



AUTOMATION  
IDEAS VIRTUAL  
INSTRUMENT  
SLURRY/DENSITY FLOW

**INDUSTRY-LEADING TECHNOLOGY**

The IDEAS virtual instrument provides flow and slurry density in real time and is a proven back-up in cases where it is not cost effective to install a physical instrument in the field. Our virtual instrument is based on our IDEAS dynamic simulation technology,

which has a proven 25-year record of providing accurate simulations. Our models use the actual engineering dimensions of your plant (its pump curves, pipe diameters, elevations, etc.) to produce a digital version that behaves realistically under all operating conditions. We read pump power,

pump speed and discharge pressure to synchronize the state of our model with the plant in real time. The physical realism of our model enables us to output slurry consistency and flow.

**ANDRITZ**

**ENGINEERED SUCCESS**

# A reliable alternative for online slurry measurement

## BACK-UP INSTRUMENT ENABLES AUTOMATIC CONTROL

If the field instrument malfunctions, the virtual instrument provides a reliable fallback measurement for automatic control. Under normal conditions, the IDEAS virtual instrument matches the flow or density measurement with less than a 5% root mean squared error. However, density instruments notoriously perform poorly under a variety of conditions including low densities and empty pipes, which can result in a complete loss of calibration. In such cases, control reverts to the virtual instrument, allowing loops to stay in automatic control.

## NO FIELD INSTRUMENT REQUIRED

Unlike typical soft sensors or big data

approaches, our instrument does not need to learn the process. The IDEAS virtual instrument relies on the current state of the plant; no historical data is required. It can provide accurate density measurements without a field instrument. Wherever there is a pump with discharge pressure measurement and normal electrical feedback, an IDEAS virtual instrument installation can provide information on flow and consistency.

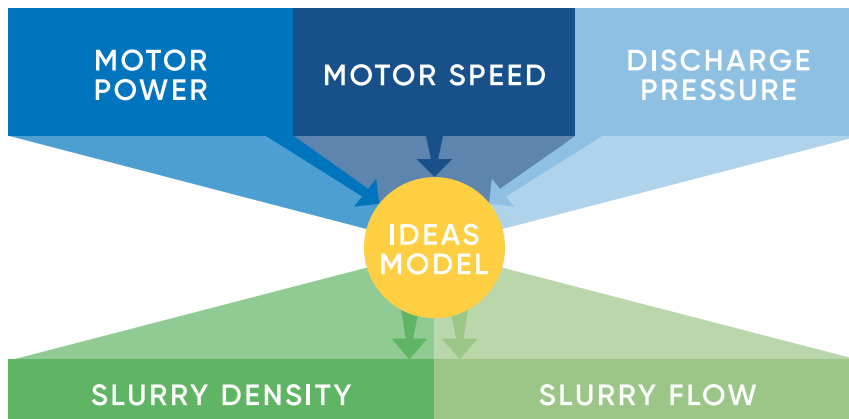
## PROCESS DIAGNOSTICS

We monitor the short- and long-term relationship between the physical and virtual measurements. Any change to the relationship signals a change in the plant equipment. Short term, this could indicate a sudden pipe

obstruction, whereas a long-term drift could indicate pump impeller wear. This additional layer of information provides important alerts to plant maintenance personnel.

## WHY A SINGLE INSTRUMENT?

One virtual instrument installation can provide many density/flow measurements at the same time, providing fallbacks to key control measurements while offering additional information on other streams that improve the material accounting throughout the concentrator. The IDEAS virtual instrument is easy to deploy and is regularly monitored to maximize its value to your operation.



## BENEFITS

- Online back-up of field measurements
- Density measurement anywhere a pump measures power, speed and discharge pressure
- Automatic identification of equipment problems
- Easy installation on one PC

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