

Modeling Notification

EX2000 Dynamics Component Model for Excitation Systems

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Recent information has indicated that the EX2000 dynamics model in the Siemens PTI PSS/E power system dynamics simulation program does not properly model the equipment that it is intended to represent. EX2000 is a General Electric (GE) excitation system for synchronous generators.

Primary Interest Groups:

Generator Owners, Generation Operators, Transmission Operators, Transmission Planners, Planning Coordinators, and Reliability Coordinator

Background:

EX2000, EX2100, and EX2100e are excitation systems for synchronous generators manufactured by GE. In the Siemens PTI PSS/E power system dynamics simulation software package, there is an exciter dynamics component model named EX2000 which is intended to represent these particular excitation systems. However, the field current limiter reset action modeled in the EX2000 exciter model in PSS/E is based on the information that was provided when the model was first written and is not how the actual equipment works. Specifically, once the Latch 2 gate in the field current limiter portion of the model is set, it will never reset, even if the field current falls below the value IFDREF2.

Modeling Notification:

All recipients of this modeling notification that are using the EX2000 model in the Siemens PTI PSS/E dynamics simulation software should be aware that the representation of the field current limiter portion of this model is suspect. For situations that do not involve action of overexcitation limiters (OEL) (i.e., $ICON(M) = 0$), the EX2000 model can be used without any issue, or the EX2000 model may be replaced with the AC7B model from the IEEE 421.5 standard. However, if it is necessary to represent OEL action of an EX2000, EX2100, or EX2100e excitation system in a PSS/E simulation, a user-written model (EX21BR) may be downloaded for PSS/E versions 32 and 33 from the Siemens PTI PSS/E user support web page (for details, please send an email to PSS/E Support). Although the model is being supplied by PTI, any user support for this model would need to be sought from Dan Leonard (daniel1.leonard@ge.com) at GE. (The ex21br model may be used to represent the EX2000, EX2100, or EX2100e excitation system, including field current limiter behavior, in the GE PSLF program.) Recipients using PSS/E should review any study results that are dependent on the field current limiter action of the EX2000 model.

For more information or assistance, and to provide comments on the Modeling Notifications please contact [System Analysis Department](#) (via email) or (404) 446-2560.