



Thermo Scientific AnStat-330

Online Sampling and Elemental Analysis Station

The Thermo Scientific™ AnStat-330 provides composite samples for metallurgical accounting while providing online elemental analysis. Options for additional process functionality, including distribution and pebble screening, make the AnStat-330 a versatile and compact solution that can address multiple needs.

Features:

- Advanced energy dispersive X-ray detector that does not require liquid nitrogen cooling
- Faster assay update rate
- Continuous minute by minute analysis
- High availability
- Low maintenance
- Accurate and reliable

The Thermo Scientific AnStat-330 is a single stream dedicated online slurry analyzer and sampling station. It features an integrated analyzer and a full-flow representative sampler, incorporating multiple stages to progressively sub-sample the slurry stream before delivering metallurgical accounting quality composite samples through a final stage metallurgical sampler.

The AnStat-330 provides minute-by-minute elemental assays for the slurry stream. It does not suffer from sample transport and stream cycle time delays and cross contamination associated with multiplexed analyzer systems. Instead, the dedicated and continuous in-stream analysis of the most critical process streams allows operators or expert systems to control the process and quickly respond to process upsets and changing conditions.

With exceptional availability, sampling precision and analyzer accuracy, the AnStat-330 is the highest integrity integrated sampling and analysis solution available in the industry.



Thermo Scientific AnStat-330

AnStat-330 Benefits

The AnStat-330 provides a window into your mineral separation processes. The system provides stable, accurate and reliable assays of core and nuisance elements in your slurry streams from Calcium (Ca) to Uranium (U). The quality of the information allows greater control of your process. When combined with experienced operators or an expert control system, the analyses from the AnStat-330 can be used to:

- Provide enhanced process control
- Improve efficiency
- Reduce energy consumption
- Improve metal recovery
- Optimize reagent consumption
- Minimize the amount of off-spec material in product.

AnStat-330 Application Example

As a system the AnStat-330 features a very low head loss whilst sampling the full flow of a process stream. When used on the most critical streams of your plant it ensures the fastest update time with maximum availability and the lowest combined sampling and instrument error in the industry. As such the AnStat-330 is especially suited to bank- by-bank rougher tails analysis where it's high accuracy and fast updates can help to minimize losses due to circuit upsets. As shown below, the design allows for very low head loss which can lead to significant concentrator construction cost savings while eliminating the need for dedicated sample pumps.

AnStat-330 Analysis - MEP-300 Multi Element Probe

The Thermo Scientific™ MEP-300 Multi Element Probe is a product of 45 years of experience with immersion probe based instream elemental analysis. It is the safest MEP ever with a retractable detector and source combining with a visual beacon to ensure no risk of radiation exposure for operators. The new detector attains higher count rates than previous generations

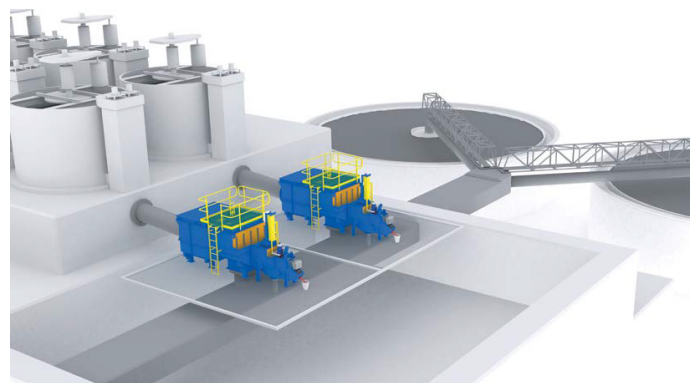
with a better than 400% increase in copper sensitivity (CuKa), resulting in exceptional instrument precision. Similar improvements are also realized for other base metals.

AnStat-330 Sampling

The AnStat is based on the 3rd Generation of the Thermo Scientific™ SamStat Slurry Sampling system. The SamStat is a sampling technology developed for easy and efficient installation into a modern processing plant. The flange-to-flange scope of supply delivers significant savings in engineering design and construction costs for new plants. The design has been iterated for over 20 years to provide the most reliable sample presentation of any online slurry analyzer.

The SamStat provides ideal slurry presentation to the MEP300 Probe and has demonstrated superior availability and reliability. The AnStat-330 requires no pumps or sample transport lines, minimizing both capital and operating costs. Special attention is paid to optimizing flow velocity for deaeration and wear while maintaining critical transport velocity for coarser particles.

Multi-stage sampling is both continuous and proportional, fully reflecting process variability. Available in a 1, 2, 3 or 4 stage system, the AnStat-330 has been successfully installed in mineral processing plants around the world, handling flows from 4 to 36,000 m³/hour where it delivers high availability and accuracy for both on-line assays and metallurgical accounting samples.



Thermo Scientific MEP-300

Hoist and Probe

- XRF immersion probe for elemental analysis
- Pneumatic hoist raises and lowers probe as required for window maintenance
- Local control panel includes safety lockout
- High visibility beacon provides easy to recognize operational status from a distance

Controller (not shown)

- Stainless Steel IP65 rated multi-agency certified
- Contains stirrer motor VFD and programmable sample timer
- Industrial computer and I/O platform

1st and subsequent continuous sampling stages

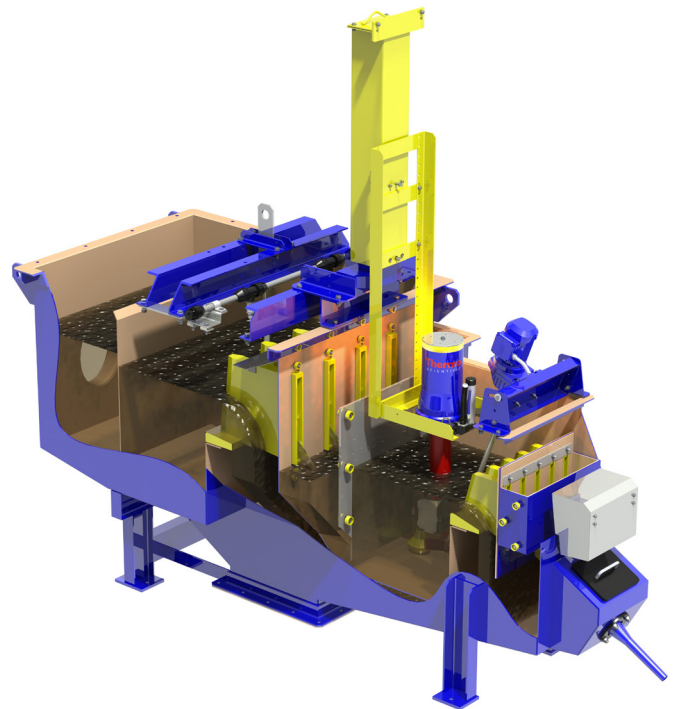
- Full process flow continuously sampled
- Each tank contains a baffle and weir to ensure mixing and correct presentation of sample to fixed cutters
- Effective de-aeration of slurry while maintaining critical transport velocities
- Single or multiple inlets
- Optional expanded de-aeration zone for high froth streams
- Pneumatic dump valve option allows remote and automatic operation
- Pebble screen option captures coarse oversize from cyclone roping events

Analysis Stage

- Variable speed impeller ensures optimal slurry presentation for XRF analysis over a wide range of flow conditions
- Improved impeller design and shaft sealing for increased service life
- Sample underflows reverse flow baffle creating an upwelling homogenous field for the XRF probe and ensuring representative calibration samples

Cross Cut Sampler

- A final-stage, cross-cut sampler is located at the outlet of the analysis tank for calibration and metallurgical accounting sample acquisition
- Environmentally hardened to minimise maintenance and maximise availability
- Tooth pulley belt with electric motor drive for constant speed to comply with best design practices for crosscut sampling
- Programmable sample intervals



Thermo Scientific™ AnStat-330

General Specifications

Analysis update time	Typically, 1 minute
Detection System	Silicon drift detector, Peltier cooled. Typical resolution 140-155 eV.

Accuracy

Assay Range (% element by weight)	Relative Error (Guide only)	Assay range (% element by Wt.)	Relative Error (Guide only)
0.05 to 0.2	4%-6%	1 to 10	2%-4%
0.2 to 1.0	3%-5%	10 to 80	1%-2%

Sampling – Primary Samplers

Design/Methodology	Sampler design is proportional with minimum fraction of 4% is sampled at each stage.
Sample flow rate	Accommodates any flow-rate (available in 1 to 4 stages, as a function of the flow rate).
Sampling – Final Stage	A small cross-cut sampler is installed to cut the final sample. This can be programmed to cut samples for calibration or shift samples

Utilities Required

Power (In-Plant)	Three Phase AC, 48-62 Hz. May be factory or field set (by changing transformer taps) to any international “standard” voltage in the range 380-600 volts. Voltage fluctuations should not exceed $\pm 6\%$ of the nominal voltage. Feed required: three wires + earth (no neutral).
Power Consumption	Approx. 800 W (including 550 W stirrer).
Air	Air Instrument air quality to ISO8573-1 Class 3,4,3 at all times (Max 3°C Pressure dew point). Pressure nominally 700 kPa (87psi) minimum 550 kPa, maximum 1000kPa. Minimum of 420 slpm @700kPa at air inlet of controller frame. Consumption of 180L/ min@700kPa at temp. of 30°C
Water (F Models)	Clean plant water, 12.7L/min per nozzle @ 300kPa (Max)
Communications	Ethernet TCP/IP: 100 MBps or greater. Optional Fibre Optic converter available.

Environmental

Temperature (Ambient)	-10°C to 55°C (measured at enclosure surface temperature, temperature to not exceed 55°C)
Temperature (Process Fluid)	0°C to 45°C, Check with factory for higher temperature options
Humidity	0 to 95% RH - non condensing
Vibration	<0.5G at installation tank supports
Dimensions and weights	Request installation drawing for specific equipment dimensions & weights

Compliance and Standards

Electrical Enclosure	IP65; SS31; CE; ICES 001, CSA, FCC Part 15B and RCM
Quality Assurance	Adelaide manufacturing facility ISO-9001:2000 certified

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