

## ONE PROCESS IMPROVEMENT

### Reliable Pulp Level Measurement Starts with Reliable Measurement

#### Why measurement stability matters in flotation control.

In a flotation circuit, process control depends on reliable information.

Pulp level is one of the variables that needs to be monitored and controlled consistently. But in a flotation cell, measuring the pulp/froth interface is not always as straightforward as measuring a simple liquid level.

The challenge is not necessarily the measuring range.

The challenge is identifying the actual pulp/froth interface under changing process conditions.

#### THE PROCESS CHALLENGE

A flotation cell contains a pulp or slurry phase below a froth layer.

The interface between these two phases is important because changes in pulp level can influence the operation of the flotation circuit.

However, the conditions around that interface are constantly changing.

Froth characteristics can vary.

Slurry density can change.

The amount of water and slurry held within the lower part of the froth can change.

These changes can make the interface less distinct and more difficult to measure consistently.



This creates an important process-control question:

*Are we controlling the process using a measurement that accurately represents the actual pulp level?*

## **WHY CONVENTIONAL MEASUREMENT CAN BECOME DIFFICULT**

Different measurement technologies respond differently to changing flotation conditions.

### **Mechanical devices**

Float-based measurement devices can be affected when solids accumulate on the measuring mechanism.

The added weight can cause the float to sit differently in the slurry, while mechanical components can also become restricted or jammed.

### **Pressure differential measurement**

Pressure-based devices measure the weight of the slurry above the measurement point.

When slurry density changes, the measured pressure can change even when the actual pulp level has not changed.

This means a change in % solids can appear as a change in level.

### **Froth conditions**

The froth itself creates another challenge.

Fine bubbles rising through the flotation cell can carry slurry into the lower froth layer. As the bubbles rise and coalesce, some of that slurry drains back into the cell.

The amount of slurry held in the lower froth can therefore vary considerably.

This can make the pulp/froth interface difficult to define consistently.



## THE PROCESS IMPROVEMENT

The starting point is to look at the measurement itself.

Instead of asking:

“Which level instrument should we install?”

Ask:

“What exactly are we trying to measure?”

If the objective is to control pulp level, the measurement technology needs to reliably identify the point where the pulp ends and the froth begins.

That is particularly important when flotation conditions are variable.

A measurement that remains representative of the actual process provides the control system with better information.

Better information supports better control.

And better control can contribute to more consistent process operation.

## A DIFFERENT APPROACH

The **LTM-2** approaches the problem by measuring the pulp/froth interface using **conductivity**.

The probe is sensitive enough to measure at very low slurry concentrations.

This allows the interface to be identified at the point where there is insufficient slurry present to conduct an electrical current.

The result is a measurement principle specifically suited to identifying the pulp/froth interface rather than relying on slurry weight or a mechanical float position.

The **LTM-2** has been used in column, bank and tank flotation cells and has also been tested in sump applications.



## THE TAKEAWAY

Reliable process control starts with reliable process information.

When measuring pulp level in flotation applications, changing density, solids and froth conditions need to be considered when selecting the measurement technology.

## Before changing the control strategy, look at the measurement.

*Is the instrument measuring the variable you actually need to control?*

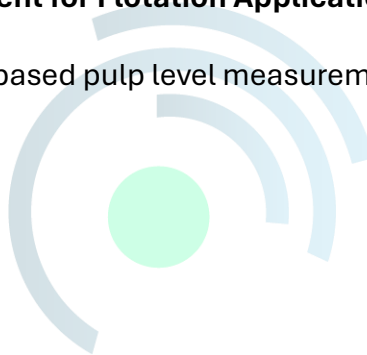
## LTM-2

### Pulp/Froth Interface Measurement for Flotation Applications

The LTM-2 provides conductivity-based pulp level measurement for demanding flotation applications.

#### Applications include:

- Bank flotation cells
- Tank flotation cells
- Column flotation cells
- Sumps



For technical information or application guidance:

Contact Instek Control (Pty) Ltd

Helping Industry Measure. Control. Improve.

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*Technical information based on LTM-2 manufacturer's published measurement and application information. Application suitability should be confirmed for the specific process conditions.*

