

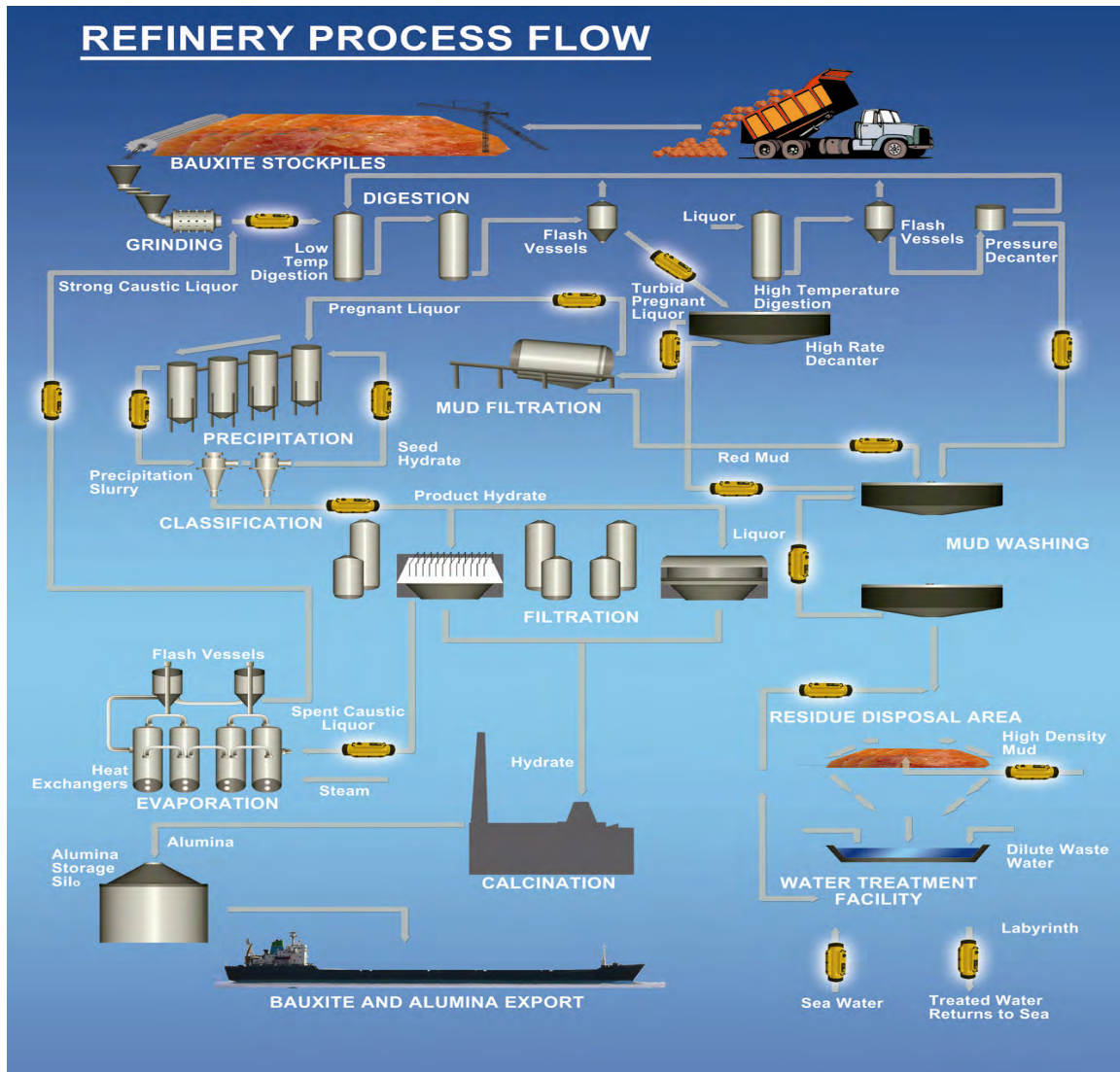


CiDRA Minerals Processing -alumina refining process solutions

- **The only guaranteed volumetric flow and gas volume fraction solution**
- **Improve material balance accuracy and reliability**
- **Immune to scale build-up**
- **No maintenance requirements and no flow measurement downtime**
- **Eliminate human intervention in potentially dangerous liquor and slurry applications**
- **A breakthrough in process measurement technology**

CiDRA Minerals Processing

-alumina refining process solutions



Applications for SONARtrac Technology – Alumina Refinery

- Low Temperature Digestion Feed
- High Rate Decanter Feed Lines
- Red Mud Lines
- Residue Disposal Lines
- Pregnant Liquor Lines
- Precipitation Slurry Lines
- Seed Hydrate Lines
- Product Hydrate Lines
- Liquor Lines
- Spent Caustic Liquor Lines
- Seawater Flows

CiDRA Minerals Processing

-alumina refining process solutions

The *SONARtrac* clamp-on system provides a non-intrusive, on-line, real-time measurement of the volumetric flow and amount of entrained air/gas present in any liquid-continuous-phase process fluid. The system also provides a measurement of only the liquid portion of the flow by compensating for the amount of entrained gas/air in the process line.

SONARtrac Process Monitoring Systems have been installed in alumina refineries around the world including the U.S. and Australia.

These companies continue to take advantage of the many value propositions this device provides:

- Accurate/repeatable low-life-cycle-cost volumetric flow
- Enables accurate mass balance in the presence of air
- Immune to scale build-up
- No maintenance requirements and no flow measurement downtime
- Eliminate human intervention in potentially dangerous liquor and slurry applications
- Improved tailings/pipeline pump efficiency
- Pipeline leak detection and monitoring
- Pipeline product identification
- Pump monitoring and rock/ball detection



SONARtrac Process Monitoring Systems, sonar-based clamp-on technology for the most challenging processes.

CiDRA Minerals Processing -alumina refining process solutions

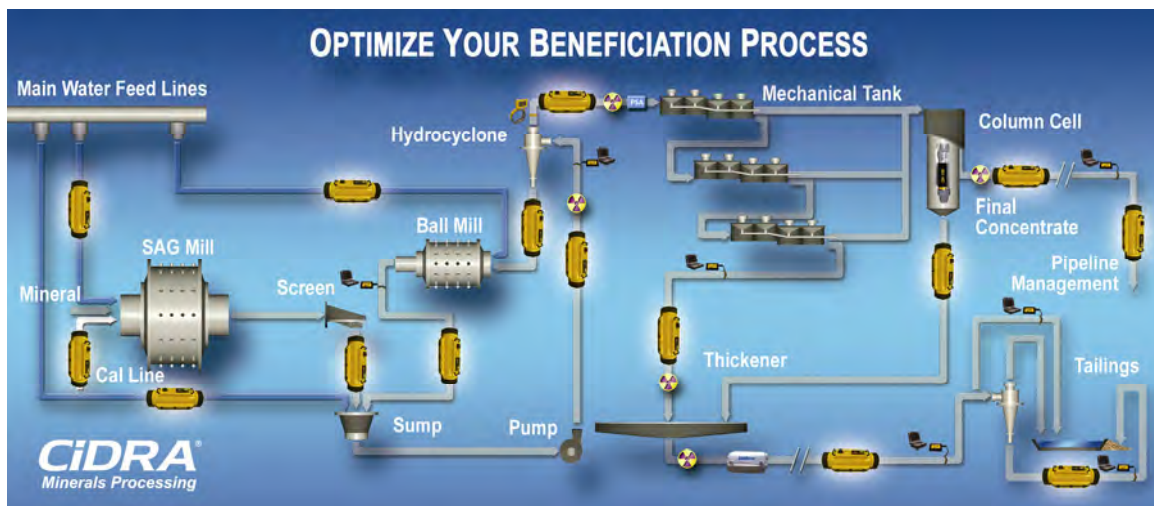
SONARtrac® Volumetric Flow & Gas Volume Fraction Monitoring Systems

Achieving a high level of process control without significant human labor requires instrumentation that is precise, reliable, and robust. Non-intrusive, volumetric flow technology, that is immune to scaling effects, eliminates human interaction in potentially dangerous liquor and slurry applications.

SONARtrac clamp-on system allows on-line real-time measurement of the volumetric flow and amount of entrained air/gas present in any liquid-continuous-phase process fluid.

Immune to refinery scale, SONARtrac systems have no maintenance requirements and no flow measurement downtime.

General Applications for SONARtrac Technology Beneficiation Process



- Pregnant Leach Solution Lines
- Raffinate Lines
- Hydrocyclone Feed Lines
- Hydrocyclone Overflow Lines
- Hydrocyclone Underflow Lines
- Water Feed Lines
- SAG Mill Discharge Lines
- Ball Mill Discharge Lines
- Water Recovery Lines
- Tailings Discharge Lines
- Flotation Feed Lines
- Tanks/Column Cells (Gas Holdup)
- External Sparger Lines