

## Product sheet

### RPA-5000

#### Residual Peroxide Analyzer

#### FEATURES

- Provides accurate results in as little as four minutes
- Wide range of measurement, 5-5000 ppm – no changes in instrument settings are required
- Selective – measures peroxide only

#### BENEFITS

- Environment-friendly since the catalyzer is non-hazardous
- Absolute-calibrated by the manufacturer for minimum calibration
- Sample composition does not affect the measuring process



#### GENERAL / BACKGROUND

The use of chlorine-free bleaching agents in pulp bleaching processes is steadily increasing. Peroxide is the most commonly used of these chemicals for bleaching kraft, mechanical and recycled pulps. Peroxide, however, is relatively expensive and, therefore, improved control of its use in the bleaching process is beneficial for optimizing operating efficiency and product quality. Measurement of peroxide residuals after bleaching, for example, is necessary for achieving better overall control of the bleaching process.

Residual peroxide content, which may vary from almost zero to several thousand ppm. It is normally determined in a laboratory by means of a titration method. Laboratory analysis is unsuitable for process control – the intervals between measurements are too infrequent, and furthermore, laboratory analysis requires the use of considerable resources.

The BTG Residual Peroxide Analyzer, RPA-5000, for continuous (on-line) monitoring of peroxide residuals, addresses these problems directly.

The RPA-5000 measures the residual peroxide content of a filtrate sample from a bleached pulp suspension. The sample can be extracted with a BTG filtrate sampler or directly from, for example, a press located after the bleach tower. The analyzer is also equipped with a laboratory vessel, which can be filled with a peroxide-containing solution for test.

The RPA-5000 works fast, providing measurements in intervals of as little as four minutes, and it is selective, measuring only peroxide. Its ability to provide accurate and reliable measurements is not affected by the composition of the sample. The instrument's method of operation allows for simple and reliable instrumentation and minimum calibration.



Use QR-code or link for more information  
[www.btg.com/mybtg/en/instruments/rpa-5000](http://www.btg.com/mybtg/en/instruments/rpa-5000)

### MEASURING PRINCIPLE / MEASUREMENT

The RPA measuring method takes advantage of the well-known fact that instability causes peroxide to decompose into water and oxygen under certain conditions, and that measuring the oxygen reveals the peroxide content of the sample. This method employs a catalyzer, is environment-friendly and independent of both pH and temperature. Thanks to the highly active catalyzer, the dosage is minimal, ~1.5 ml/measurement, which means that the catalyzer needs filling only every third week, or more seldom depending on the frequency of measurements. An automatic alarm releases when the catalyzer container is nearly empty.

Measurement of the oxygen, which is formed when the catalyzer decomposes the peroxide into water and oxygen, is carried out manometrically. The oxygen forces a corresponding quantity of the sample into the open measuring chamber, which is connected to the reaction chamber. The liquid level in the measuring chamber is therefore a measure of the peroxide content. The liquid level is measured by a pressure gauge placed at the bottom of the chamber. The measuring chamber is designed so that the level provides a logarithmic signal of the peroxide content. This means that the instrument can operate within a very extensive range of measurement and provide the same excellent accuracy without resetting or recalibrating the instrument.

### MEASURING SEQUENCE

The whole system is filled with filtrate (1). The measuring chamber (2) is emptied. After injection of the catalyzer (3), the filtrate is efficiently stirred. Oxygen is formed and forces a certain quantity of the filtrate into the measuring chamber. The measured pressure indicates the amount of peroxide in the filtrate (4). The system is emptied (5) and cleaned (6). The instrument is now ready for a new sample.

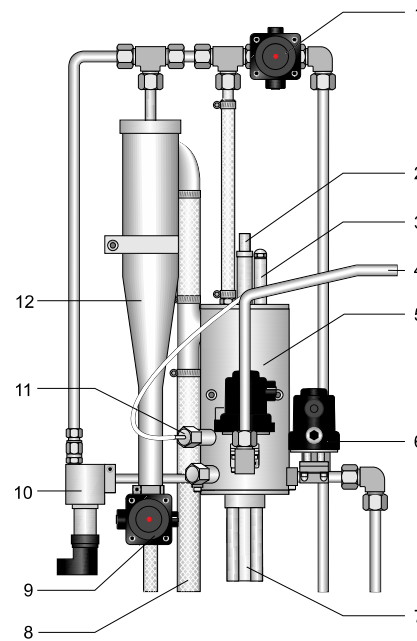


Figure 1: The wet part of the RPA-5000

- |                                |                        |
|--------------------------------|------------------------|
| 1) Water inlet valve           | 7) Agitating device    |
| 2) Air cylinder                | 8) Overflow            |
| 3) Optional pH electrode       | 9) Drain valve         |
| 4) Inlet for laboratory sample | 10) Pressure gauge     |
| 5) Reaction chamber            | 11) Catalyzer injector |
| 6) Sample inlet valve          | 12) Measuring chamber  |

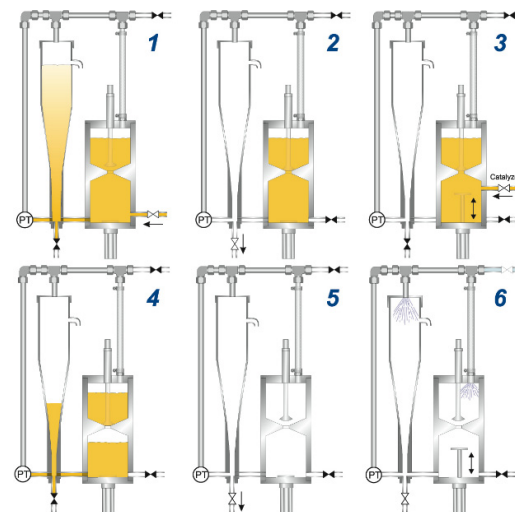


Figure 2: The RPA-5000 measuring sequence

- |   |                           |
|---|---------------------------|
| 1) Filling of filtrate sample               | 4) Measuring              |
| 2) Drainage of the measuring chamber        | 5) Drainage of the system |
| 3) Injection of the catalyzer and agitating | 6) Cleaning               |

## TECHNICAL DATA / SPECIFICATIONS

### GENERAL

<b>Type</b>	Residual Peroxide Analyzer, RPA-5000
<b>Manufacturer</b>	BTG Instruments AB, Säfte, Sweden
<b>Measuring principle</b>	By means of a catalyzer which de-composes the peroxide into water and oxygen. The oxygen content is measured manometrically.
<b>Measuring range</b>	5-5000ppm
<b>Accuracy</b>	± 5% ±10 ppm of measured value
<b>Ambient temperature</b>	10-45°C [50-110°F]
<b>Filtrate:</b>	
<b>Sampling point</b>	1 per system. The sample is extracted by a BTG filtrate sampler or directly from, for example, a press.
<b>Temperature<sup>a)</sup></b>	20-60°C [60-140°F]
<b>Pressure</b>	0.2-5 bar [2.9-70 psi]
<b>Minimum flow</b>	1 l/min [0.3 gal/min]. The sample flow should be set at 3 l/min [0.8 gal/min]. An accumulator tank is required if the sample is less than 1 l/min.
<b>Water supply</b>	Mechanically and chemically cleaned water, 100 microns. Regulated pressure 4-5 bar [60-70 psi], min. flow 10 l/min (2.5 gal/min) at a temperature of 10-50°C [50-122°F]

<b>Air supply</b>	Clean instrument air, dried and oil-free. Regulated pressure 4-5 bar [60-70 psi]
<b>Power supply</b>	110/230 V AC, 50-60 Hz, 200 VA
<b>Installation category</b>	III
<b>Material</b>	Stainless steel SS 2343
<b>Weight</b>	80 kg [176 lbs]
<b>Signals</b>	
Analog outputs	4 (0/4-20 mA), 4 galvanically isolated, resistance 50-250Ω
Analog inputs	2 (0/4-20 mA)
Digital outputs	4 internally supplied, 30 VDC 50 mA
Digital inputs	4 non-energized
Alarm	1 (relay 240 VAC/2A), normally open
Communication	RS 485
<b>Option</b>	pH measurement

### SAFETY & DIRECTIVES

#### Safety and protection class

Product safety	CE, C-tick, ETL
Protective rating	Equivalent to IP65, NEMA 4x

#### EU-directives

Designed in accordance with relevant CE standards.

#### Quality Assurance

Quality-assured in accordance with ISO 9001.

a) Hot filtrate requires a filtrate cooler

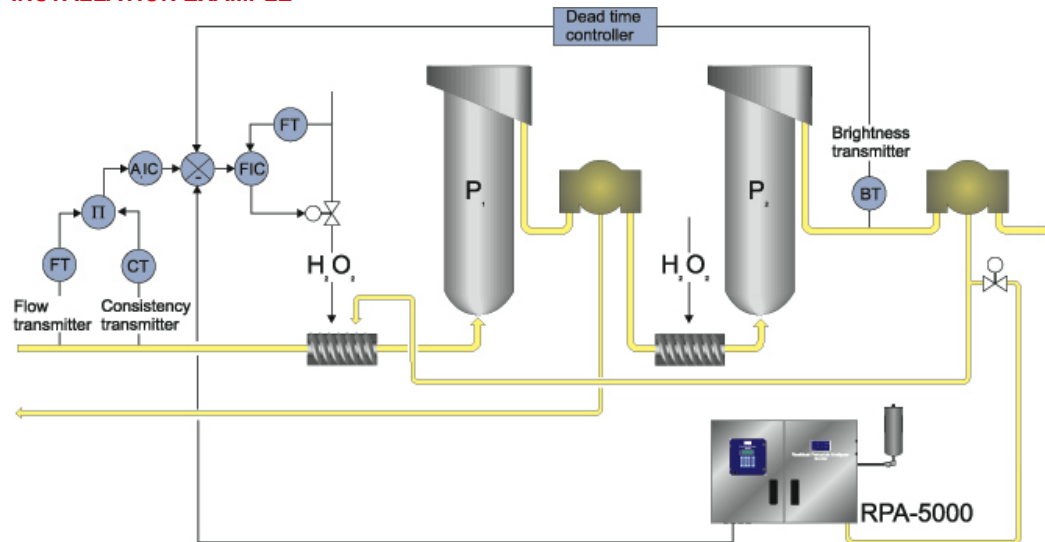
### YOUR LOCAL BTG OFFICE



Use QR-code or link for more information

[www.btg.com/en/contact/sales-service-network](http://www.btg.com/en/contact/sales-service-network)

### INSTALLATION EXAMPLE



### DIMENSION DRAWINGS

