ADI

3000 SERIES

Automatic Analysis of Pickling Acids for Steel and Stainless Steel Processing

The ADI 3000 simplifies the complex process of analyzing chemical baths and generates an immediate return on investment by providing fast and reliable analysis of mixed acids (nitric/hydrofluoric), single acids (sulphuric/hydrochloric/phosphoric) and dissolved metals.

Fast

- Sample analysis completed in less than ten minutes
- No regular calibration required
- Results are automatically recorded for permanent record keeping

Simple

- Place sample in position, insert draw tube and start analysis
- Displays and interface in English and Chinese
- Compact, self-contained enclosure resistant to corrosive environments
- Analyzes and keeps records for 25 separate sources
- Records may be stored for more than one year
- System capable of archiving records to compact disc (CD)
- Can interface to the plant distributed control system (DCS)

Economical

- Eliminate costly replacements of electrodes
- Reduce use of consumable items and chemicals such as calibration solutions

Reliable

- Uses no special electrodes which require frequent calibration
- Maintains accurate, repeatable readings without regular calibration
- Eliminates variations due to operator error or judgement
- Allows measurement of dilute streams (APU waste or pickling rinsewater) without recalibration

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DESCRIPTION

Hardware

The analyzer can be placed on a desk, mounted on a wall or on a floor stand. It is normally installed in or near a control room, laboratory or quality control area.

The analyzer draws sample fluid into an analysis chamber where the properties of the solution are measured by a density detector and conductivity electrode.

A programmable logic controller (PLC) uses rugged level sensors to automatically control the sample volume, dilution and electrode rinsing. The measurements are transferred to a computer station (PC) which calculates the sample composition. An ISO reference solution* is provided to confirm analyzer accuracy.

The system's rugged density and conductivity sensors are more durable than other delicate probes that require frequent maintenance (such as pH or specific ion probes). The system does not require calibration, frequent replacement or regular cleaning.

Software

The ADI 3000 system is supported by a software package designed for ease of operation. The software and PC monitor also support a multi-language human-machine interface (HMI).

Initial set up includes entry of data on sample sources such as location, composition, volume and concentration limits.

During regular operation, the operator simply has to identify the sample source, initiate analysis and view results which are then stored in a database. Users can then tabulate and graph results over a desired period of time.

The system provides prompts for recommended actions such as acid addition or operation of a purification system (APU). The system can communicate analysis values or signals to a plant Distributed Control System (DCS) for records or control.

The ADI 3000 can be upgraded to the ADI 5000 (fully automated on-line analyzer) with the addition of an automated sample delivery system and upgraded software package.

Height - 915 mm

Width - 600 mm

Depth - 450 mm

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TOTAL SOLUTIONS

Upgrade to Fully Automated On-Line Analyzer

When frequent analysis and virtually continuous monitoring is required, such as for coil strip pickling lines, fully automated sampling is preferred.

A Model ADI 3000 can be upgraded to an ADI 5000 with the addition of an automated sampling module and upgraded system software.

Refer to the ADI 5000 Product Bulletin PB1002 for more details.

Model	Analysis	Sampling
ADI 3000	Automatic	Manual
ADI 5000	Automatic	Automatic

Advantages Over Competitive Systems

The ADI 3000 is the most advanced analyzer available for mixed acid pickling baths.

The major improvement is the analytical method which eliminates the need for sensitive and delicate probes for measuring pH or fluoride (specific ion probe), which require frequent calibration and replacement.

The ADI 3000 gives very stable readings, with no calibration required. Probe life has proven to be more than two years.

For a more detailed comparison, refer to technical bulletin TB1001.

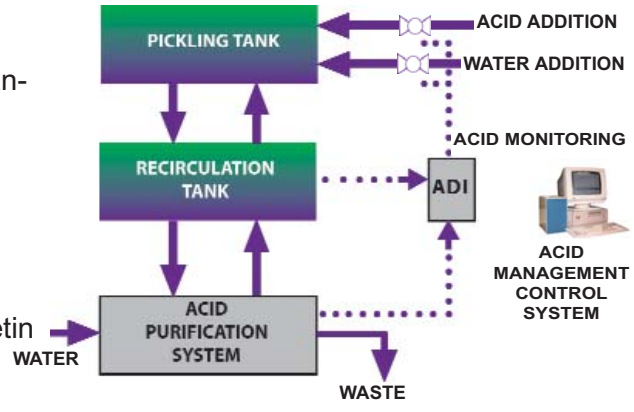
Complete Acid Management System

In addition to analyzers, Eco-Tec offers complete acid management systems. These systems feature Eco-Tec's Acid Purification Units (APU) which use resin sorption technology originally developed by Eco-Tec for mixed acid purification.

A complete Acid Management System provides:

- Continuous information and control of the pickling acid composition
- Automatic operation of purification system to control dissolved metal concentration
- Automatic acid and water addition to control tank levels and acid concentration
- reduced acid purchases
- reduced neutralization costs
- reduced nitrate and fluoride to effluent
- reduced maintenance for draining, cleaning and make-up of pickling tanks
- improved and consistent pickling product quality
- automated recording of pickling conditions

Refer to the Acid Purification Product Bulletin PB0402 for more details.



ADI 3000 SERIES

Analytical Capacity	Mixed Acid (HNO_3/HF)/metal, Nitric Acid/Metal, Sulphuric Acid/Metal (Fe^{2+}, Ni, Cr) Hydrochloric Acid/Metal, Sulphuric/ Hydrofluoric/Peroxide/Metal, Phosphoric Acid/Metal, dilute streams (APU and rinsewaters).	
Instrumentation Range	**Feed Samples**	
	H_2SO_4 (free)	2-250 g/L ± 5%
	HNO_3 (free)	3-200 g/L ± 5%
	HF (free)	1-60 g/L ± 5%
	Metals	0-50 g/L ± 5%
	Dilute Samples (e.g. rinsewater)	
	HNO_3 (free)	3-20 g/L ± 2 g/L
	HF (free)	1-6 g/L ± 0.5 g/L
	Metals	0-35 g/L ± 2 g/L
Tracking Capacity	23 source samples, 1 reference sample* and 1 manual sample.	
Software Capability	DCS interface included. Automatic link with APU, with optional Eco-Linc. Supports HMI interface.	
Measurement Time	7 to 10 minutes.	
System Components	Analyzer (DCS interface, sensors, controls), computer workstation (monitor, printer), ISO reference solution* and spare parts	
	**Reference sample (verified by Société Générale de Surveillance - Lakefield)*	

Service Requirements

Electrical	**Voltage**	110/220 Volts
	Phases	1
	Frequency	60/50 hertz
	Amps	5
Water	**Total Dissolved Solids**	< 1.0 mg/L
	Deionized water is preferred	
	Note: Potable water can be used but accuracy will be slightly reduced	
Reagent Consumption	Average ADI Reagent Consumption - 1.5 L/100 samples	

Represented By:

ECO-TEC Inc.
1145 Squires Beach Road, Pickering
Ontario, Canada L1W 3T9
Telephone: (905) 427-0077 Fax: (905) 427-4477
Email: ecotec@eco-tec.com

ECO-TEC (Europe) Ltd.
Unit 29C Ring Road, Zone 3, Burntwood Business Park,
Burntwood, Staffordshire, England WS7 3JG
Telephone: (44) 01543 683086 Fax: (44) 01543 674117
Email: ete@eco-tec.com

www.eco-tec.com

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