

# MOISTURE IN ALCOHOL ANALYZER

Continuous reagent-free trace water measurement



QUALITY CONTROL

PROCESS OPTIMIZATION

EQUIPMENT PROTECTION



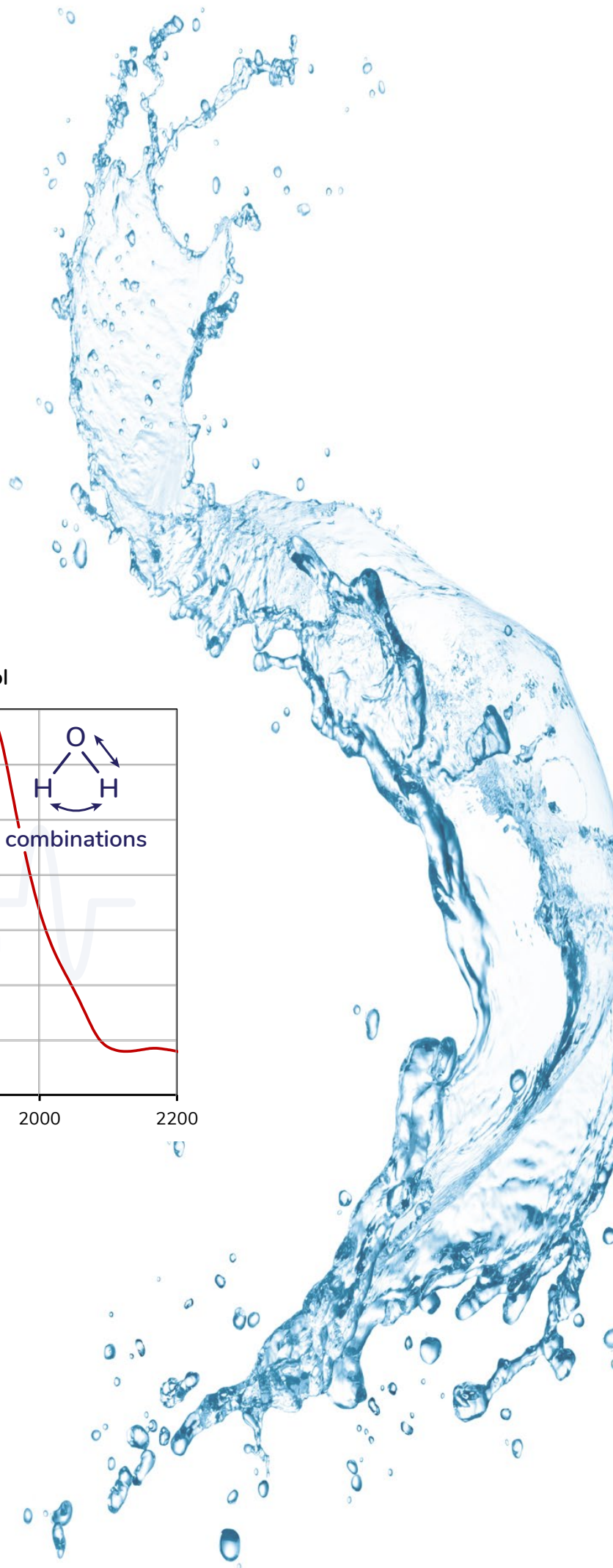




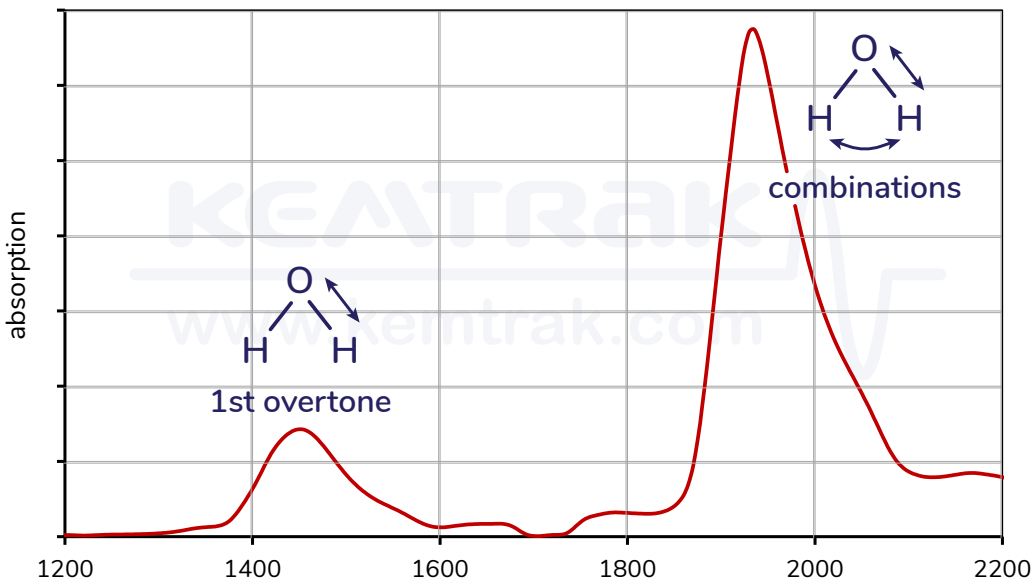
# TRACE WATER DETECTION

## BENEFITS

- 01 / Cost effective reagent free alternative to Karl Fischer titration
- 02 / Real time continuous measurement
- 03 / No drift and low maintenance. Robust NIR-LED process analyzer with wetted parts constructed from corrosion-resistant materials
- 04 / Pre-calibrated with effortless validation using a validation accessory
- 05 / Hazardous area use with EExD, IECEx & UL enclosures



2 000 ppm (0.2 %) Water in Ethanol



Water absorbs strongly in the NIR region which can be used to measure its concentration when dissolved in liquids such as alcohols. The vibration and stretching of the water molecule creates distinctive peaks of absorption that can be utilized to accurately measure its concentration using an NIR photometer.

Moisture detection comparison		
	Karl Fischer	NIR
<b>Sample handling</b>	Destructive	Non destructive
<b>In-line/Real Time Analysis</b>	No in-line option	In-line & continuous
<b>Maintenance</b>	High, reagents required	None, reagent free
<b>Measurement resolution</b>	1–5 ppm	±10 ppm
<b>Operational</b>	Time consuming	Instantaneous and efficient

Near Infra-Red (NIR) absorption is a widely used analytical method for determining water and solvent concentrations in various industries, including chemical, semiconductor, biotech, and pharmaceutical sectors. This method is both instantaneous and accurate, making it an ideal choice for measuring water content in alcohol.

NIR photometry replaces the traditional Karl Fischer titration technique, enabling on-line water content measurement. Karl Fischer titration is slow and maintenance-intensive due to its need for reaction chemicals, which also makes it unsuitable for continuous at-line use in chemical processes. In contrast, in-line NIR absorption requires no reagents and offers a cost-effective and reliable method for determining water content.

The Kemtrak NIR water analyzer utilizes high-performance, long-life LED light technology, providing exceptional stability and consistency

over time. This eliminates measurement drift and removes the need for periodic recalibration. The analyzer simultaneously measures at two optical wavelengths, ensuring accurate and reliable readings unaffected by window fouling or entrained particulates and suspended solids. This results in continuous in-line concentration analysis without the need for continual consumable reagent replenishment.

The Kemtrak NIR water analyzer is available in two different models:

- 1. NIR-H:** 100 – 20 000 ppm trace water in the 1900 nm NIR region with a resolution of ±10 ppm.
- 2. NIR-L:** 0.1 – 100 % water in the 1440 nm region with a resolution of ±0.05 %.

Initial calibration is performed at the factory using theoretical calibration coefficients. An optional validation accessory can be used to verify analyzer performance without interrupting the process.



# APPLICATIONS





01 /

## Bioethanol

Maintaining the correct moisture level is a crucial component in manufacturing bioethanol fuel as the presence of water in the end product results in reduced power, corrosion of fuel system components and engine damage.

02 /

## Pharma & Biotech

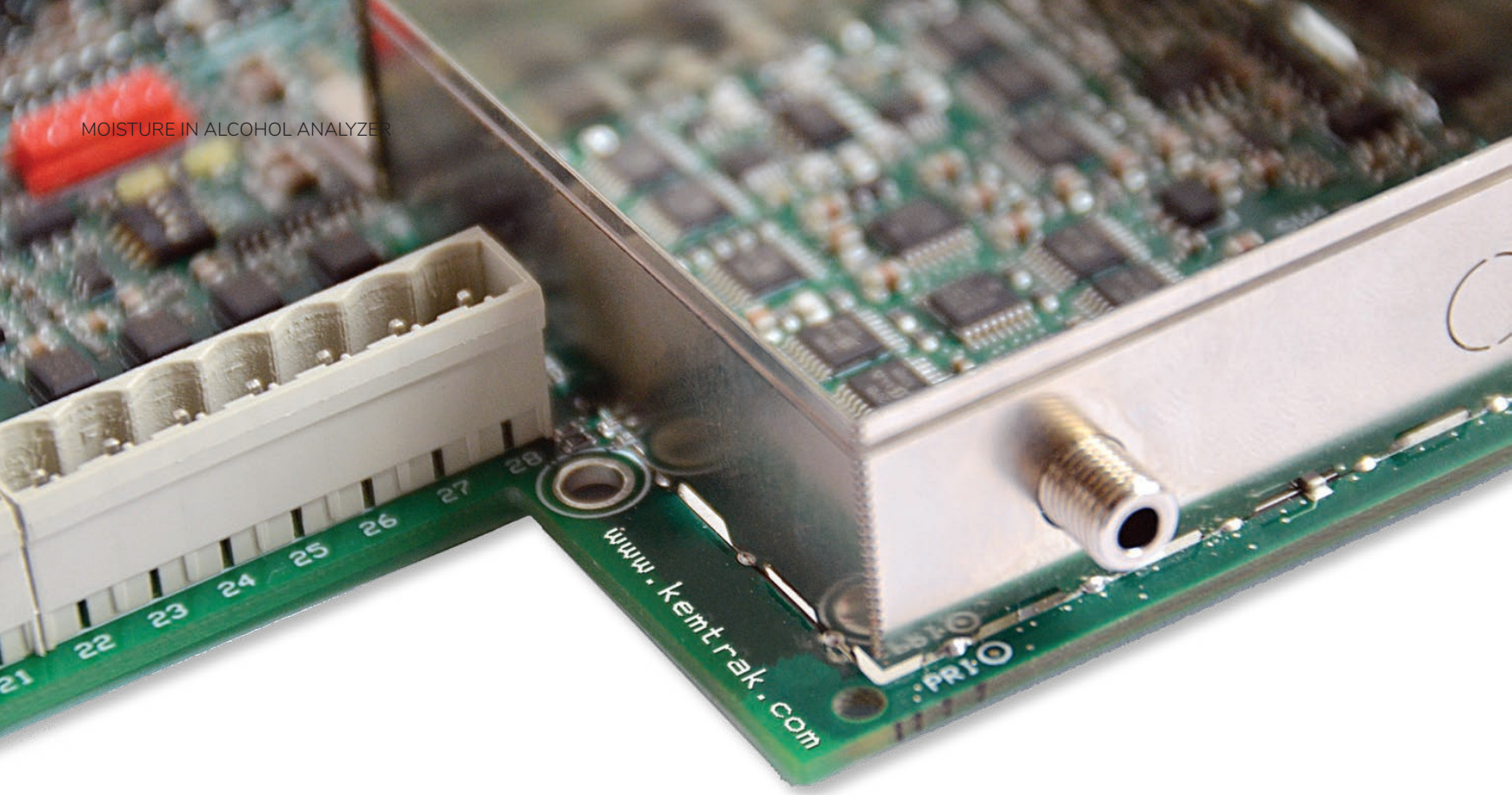
Solvents are routinely used during the manufacture of active pharmaceutical ingredients. Rather than the tedious, costly, and environmentally harmful disposal process, solvent recovery is routinely used however it is essential the recovered solvents are of sufficient purity for their intended purpose. A common impurity is water as this can interfere with many reactions and why the accurate determination of water content is essential.

03 /

## Chemical Manufacturing

The measurement of water in alcohol and hydrocarbon solvents is an important measurement in many industrial processes. Water can be accurately monitored in a wide range of samples from trace quantities to 100% using a Kemtrak NIR process analyzer.





# ABOUT KEMTRAK

Founded in 2006, Kemtrak is the industry leader in LED-based industrial photometers. Low optical power and long lifetime provide dependable products with the highest performance and lowest cost of ownership available.

The Kemtrak 007 analyzer platform is a robust industrial analyzer designed to accurately measure and report specific properties of liquids and gases in-line and in real time. Based upon either absorbance, light scatter, or fluorescence, Kemtrak photometers are used in a wide range of industrial applications for measuring parameters like color, concentration, turbidity, and solids concentration.

Kemtrak is located in Stockholm, Sweden. Kemtrak products are distributed globally. No

matter where you are in the world, Kemtrak has a motivated team of skilled engineers ready to help.

- Industrial liquid and gas concentration measurement
- Real-time, in-line
- State of the art with exceptional performance
- Low cost of ownership:
  - No / ultra-low maintenance
  - Long life LED light source
  - Robust and reliable
- Application experience and know-how
- Global sales and support
- ISO 9001:2015 Quality System



At Kemtrak, we believe efficient manufacturing processes are essential for a sustainable world. Our products empower our customers to increase profits by preventing or limiting waste. Kemtrak analyzers provide insight into the process enabling resources to be conserved, waste minimized, energy reduced, and harmful leaks detected.

Kemtrak technology delivers tangible, measurable, and substantial benefits. We help our customers make the transition to a greener future through process optimization.

Our philosophy is to focus on areas that are beneficial for people and the planet, and Kemtrak supports the societies where we conduct business. By leveraging the latest and greenest technologies, we ensure we are doing our best to create a more sustainable process industry for the coming generations.



## TYPICAL APPLICATIONS:

1. **Gas Scrubber Optimization:** Kemtrak photometers continuously monitor exhaust gases such as  $\text{ClO}_2$  and  $\text{Cl}_2$  to limit harmful emissions and loss of product into the environment.
2. **Leak Detection:** Continuous monitoring of leaks is an essential part of any process and Kemtrak analyzers provide ultra-low (ppb) levels of detection.
3. **Distillation Optimization:** Reduce energy consumption in distillation processes through real time measurement of tray & distillate concentration.
4. **Centrifuge Control:** Kemtrak turbidimeters optimize separators used to remove  $\text{SO}_2$  and particulates from wet scrubbers that clean marine exhaust gas.
5. **Interface Detection:** Kemtrak analyzers minimize product loss, process downtime, and waste through precise interface control, ensuring consistent performance at any concentration.

## OUR APPROACH:

**Eco-Friendly Products:** Kemtrak products have a no/ultra-low service and maintenance requirement, helping companies lower their ecological footprint and reduce costs. Our products are mercury-free, comply with RoHS directives, and are made from durable materials like stainless steel.

**Minimizing Carbon Footprint:** Kemtrak promotes environmental awareness, has energy-efficient facilities with eco-friendly electricity, recycles waste, and encourages remote meetings and responsible travel.

**Research & Development:** Kemtrak invests in sustainable technologies and practices, and develops products used to create a more sustainable process industry.









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