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News

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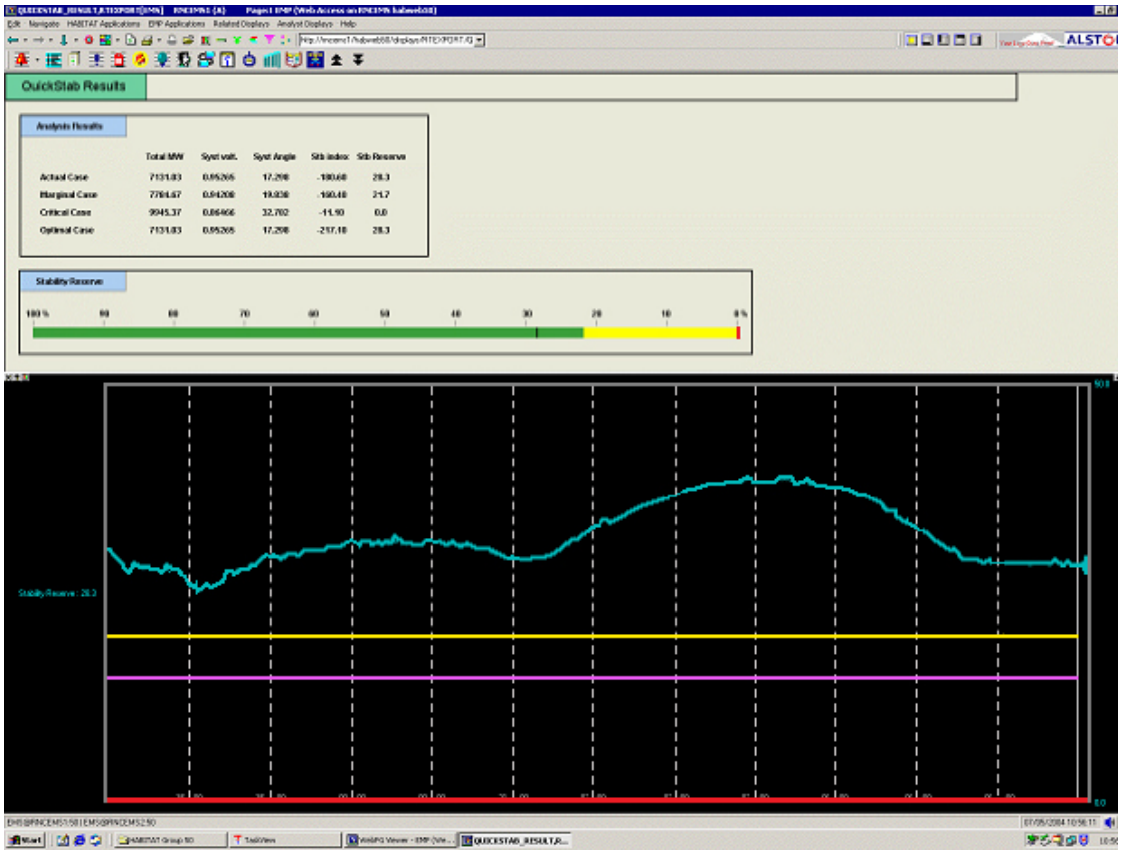
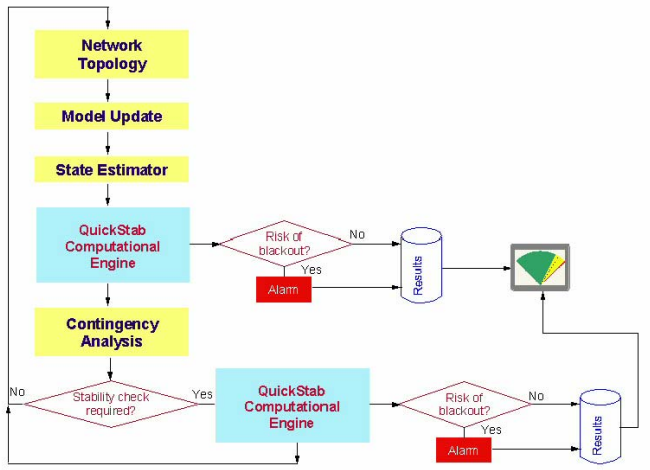


Real-time tracking of the risk of blackout on Transelectrica's SCADA/EMS. The steady-state stability reserve computed by QuickStab® after each run of the state estimator is shown in cyan. The bottom red line depicts instability (blackout). The yellow line shows the security margin. The alarm threshold is shown in magenta: should the steady-state stability reserve fall below this limit, an alarm would be triggered.

"The Era of Real-time Tracking of the Risk of Blackout Has Begun"

- ✓ *QuickStab® seamlessly integrated on AREVA's SCADA/EMS*
- ✓ *triggered instantaneously after each state estimate*
- ✓ *real-time stability checks performed automatically*

The era of real-time tracking of the risk of blackout has begun. With the seamless integration of QuickStab® on Transelectrica's (Romanian National Power Grid Company) SCADA/EMS by AREVA T&D, the system's maximum loadability where voltages collapse and units may get out of synchronism can be computed and tracked in real-time. The distance to this limit, known as steady-state stability reserve, is then shown on a trending chart, thus enabling the dispatcher to monitor the risk of blackout. This significant breakthrough is due primarily to QuickStab®'s fast solution technique. Computational speed is essential for real-time -- and is a key requirement in market clearing and operations scheduling where stability checks must be performed frequently in order to devise strategies aimed at preventing blackouts while meeting the economic objectives of the electricity business.



AREVA'S implementation of QuickStab®. The real-time network analysis sequence triggers QuickStab® after each successful run of the state estimator and issues an alarm if the steady-state stability reserve is smaller than a user-defined threshold.

QuickStab® at a Glance

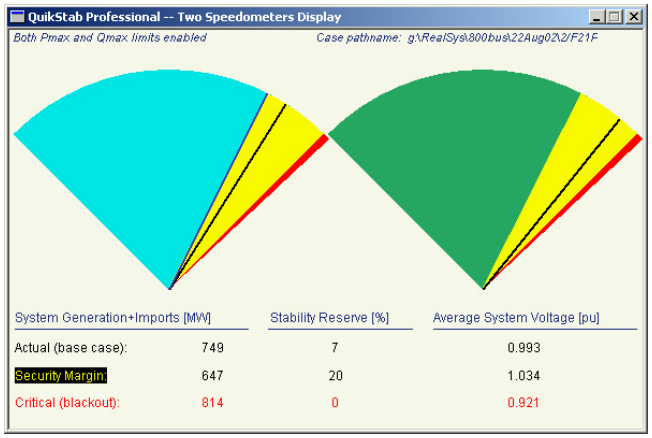
Given a load-flow solution or state estimate of a multi-area power system, QuickStab®:

- Uses a fast voltage stability technique to compute, for each area, the maximum loadability, the distance from the current operating state to the total system MW at the point of voltage collapse, and the safe system loading for a user-defined security margin
- Identifies generators that may cause instability and ranks the machines and tie-line injections in order of their impact on system's stability
- Determines the maximum transfer capability across area interfaces.

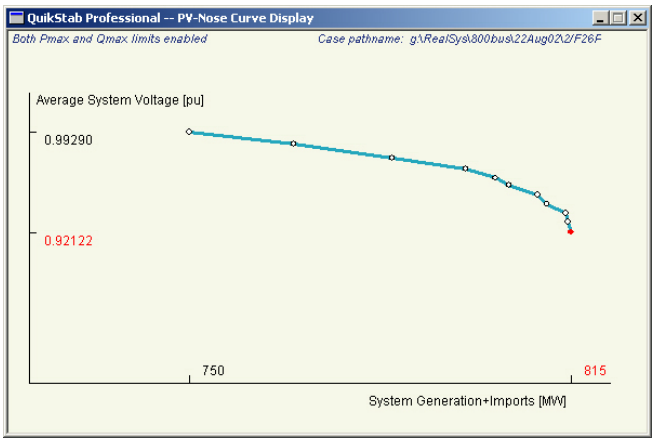
QuickStab® is normally executed off-line as a stand-alone application, but its computational and user-interface engines can also be:

- Invoked from, or used in conjunction with, third-party load-flow programs
- Seamlessly integrated with real-time and study-mode network analysis software
- Loosely integrated, i.e., executed in parallel, with SCADA/EMS network analysis applications.

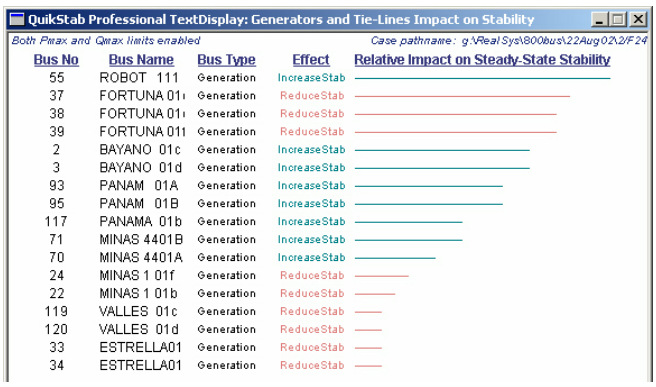
QuickStab® stands out in the industry because it *quantifies the risk of blackout*, can help develop *preventative and corrective strategies*, is extremely *fast* and can be *easily integrated with third-party software*. Its approach to presenting the results on *intuitive graphics* is another significant benefit. The output is shown on user-friendly speedometer and PV-Nose charts, bar diagrams, and numerical tables, as illustrated in the following. For real-time, AREVA introduced additional graphics, including a trending display that helps monitor the risk of blackout.



Actual 800-bus system. The black needle in the green speedometer is closer to steady-state instability than the black needle in the blue speedometer, thus suggesting that the system is quickly approaching instability.



PV-Nose chart for the 800-bus system shown above. The voltage is predicted to collapse if the total generated power approaches 815 MW



Bar chart ranks the generators and tie-line injections in the 800-bus system in order of their impact on stability. Further loading of the units shown in green can improve the steady-state stability conditions.

Contact Us

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