



# CASE STUDY

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# CASE STUDY - BRAZILIAN GOLD PROCESSING PLANT

## Introduction

This is a project that took place at a gold processing plant in Brazil. After the ore extraction at the mine, the material is compacted in a grinding circuit (comminution), the initial stage of their wet processing plant. The first stage of the wet-process after the comminution is the hydrocyclone classification. The hydrocyclone battery used in that site rely on having the density always at the target setpoint. Therefore, they must measure and control the density in real-time at that application since it's essential for the process stability.



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Metallurgy Management

## Challenges

- To optimize the process control through density data obtained in real-time
- To improve efficiency and control of the hydrocyclone battery (classification)
- To calculate the mass of slurry produced in the grinding circuit
- To use reliable, non-nuclear density measurement technology

## Process Data

Cyclone feed: classification  
Ore: Gold (Au)  
Tank material: Carbon steel  
Solids: 60 wt%  
Density: 1,5 – 1,65 ton/m<sup>3</sup>  
Temperature: 25°C – 35°C

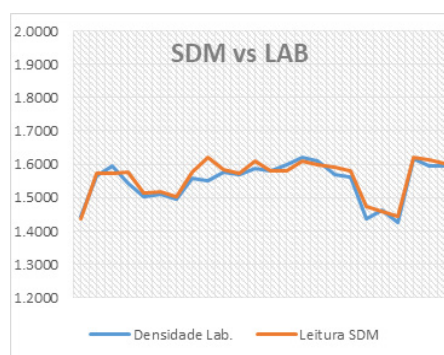
## Instruments used

Rhosonics Slurry Density Meter (SDM). The SDM was side-mounted to the hopper that feeds the hydrocyclone classification. The SDM is IP68, which makes it robust enough to withstand the harsh conditions of the installation environment.

## Our solution

The SDM measures density in real-time (online), directly in-line or in tanks, making it ideal for process control. The analyzer provides reliable, stable and accurate measurement, by using technology that is not harmful to operational health and safety. The SDM is easy to calibrate (one point: slurry) and does not require operational licenses related to radiation protection and safety.

## Measurement data



## Measurement accuracy

The commissioning and calibration of the analyzer was performed by the mine personnel, with support from Yellow Solutions (local representative). The SDM measurement results were validated and compared to laboratory analysis results. The graph shows the density values measured by the SDM compared to laboratory values, in the period after calibration.

## Results

The SDM analyzer went into operation in 2018, and has since then been meeting the measurement needs for operational control of the classification stage at the client's mineral processing plant. The process and operation teams are satisfied with the results obtained via the SDM, and its easy calibration.

The SDM contributes to:

- Real-time density measurement and monitoring, through ultrasonic technology
- Allows the calculation of production (mass flow)
- Detects process changes “online”
- Allows process control to reach density and production targets
- Eliminates costs associated with operating licenses, transport and disposals



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