



## Success story

# Ameren Missouri chooses Nexus Controls to modernize plant operations

### Customer type:

Pumped storage  
Hydroelectric plant

### Industry:

Power generation

### Application:

Generator controls-excitation

### Solution:

EX2100e 120A automatic  
Voltage regulator

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### Introduction

Operated by Ameren Missouri, the Taum Sauk Plant is a 440-megawatt pumped storage hydroelectric plant that stores and produces energy for the eastern half of Missouri. Located in the St. Francois mountain region of the Missouri Ozarks, this plant uses 1.5 billion gallons of water stored in an upper reservoir to generate clean, renewable electricity and is a critical asset for the power company.

### Customer's challenge

The Taum Sauk Plant provides power during peak demands within their system, but operations declined with aging infrastructure. More than 20 years old and facing obsolescence, the plant's excitation systems frequently required service and experienced multiple failures. Voltage regulator issues had the potential to create extended site downtime due to the remote location.

## Nexus Controls solution and added value

The plant operates two units running at 250 MVA each. To reduce service calls and improve operations, the Ameren team considered replacing the units with full static exciters. After considering all their options, the Ameren team selected fully redundant EX2100e 120A voltage regulators to replace the aging generator controls. The EX2100e is an advanced system that incorporates technology found in the Mark\* V1e control platform, making it a highly reliable and flexible solution.

Upgrading to the proposed solution has allowed the Taum Sauk Plant to operate with a custom product tailored to site-specific requirements. What makes this installation unique is that the shaft-driven exciters are able to reverse rotation depending on whether the system is in pump or generator mode. The EX2100e implementation has increased the reliability of the plant, solving the hardware obsolescence and service issues. Additionally, the redundant configuration enhances the reliability of the exciter, which is critical for its remote location.

Following the installation of the EX2100e and resulting conversion from a simplex to redundant regulator, the Taum Sauk Plant increased uptime and significantly reduced concerns over unit failure and lost generation. Additionally, the new system's enhanced software and alarm management features eliminated the frequent nuisance alarms that accompanied the older system.



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