

The Thermo Scientific AnStat-200 offers a unique integration of reliable, representative sampling and accurate elemental analysis of crucial process slurry streams. It provides period composite samples for metallurgical accounting. The continuous in-stream analysis allows plant operators to follow and respond to process trends in real time. This enables improvements in accountability, process efficiency and profitability.

Thermo Scientific AnStat-200 Slurry XRF Analysis and Sampling Station



Flotation Circuit Monitoring

- Tailings losses
- Concentrate grades
- Key impurity levels
- Head grade variations
- Feed control



Optimizes

- Reagent dosage
- Flotation air
- Water balanced flows
- Feed tonnage
- Sampling accuracy
- Process control
- System availability
- Metallurgical accounting

The Thermo Scientific AnStat-200 analysis and sampling station is a dedicated, immersion probe-type analyzer mounted in a representative, full-flow sampling station (the Thermo Scientific SamStat). It provides simultaneous analysis of up to 20 elements and percent-solids while providing shift composite samples suitable for metallurgical balance. Elements in the periodic table from Ca and higher can be analyzed using the X-ray Fluorescence (XRF) technique, which is a proven and robust technology for plant environments. Excellent sampling and analysis allows manual or automatic process adjustments.

AnStat systems are successfully operating in many plants worldwide with slurry flows of up to 22,000 m³/hr.

Measures and Reports

- Up to 20 elements (Ca and higher) simultaneously and percent-solids, with an update time of one minute
- Period averages: minute, hourly, shift, day
- Trends and historical data logging
- Statistically correct period composite samples for metallurgical accounting

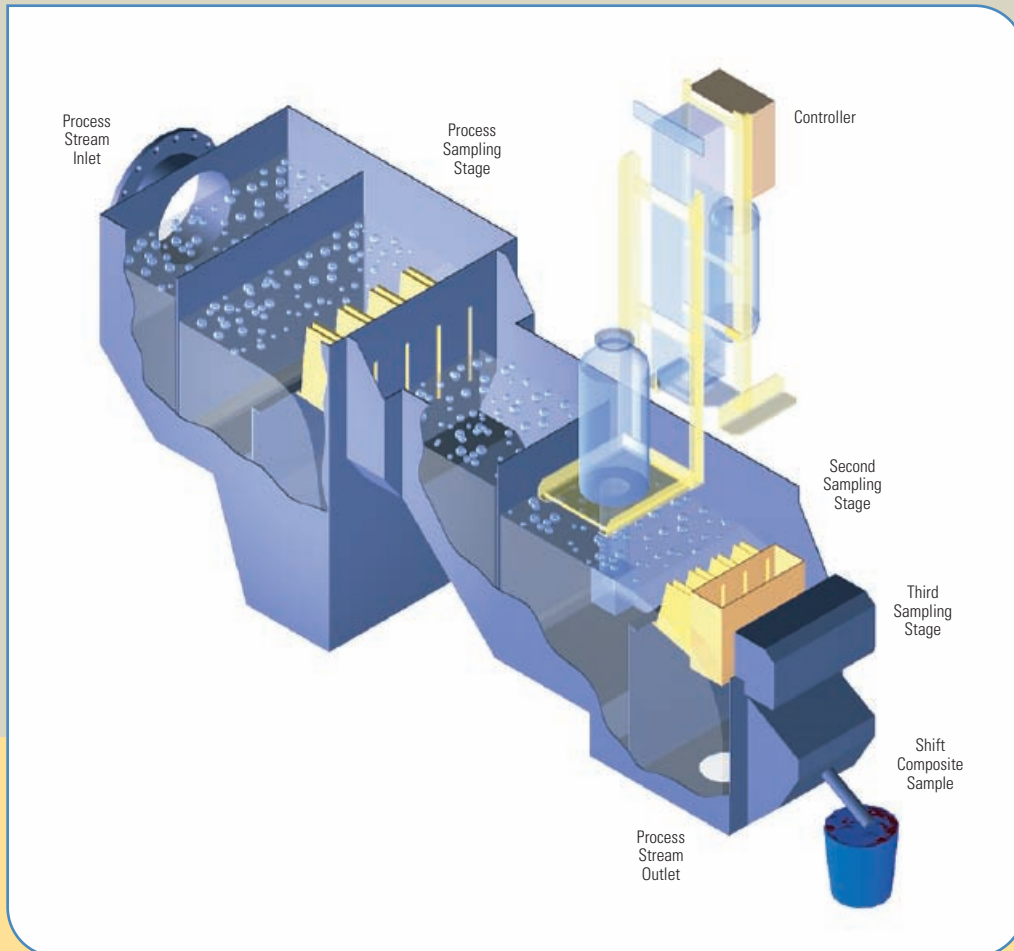
The Thermo Scientific AnStat-200 analysis and sampling station provides the following features and benefits:

- Sampling is continuous and proportional. This means that the sample truly reflects process variability, both in terms of the amount sampled and the frequently encountered cyclical variations in time. These are major advantages over conventional intermittent sampling systems that require complicated, in-plant time/variographic studies to ensure a representative sample is taken.
- A final stage cross cut sampler is located at the outlet of the analysis tank for calibration and metallurgical sampling.
- AnStat-200 systems can be designed for new plants or retrofitted to existing operations.
- With the lowest slurry head loss of any available metallurgical sampler, the AnStat-200 does not require pumps or sample transport lines. This minimizes capital and operating costs.
- Highest availability analysis/sampling system in the industry.
- Low head loss can equate to lower plant elevation and significantly reduced construction costs.
- Compact, multiple stages can be sized to handle any flow rate (available in one to four stages as a function of the flow rate).

Further advantages making the AnStat-200 the equipment of choice for operations include:

- Flange-to-flange supply offers savings in engineering design and construction costs for new plants.
- Kits of key components can be supplied, allowing local fabrication of steel tanks.
- Low flow velocity means less wear and fewer maintenance requirements. The static cutters are made from wear-resistant material and have a typical life expectancy of greater than four years.
- Open, visible system permits easy performance monitoring.
- Cutters are replaceable online.
- Accurate calibration and check sampling is achieved as the sample taken corresponds exactly to the analysis period. (The sampler is controlled by Thermo Scientific proprietary software on a dedicated server computer.)

AnStat-200 Slurry XRF Analysis and Sampling Station



Engineered Solutions and Options

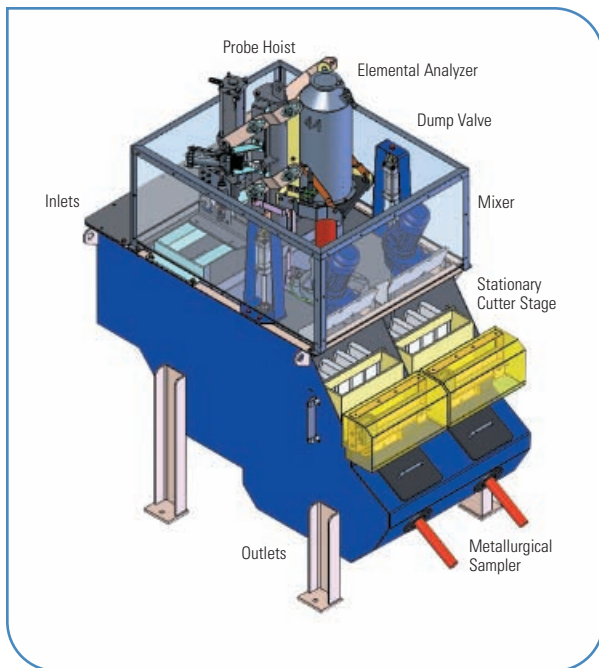
- The AnStat tank can be utilized for collection and distribution of process streams. Reliable, pneumatically actuated dart valves are employed.
- Completely engineered solutions are available for cyclone overflow by incorporating the Thermo Scientific particle size monitor.
- Built-in, flexible screens with automatic dump valves can provide rejection of oversized tramp particles.
- Systems handling up to 80 m³/hr can be skid-mounted for easy relocation and testing.
- The AnStat(D)-200, a duplex model with a single analysis probe for two critical streams, is also available. This is the cost-effective solution for two distinct streams in close proximity that require representative sampling and fast update times, such as parallel rougher lines.

AnStat-200 Improvements

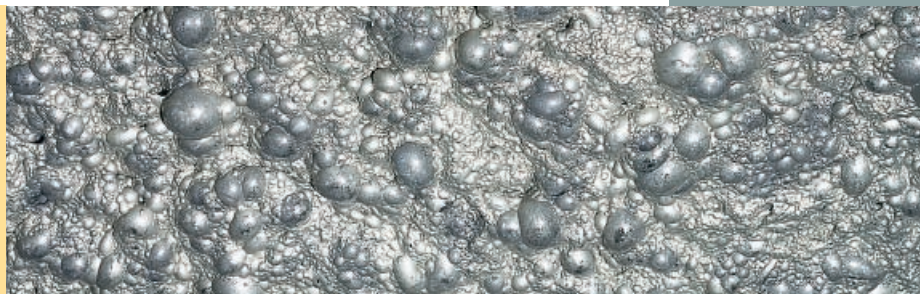
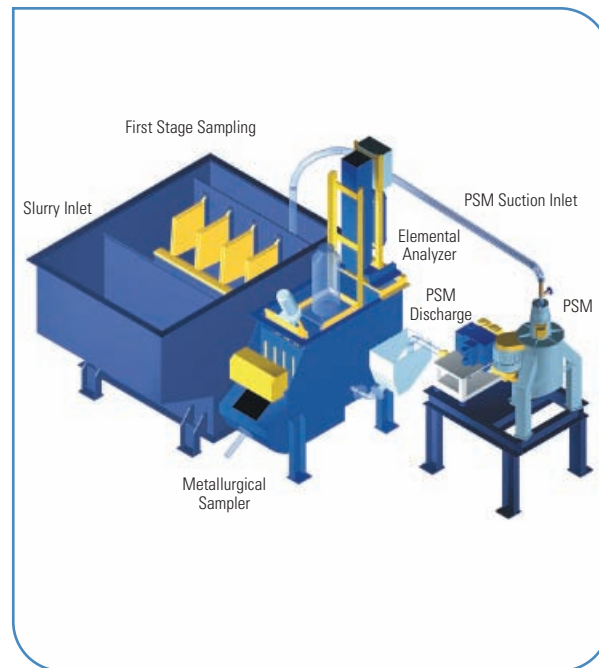
The AnStat-200 incorporates the most recent improvements in detector and electronics design. The proven and reliable AnStat system now has full digital signal processing. This technology enables the use of spectral processing, which will further improve accuracies in certain applications. Remote diagnostics down to the detector level are possible, allowing us to provide superior accuracy and serviceability. Higher count processing rates significantly improve accuracies as well. Plus, all system settings and configurations can be made from the central PC. All of these factors add up to increased reliability and an even quicker pay-back on your new or upgraded system.



AnStat(D)-200 Slurry XRF Analysis and Sampling Station — Dual Stream



Integration of AnStat-200 and PSM-400 MPX Particle Size Analyzer: Suitable for cyclone overflow streams combining elemental analysis, metallurgical shift sampling and particle size analysis



Thermo Scientific AnStat-200

General Specifications

Number of Streams	One (dedicated continuous analysis) or two for duplexed solution
Analysis Update Time	Typically one minute
Detection System	Si (Li) solid state detector with electronic reset; LN ₂ – cooled; Typical resolution 140-160 eV
Measurement Capabilities	All elements with atomic number >20 (above Ca in periodic table)

Accuracy

Assay Range (% element by weight)	Relative Error (Use as guide only. Dependent on particle size, mineralogy and matrix variations.)
0.02-0.2	4-6%
0.2-1	3-5%
1-10	2-4%
10-80	1-2%

Design/Methodology	Sampler design proportional and continuous; Minimum of five vertical cutters sample homogenized stream at overflow weir; Minimum flow of 5% sampled at each stage
Capacity	Accommodates any flow rate (available in one to four stages, as function of flow rate); Standard tank widths and combinations used; Tank volume designed to ensure de-aeration of slurry prior to probe analysis zone
Electrical Power	Factory selectable 380/415/440/460 VAC ±10%, 3-phase, 48-62 Hz ±2 Hz (3-wire plus earth)
Power Consumption	Maximum 200 W electronics; 750 W stirrer motor
Air	Instrument-quality air; Clean and dry to 0.1 μ with dew point <+2°C (<+35.6°F); Pressure nominally 600 kPa (87 psi), ranging from 450 to 800 kPa (62-116 psi)
Air Consumption	<5 liters per day at working pressure; Secondary air filter built in

Radioisotope X-ray Source	Typical GBq	Activity	RWL (Recommended Working Life)
Cm-244	1.1-7	30-190 millicuries	10 years
Pu-238	1.1-7	30-190 millicuries	10 years
Am-241	0.1-0.7	3-20 millicuries	15 years
Cd-109	0.2-0.7	5-20 millicuries	5 years
Fe-55	0.4-1.8	10-50 millicuries	5 years

Communications Links	Internal: TCP; Options available External: OPC (TCP/IP); Modbus (TCP/IP) or Modbus serial (EIA RS-232, RS-422, RS-485); 4-20mA current loops
Off-Site Modem	One data-quality phone line or VPN internet link
MEP Weight (excluding hoist)	60 kg (132.3 lb)
MEP Hoist Weight	155 kg (341.7 lb)
AnStat-200 Controller Weight	88 kg (194 lb)
Metallurgical Sampler Weight	30 kg (66.1 lb)
Tank Weight	Varies with size and material from a minimum of 400 mm (15.75 in) wide, weighing 320 kg (705.5 lb) (empty)
Construction Materials/ Surface Treatments	Rubber-lined, mild steel tank (minimum thickness 6 mm of Shore A = 40 hardness rubber); Non-wetted parts dual coated with 100 micron epoxy base and acrylic finish; Polyurethane cutters; 316 stainless steel XRF probe; Other options available

Standards

Electrical Rating	IP66
Quality Assurance	Adelaide manufacturing facility ISO-9001:2000 certified

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