches and updates – the experts at Siemens guide you throughout your project to ensure you can get the most out of your grid.

Ideal with **Spectrum Power™**

Spectrum Power™ by Siemens serves as the ideal software platform for fully integrating the Gridscale X Dynamic Security Assessment solution – and thus enhancing stability awareness. While using the strength of the simulation engines, Gridscale X Dynamic Security Assessment allows you to perform a wide variety of extended stability analysis functions.

Published by

Siemens AG

Smart Infrastructure
Grid Software

Humboldtstrasse 59
90459 Nuremberg, Germany

For the U.S. published by

Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005, United States

For more information, please contact:
spectrumpower.de@siemens.com

Article No. SIGSW-B10101-00-7600

Subject to changes and errors.

The information given in this document only contains general descriptions and/or performance features, which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.