Metris
ANDRITZ Digital Solutions

AUTOMATION & DIGITALIZATION

METRIS OPERATOR TRAINING SYSTEMS

SOLUTIONS FOR PULP AND PAPER INDUSTRY

ANDRITZ

ENGINEERED SUCCESS

Reduce the risk to your people, your equipment, and your investment

In every industry, in every business, there is risk. Operational readiness ahead of your schedule by predicting the operations risks is what the Metris IDEAS simulation solutions is all about. Metris IDEAS is a leading dynamic simulator for Pulp and Paper industry operations that helps customers to save time, money, and resources.

LEADING THE WAY

Metris IDEAS is more than just a cutting-edge simulation platform. It is supported by a team of development engineers and process experts who have years of hands-on experience at Pulp and Paper operations around the world. We bring the power of Metris IDEAS right to your site, no matter where it is in the world. Our global, industry-specific experience means we understand your issues and can provide you with solutions efficiently.

HOW METRIS IDEAS CAN HELP YOUR PROJECT

We are dedicated to working with you to help you harness the power of Metris IDEAS. With your vision and our technology, the possibilities are limitless. We build process models of your facility based on asset-specific engineering information such as P&IDs, pump curves, and other key components of the process. We then connect these models to an offline version of the actual control logic. Months before start-up, we run a simulated start-up and then verify and correct control logic against this "virtual plant." The models are used for operator training.

BENEFITS

- Test and verify design concepts, quickly, at low cost and low risk

- Stage, test, and validate control logic to achieve faster start-up and increase return on investment

- Train operators without risking their safety or plant equipment

KEY AREAS OF PROJECT DEVELOPMENT

PROCESS DESIGN
Metris IDEAS enables you to test and verify design concepts and process control logic quickly, and at low cost and low risk.

CONTROL LOGIC (DCS)
Stage, test, and validate control logic with Metris IDEAS. Identify and correct errors to achieve a faster, smoother start-up.

OPERATOR TRAINING
Provide your operators with realistic, hands-on training modules to reduce risk to your operators and your equipment.

Design a process and know it works before you decide to commit capital

Metris IDEAS is a quick and powerful solution that will enable you to dynamically model a complete Pulp and Paper project. During the process design phase, Metris IDEAS helps you create a "virtual process" environment in which process designs, modifications, and retrofits can be fine-tuned and verified faster than in real time and well before you commit to any capital costs.

Metris IDEAS is the world's leading high-fidelity process modeling and simulation software. Metris IDEAS offers comprehensive features right from the conceptual design phase to many avenues of a project, such as feasibility studies, basic and detailed engineering, DCS checkout- verify control logic, DCS pre-setup and testing, and operator Operator Training Simulation (OTS), accelerating the project to achieveoperational readiness.

SIMULATION CAPABILITIES
The Metris IDEAS simulator is designed to solve complex engineering problems such as:

- Design and size new process equipment
- Predicting control or process response
- Predicting interaction with other equipment
- Designing control logic
- Increasing product quality

Metris IDEAS includes Chemical Unit Operations and Pulping libraries that enable users to simulate a conventional Pulp and Paper operation. These libraries feature a flexible and easily customizable database that contains the material properties for components and chemicals used in the Pulp and Paper industry.

MEETING USER NEEDS
Metris IDEAS software has the ability to perform the steady-state and dynamic mass and energy balance, track components, elements and chemicals, handles chemical element tracking, flexible and customize chemical reactions with accurate thermodynamic calculations for property predictions, etc.

MODELING AND ANALYSIS
Metris IDEAS has been used successfully to model complex plants that include di erent areas of the Pulp Mill's Recovery area (Recovery Boiler, Power Boiler, Evaporation plant, Recuast and Lime Kiln) and Fiberline (Woodyard, Cooking, Washing, Screening, O2 Delignification and Brown stock washing, stock preparation and Pulp Drying area, etc.).

Metris IDEAS acts as a superior tool for "what-if?" analysis of mill balance calculations and optimization. Steady-state models can link to operating costs, complex production logic, discrete simulation of discontinuous events, and to spreadsheets for dynamic exchange of data.

In addition, as the complexity of the project advances, steady-state models created in Metris IDEAS can be easily converted to a dynamic environment to include detailed specifications and process control logic.

BENEFITS

- **Create live process flow sheets**
- **Quickly determine flows and temperatures**
- **Help to verify the selection of process equipment**
- **Make economical design decisions**
- **Run What-if and Optimization Scenarios**

Verify that your complicated control scheme will run your plant correctly

Metris IDEAS is an effective solution for control logic verification. Using Metris IDEAS dynamic simulation, you can stage and test control systems quickly and accurately, reducing the steep curve to start-up.

Implementation of control logic is a difficult task, since the performance of the plant is not only dependent upon the electrical and mechanical components, but also on the control logic and the design concept used to control those components. That's where Metris IDEAS enters the picture.

APPLYING SIMULATION TECHNOLOGY
If the control logic cannot start a simulation, it will not be able to start the actual equipment. By using Metris IDEAS for control logic verification, you will reduce costly design errors that could otherwise delay start-up.

A HIGHER RETURN ON INVESTMENT
Studies have shown that using simulation to help with start-up can correct up to 82% of control logic problems before field implementation. The cost savings are enormous. Control logic verification translates into immediate savings through a smoother start-up and can easily realize a 200% or more return on investment.

EASY TO USE
Metris IDEAS communicates with all major PLC or DCS equipments. Using our OPC server, OPC client, or one of our custom communication drivers, Metris IDEAS makes the task of control system logic verification more manageable and consistent. In addition, new control logics can be tested and verified on the Metris IDEAS simulator while the actual plant continues to run without interruption.

EXPERT SUPPORT
The biggest benefit of using Metris IDEAS for your control logic verification is that our team works with you every step of the way.

Our experts travel directly to your plant site, anywhere in the world, and work directly with the equipment vendors, control company, and plant personnel during commissioning.

BENEFITS

- Detect and correct up to 82%of control logic errors before field implementation

- Achieve a quicker and smoother start-up and realize a 200% return on investment

Control logic verification with Metris IDEAS	DCS loop back	Metris IDEAS model
I/O and loop test	√	√
Process-wide logic test	x	√
Tuning constants known before start-up	x	√
Realistic process models	x	√ √
Remove control logic errors	x	√ √
Remove process intent errors	x	√ √
Verify advanced control logic	x	√

Train your operators and meet your start-up schedule

Metris IDEAS is an essential tool for operator training. It works like a flight simulator, allowing trainees to gain realistic, hands-on experience without inflicting harm to themselves, the environment, or the plant.

METRIS IDEAS INSTRUCTOR

The Metris IDEAS instructor module can help train operators months before the actual plant is up and running. It helps enhance the operator's skills— who will start up new processes faster, react more wisely to plant upsets, and be more productive.

Metris IDEAS instructor contains preconfigured scenarios that teach, train, and challenge trainees on process upsets, including two of the most intensive and complex procedures—start-up and shut-down. We can all imagine this scenario: a relatively new operator is on shift when there is sudden drop in the Recovery boiler drum level, loss of vacuum in the evaporation plant, or sudden drop in the Digester blow line flow.
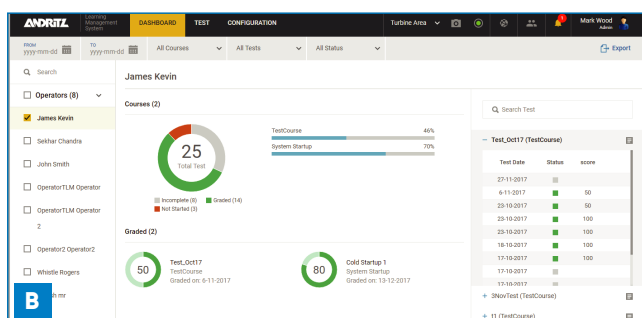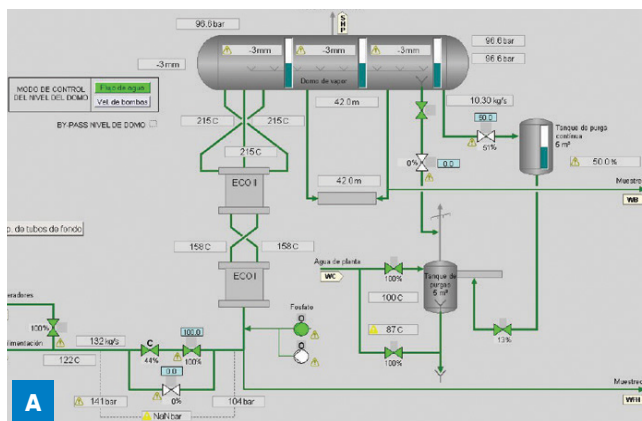
In most cases, such a scenario would have significant safety, environmental, or production consequences, but your new operator, who has practiced start-up and shutdown on the Metris IDEAS simulator, immediately makes the correct decisions and the operation continues without incident.

OPERATOR INTERFACE

The simulator allows the actual plant configuration to be loaded into the training system so that operators will be trained using the same interface (including the same logic, keyboard, and graphics) as the actual plant. The simulator enhances the learning process by actively involving the operators and providing immediate feedback without risk to production.

INSTRUCTOR INTERFACE

Metris IDEAS instructor software enables you to track individual employee performance, including login and fault scenario management. The operators' performance in executing start-up, shutdown and normal operating procedures is assessed by tracking selected process variables (for example, temperature, pressure, and flow).

A The view from the simulator is identical to the actual DCS screen.
B A screen shot from Metris IDEAS instructor demonstrates the easy-to-use interface.

BENEFITS

- Teach plant operators safely and reliably

- Have personnel practice intensive and complex procedures

- Monitor trainee progress and assess performance

- Standardize and create consistent training

Realize the net best present value on your capital project

Metris IDEAS is the leading simulator for the Pulp and Paper industry all over the world and has become the simulator of choice for the Pulp and Paper industry.

SIMULATION EXPERTS

We can model any vendor equipment and are able to communicate with every DCS supplier. Your operators train on the same human machine interface (HMI) and logic which they will use in the actual plant.

REALISTIC PROCESS MODELS

Metris IDEAS has realistic models, based on first principles of chemistry and physics, to accurately represent your process. Metris IDEAS allows you to model your plant or process at a micro or macro level of fidelity, depending on your needs.

SMOOTH START-UP

Metris IDEAS catches hundreds of errors in control logic before start-up, which means your plant achieves production on—or ahead of—schedule.

ON-SITE IMPLEMENTATION

Our personnel include experienced Pulp and Paper project managers who understand your industry. We travel directly to your site to work with vendors and control suppliers during commissioning.

RISK-FREE TRAINING

The Metris IDEAS instructor module allows staging and operator training to take place in complete safety, without risk to your employees or the environment.

ONGOING BENEFITS

Since Metris IDEAS is modular and scaleable in design, many plants continue to use the simulator past start-up for a variety of applications, including process design and training of new operators.

RETURN ON INVESTMENT

The Metris IDEAS simulator acts as a virtual plant that will help pinpoint plant production improvements and shorten projected start-up dates. In many cases, the Metris IDEAS return on investment has been over 200%.

INCREASE YOUR REVENUE

Sample calculation showing return on investment of simulation on start-up

Start-up tonnes/month		Months		Additional Revenue
60,000	x $400	x 5	x 17% =	$20,400,000
	Incremental $/tons		Additional production (%)	

WHY WORK WITH ANDRITZ

For over 20 years we've been providing modeling and Operator Training Simulation (OTS) services to customers across a variety of different industry verticals, offering our customers proven OTS solutions that enable them to achieve their operator training objectives. We can connect our clients with any third-party DCS vendor, as well as develop software, offer flexible commercial models, and provide technical support 24/7 thanks to our global presence.

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