

VCU

Valve Control Unit for Solenoid Spray Valves

The Valve Control Unit (VCU) establishes a sophisticated continuously closed loop control of the pressurizer's modulating solenoid spray valve.

Challenge

Along with the pressurizer heaters, the spray valve influences the primary coolant pressure in a pressurized water reactor (PWR). A spray valve with a basic open/close function is used in many plants to date. The main disadvantage of this simple open/close control is the decreased lifetime of the pressurizer components and the surge line, due to the thermomechanical stress of the spraying system.

Solution

Framatome's VCU enhances functionality by allowing a spray valve to be positioned at any point between both end positions, if a modulating solenoid spray valve is used. Thereby, the thermomechanical stress of the spray system and the surge line is reduced significantly.

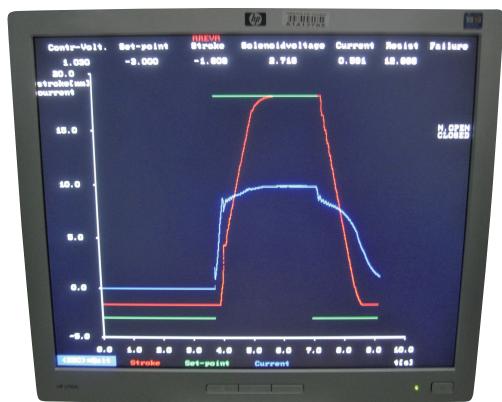
The VCU offers an optimum solution for new builds and plant upgrades with a modulating solenoid spray valve.

Customer benefits

- Considerable decrease of hydraulic shocks in the spray system
- Continuous spraying with adjustable flow rate avoids cyclic loading
- Optimized closed loop control combined with a prioritized safety-classified open loop control
- Extensive parameterization features (e.g. valve set time)
- Easy valve diagnosis using integrated software



Regulated power supply (top) with VCU (bottom)



Integrated valve diagnosis (stroke-time diagram)

**Your performance
is our everyday commitment**

Technical information

The two modular 19" components (VCU and regulated power supply) are prepared for installation in a switchgear cabinet. The control behavior of the VCU software can be easily configured to meet the requirements of the plant. The system may be customized to the needs of individual customers by extending or replacing input/output modules for high flexibility.

Key functionalities

- Self-adjustment of valve stroke at the push of a button
- Electrical limitation of valve stroke possible
- VCU software allows for easy configuration to adjust to plant interfaces

Additional features

- Easy valve diagnosis using integrated software

Safety

The operational safety of the VCU is guaranteed by the cyclic monitoring of

- valve stroke,
- regulated power supply and
- microprocessor.

The use of standard components which benefit from the long-term availability of spare parts ensures long-term system sustainability.



Exemplary VCU application

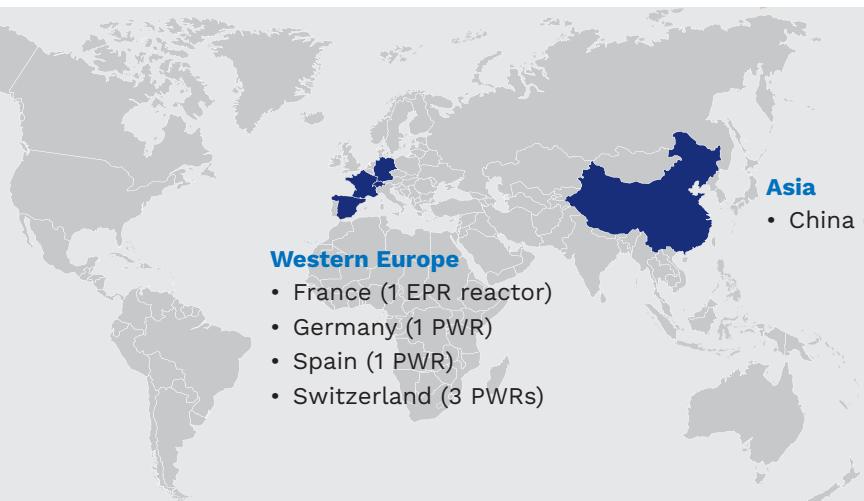
Key figures

20 years of operational experience

More than **15** VCUs in operation worldwide

References

Framatome VCUs are installed in eight nuclear power plants worldwide, of which two are non-OEM plants.



OEM: original equipment manufacturer

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