

QuickStab[®] results on the video projection system in the Control Room of the Independent System Operator of Bosnia and Herzegovina. The Speedometer and the Extended Summary report charts are refreshed automatically with the stability calculation results obtained after each successful run of the state estimator (upper right corner). In addition, the operator can manually display any other stability computation results by means of the QuickStab[®] Viewer Control Panel (shown in an overlapping window on the right).

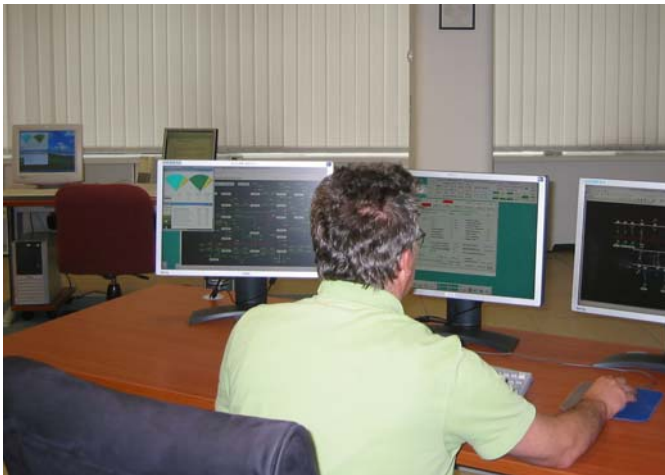
Siemens Implements QuickStab[®] on the Spectrum SCADA/EMS of the Independent System Operator in Bosnia and Herzegovina

The power system of Bosnia and Herzegovina provides open access transmission to the South-eastern European electricity market. In addition to parallel flows, which are inherent to the tightly interconnected operation of the regional grid, the ensuing MW transfers may cause congestion and low bus voltage conditions that can bring the system near the state where voltages collapse and units lose synchronism. In order to develop adequate corrective actions if and when needed, the risk of blackout must be detected ahead of time -- and since instability develops instantly and leaves no time to react, the *distance* to instability must be computed and monitored in real-time.

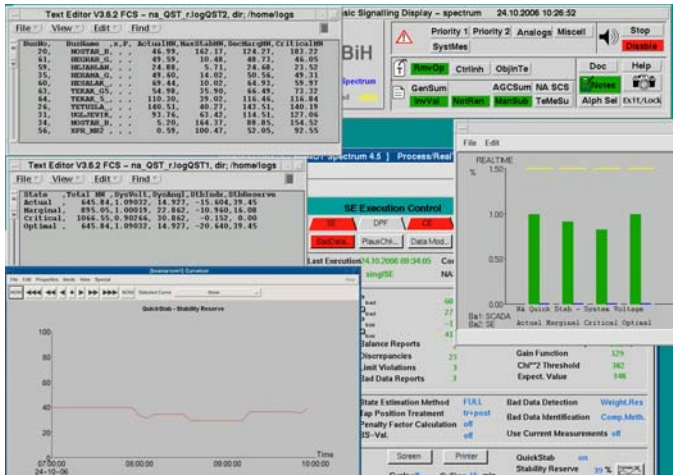
The Independent System Operator in Bosnia and Herzegovina (NOS BiH) solved this problem in 2006 by implementing QuickStab[®] on its interim SCADA/EMS [1]. Due to the excellent operational experience with real-time stability assessment and monitoring, NOS BiH asked Siemens AG Austria to *seamlessly integrate* QuickStab[®] with the new Spectrum SCADA/EMS.

Implementation Highlights

The new solution developed by Siemens was successfully tested in site and commissioned for production grade operation on May 21, 2008. The approach has



After each successful state estimate, Spectrum launches a Real-Time QuickStab® Extensions module that: runs on a PC connected to the SCADA/EMS LAN (left); triggers the stability calculations; and refreshes the QuickStab® displays on the PC. The genuine QuickStab® interface can be imported on any Spectrum console, as shown in the left picture. In addition, the key results, including the trending chart that allows monitoring the distance to instability in real-time, are displayed directly in the Spectrum native user interface, as shown in the right picture.



In addition to viewing the automatically refreshed QuickStab® displays on a Spectrum workstation, the operator can import them on the video projection system as well (left). Furthermore, the capability exists to import, either on the workstation or on the video projection system, the QuickStab® Viewer Control Panel (right), which allows the operator to select and view any of the computational results produced by QuickStab®.

been described in detail in reference [1] and is briefly summarized below.

Siemens extended the Network Analysis Sequence Control program to activate a dedicated script that runs on Spectrum after the state estimate in PSS/E format has been created. This script launches the Real-Time QuickStab® Extensions [2] module which triggers the stability computations and refreshes the displays. The process: runs automatically after each state estimation at five minute intervals and upon system events, and after each Dispatcher Power Flow calculation in study-mode; and can be activated manually as well.

Benefits

QuickStab® stands out in the industry because it *quantifies the risk of blackout*, is extremely fast, can help develop *preventative strategies*, and makes extensive use of *intuitive graphics*. In addition, it can be easily *integrated with third-party software*, as magnificently

demonstrated in Bosnia, where QuickStab® was first implemented on the interim SCADA/EMS system, and now is fully operational *seamlessly integrated* with the new Siemens Spectrum SCADA/EMS.

Contact Us

For additional information or to schedule a demo please visit our web <http://www.eciqs.com> or contact us by phone (212) 913-9154, e-mail infoqs@eciqs.com or in writing: *Energy Consulting International, Inc., 405 Lexington Avenue 26th Floor, New York, NY 10174.*

References

- [1] Vickovic, D., Eichler, R., "Real-Time Stability Monitoring at the Independent System Operator in Bosnia and Herzegovina", in the book *Real Time Stability Assessment in Modern Power System Control Centers*, IEEE Press & John Wiley, NY, January 2009
- [2] **** "Announcing the Real-Time QuickStab® Extensions", ECI Newsletter Vol. 5, No. 2, August 2007