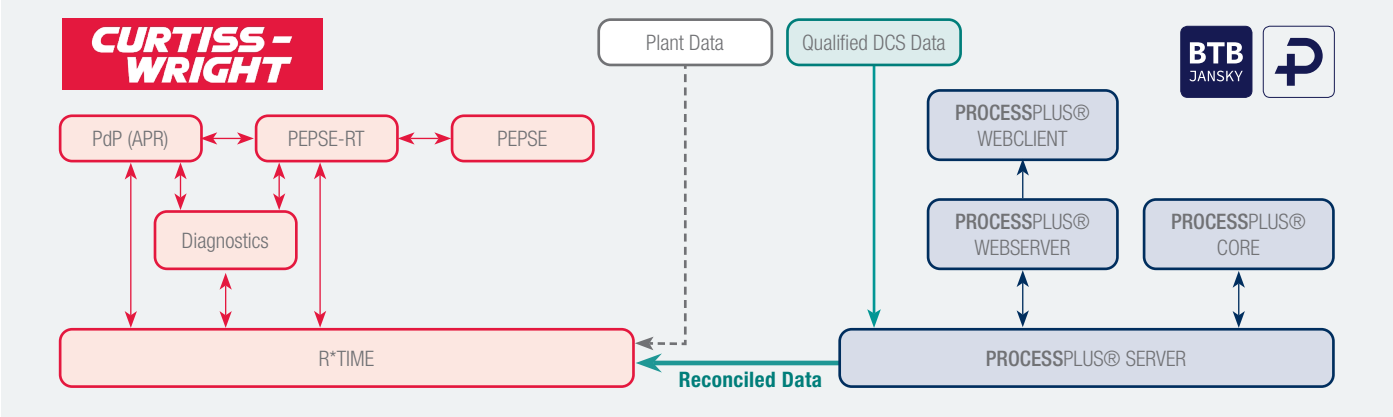
FAMOS Data Validation & Reconciliation (DVR)

FAMOS Solutions

Power & Process Products and Services



About Curtiss-Wright

Curtiss-Wright is a global integrated company with a long tradition of providing state-of-the-art, reliable solutions through trusted customer relationships.

We provide analytical platforms and sensors to optimize the data you need to address plant issues. We are leaders in thermal performance software and services; equipment reliability solutions; valve condition monitoring; and advanced data analytics. We further enhance our customer support through our Monitoring and Diagnostic Center, providing remote detailed evaluation of the condition of clients' assets.

Curtiss-Wright is committed to the safe operation and improved performance and reliability of power plants worldwide.

About Our Teaming Partner

BTB Jansky is an engineering consulting and software developing company based in southern Germany. They have specialized in data validation and reconciliation (DVR) installations for over 25 years and their meticulous approach meets the highest levels of quality assurance for power recovery and measurement uncertainty recapture (MUR) and quality-assured plant performance monitoring.

BTB Jansky strives to make resilient, contradiction-free plant data available to all plant operators, ensuring continuously safe and efficient operation. Their customer base includes nuclear power plants as well as industrial, coal-fired, CCGT, and gas power plants.

What is Data Validation and Reconciliation (DVR)?

Current power plants are adequately equipped with sensors to measure mass flows, pressures, and temperatures, creating large volumes of measurement readings but leaving the operators and engineers with the task of interpreting this data for their primary purpose – optimal and safe operation of the plant.

However, measurements can contain uncertainties. Random and systematic errors in any of the relevant measurements will lead to plant inefficiency. A more complete approach—one that does not require any hardware changes—is now available.

Introducing a mathematical methodology called data validation and reconciliation (DVR).

Curtiss-Wright has teamed up with BTB Jansky to bring their certified DVR tool PROCESSPLUS® into the FAMOS suite of solutions. DVR provides plausible, contradiction-free, quality-assured process data—even for regions where no measurements are available. Using reconciled data instead of raw measurements for plant operation results in increased plant safety, efficiency, electrical output, and ultimately, revenue. DVR takes the risk out of measurement uncertainty.

FAMOS-DVR continuously produces process reference values in near real-time for the entire power plant. By reducing the measurement errors in the plant, FAMOS-DVR provides a state-of-the-art monitoring system for nuclear power plants of all reactor types. Any existing hardware redundancies (parallel sensors) are included in the model, providing valuable data which adds to the quality of the reconciled results. This contrasts with other methods in which valuable redundant data must be discarded. Plant operators will now be able to utilize historical redundant process data.

The system installation does not require any additional measurements but rather makes use of the measuring devices already available in the plant.

The Curtiss-Wright team provides solutions involving unique performance monitoring applications, the integration of these applications, and the presentation of actionable information. The actions taken by operators, engineers, and management result in measurable improvements that have a proposition value for the business investment in our technology.

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Why Buy FAMOS-DVR?

Instrument Validation

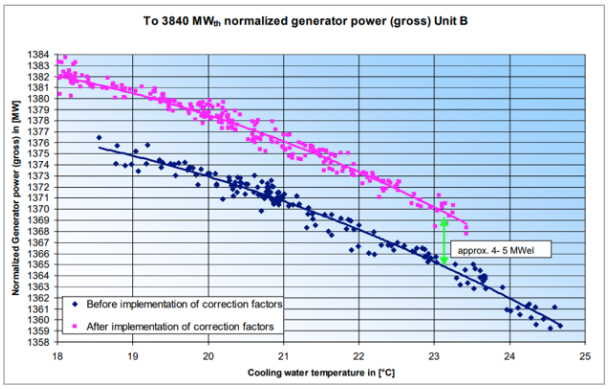
All power plant instrumentation contains measurement uncertainties. Using inaccurate data to evaluate plant performance leads to wrong decisions regarding deteriorating plant efficiency and operation. FAMOS-DVR validates instrumentation data, resulting in reduced measurement uncertainty providing accurate input for important decisions based on critical information.

Validation of Core Thermal Power

Many power plants struggle with fouling in feedwater flow nozzles, which has a direct impact on the accuracy of the core thermal power calculation. Fouled feedwater flow nozzles result in operating the plant at reduced thermal power and lost generation, leading to *millions of dollars* in lost revenue.

How do you know the nozzles are fouled? FAMOS-DVR reconciles the plant data using a combination of mass and energy balance and process calculations, resulting in quick detection of nozzle fouling and issues with other plant calorimetric instrument inputs.

FAMOS-DVR provides correction factors to the feedwater flow measurements resulting in recapture of lost generation and quick return on investment.

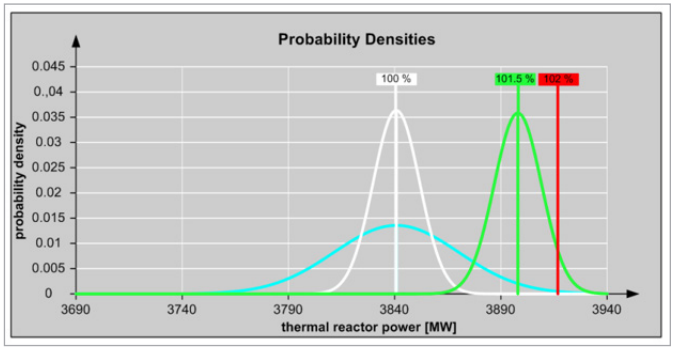


Graph illustrates a 4-5 MWE increase in generation after applying FAMOS-DVR correction factors.

Measurement Uncertainty Recapture (MUR)

The Curtiss-Wright team has worked with the Electric Power Research Institute (EPRI) to create Topical Report (TR) No. 3002018337 on the use of DVR. The goal is to increase reactor power output by up to 1.5% (10-15 MWe) through measurement uncertainty recapture (MUR) in nuclear power plants.

The investment in FAMOS-DVR can provide *full recovery and maximum exploitation of the MUR potential*. Models created by less experienced modelers can lead to irretrievable financial losses and potential conflicts with nuclear regulatory authorities.



Graph illustrates a 1.5% increase in thermal power supporting an MUR with FAMOS-DVR.

The highest quality of reconciled data for MUR is provided in an environment that U.S. nuclear power plants are accustomed to and trust.

FAMOS-DVR provides:

- Power recovery with reconciled correction factors
- MUR based on EPRI Topical Report
- Component monitoring with the possibility to extend maintenance intervals
- Measurement monitoring with the possibility to extend maintenance intervals
- Increased plant safety

Curtiss-Wright will support participating utilities by preparing the license amendment request (LAR) and responding to the conditions stated in the NRC Safety Evaluation, as well as providing technical support with the implementation of the MUR in the FAMOS-DVR system.

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