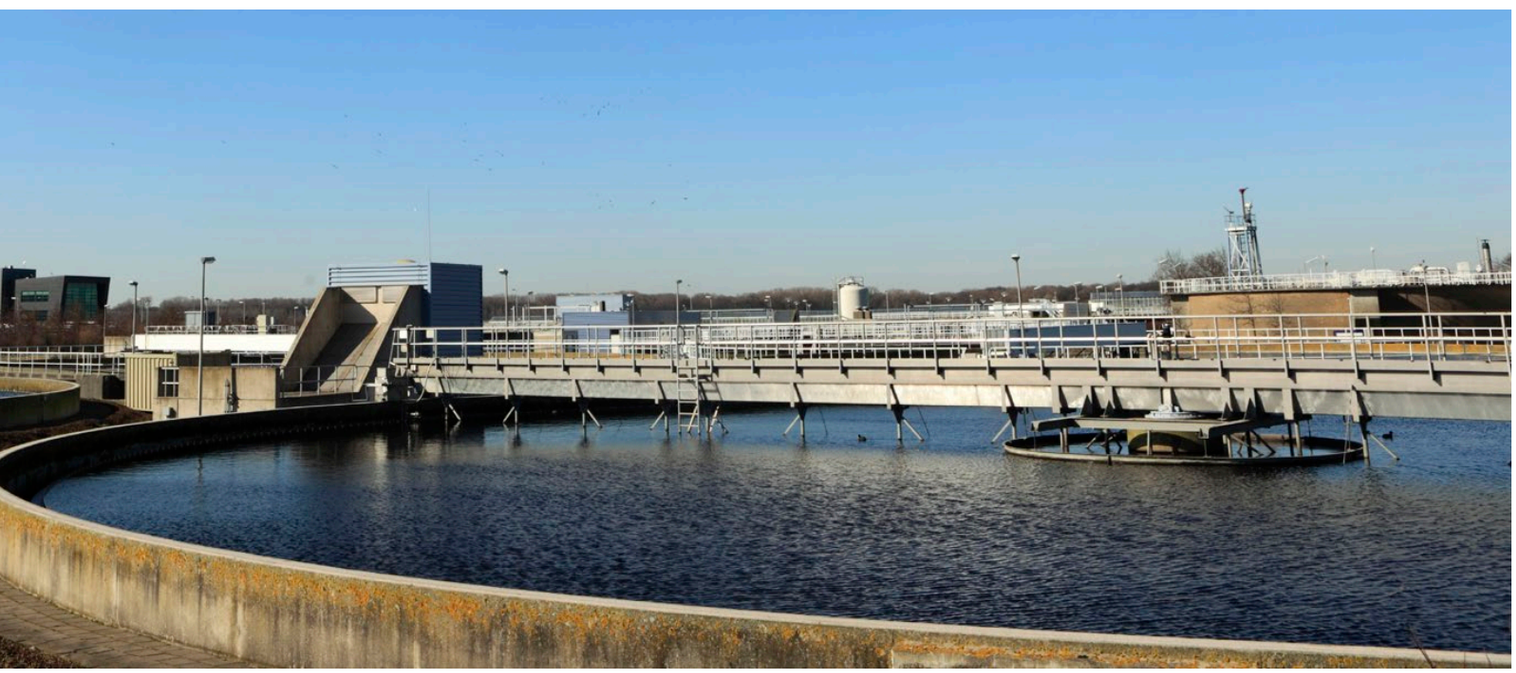
KEMTRAK

UV254 Process Analyzer

Continuous COD and TOC measurement



PROCESS OPTIMIZATION CONTAMINANT MONITORING DOSING CONTROL

UV254 DETECTION

BENEFITS

01 / Measurement of the organic species found in water and wastewaters

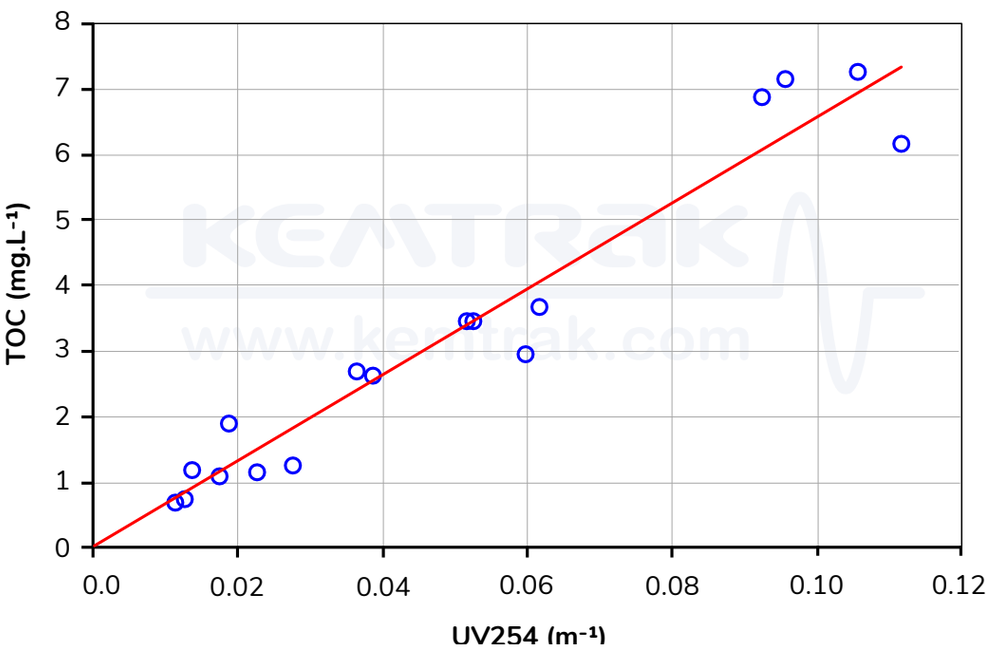
02 / Accurate, robust and reliable correlation for parameters such as BOD, COD, DOC and TOC

03 / Real-time measurement without expensive reagents

04 / Robust UV-LED process analyzer with wetted parts constructed from corrosion-resistant materials

05 / Effortless validation using a traceable validation accessory

BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
DOC = Dissolved Organic Carbon
TOC = Total Organic Carbon



Correlation between total organic carbon (TOC) and UV254 absorbance of ground water at a water treatment facility.

Organic compounds that cause UV254 absorption can vary as a result of seasonal or other changes to the organic matter present. It is recommended to routinely validate UV254 measurements against laboratory measurements to assure trouble free operation.

Instrument Configuration: Range and Resolution (mg/L)						
Parameter	**0.1 cm OPL**	**0.2 cm OPL**	**0.5 cm OPL**	**1 cm OPL**	**2 cm OPL**	**5 cm OPL**
COD	0 - 3000±1.5	0 - 1500±0.75	0 - 600±0.30	0 - 300±0.15	0 - 150±0.08	0 - 60±0.03
BOD	0 - 1500±0.75	0 - 750±0.38	0 - 300±0.15	0 - 150±0.08	0 - 75±0.04	0 - 30±0.02
TOC	0 - 1250±0.63	0 - 625±0.31	0 - 250±0.13	0 - 125±0.06	0 - 63±0.03	0 - 25±0.01
DOC	0 - 1000±0.50	0 - 500±0.25	0 - 200±0.10	0 - 100±0.05	0 - 50±0.03	0 - 20±0.01

The Kemtrak UV254 analyzer measures the attenuation of UV light in a measurement cell with a defined optical path-length (OPL). The selection of correct OPL depends upon the desired measurement range of the chosen parameter.

Organic compounds commonly found in water and wastewater e.g., humic substances, tannin, lignin, and various aromatic compounds, strongly absorb ultraviolet (UV) light. This absorption of UV light at 254nm (UV254), also known as the spectral absorption coefficient (SAC254), is routinely used for the measurement of the organic pollution in drinking water supplies. UV254 has a very good correlation with BOD, COD, DOC and TOC in water treatment process systems and wastewater treatment plants. UV254 is a continuous measurement that does not require reagents and avoids the errors associated with the withdrawal and preparation of composite samples.

The widespread use of UV254 in water treatment processes has arisen from the simplicity and speed of the measurement and is used to supplement more advanced laboratory analytical methods such as chromatography and DOC. While UV254 only detects components that absorb at 254 nm, the consistent presence of these compounds in communal and industrial wastewater provides good correlation between UV absorption and other parameters for detecting organic pollution, such as DOC or TOC.

The Kemtrak UV254 analyzer simultaneously measures at a second non-absorbing wavelength that is used for the measurement of turbidity in the process. Besides providing real-time indication of process turbidity, it is also used for compensation of the UV254 measurement against the influence of particulate in the process to assure reliable measurement.

Traditional BOD, COD, DOC and TOC type measurements are time consuming and expensive tests for measuring organics in water. The time required for sample prep and processing makes them impractical for process control applications. The Kemtrak UV254 analyzer is an affordable, simple and real time instrument that enables new opportunities for water and wastewater treatment operators to better control their processes.

APPLICATIONS

01 /

Potable water

It is necessary to eliminate harmful organic substances generated during water treatment. UV254 is an effective measure of aromatic substance content and disinfection by-products such as trihalomethanes (THM). A proportional relationship between UV254 and COD or TOC exists.

02 /

Municipal wastewater effluent

UV254 absorption measurement has a very good correlation with COD and is routinely used to monitor pollution levels in wastewater treatment plants. UV254 can help reduce treatment costs by monitoring coagulant efficiency and controlling coagulant dosage.

03 /

Pulp mill effluent

A Kemtrak UV254 analyzer providing continuous measurement of BOD can be used for optimal operation and control of an activated sludge treatment plant. UV254 will accurately predict the BOD of the reactor entrance streams in TMP plants and the reactor inlet at Kraft pulp mills.

04 /

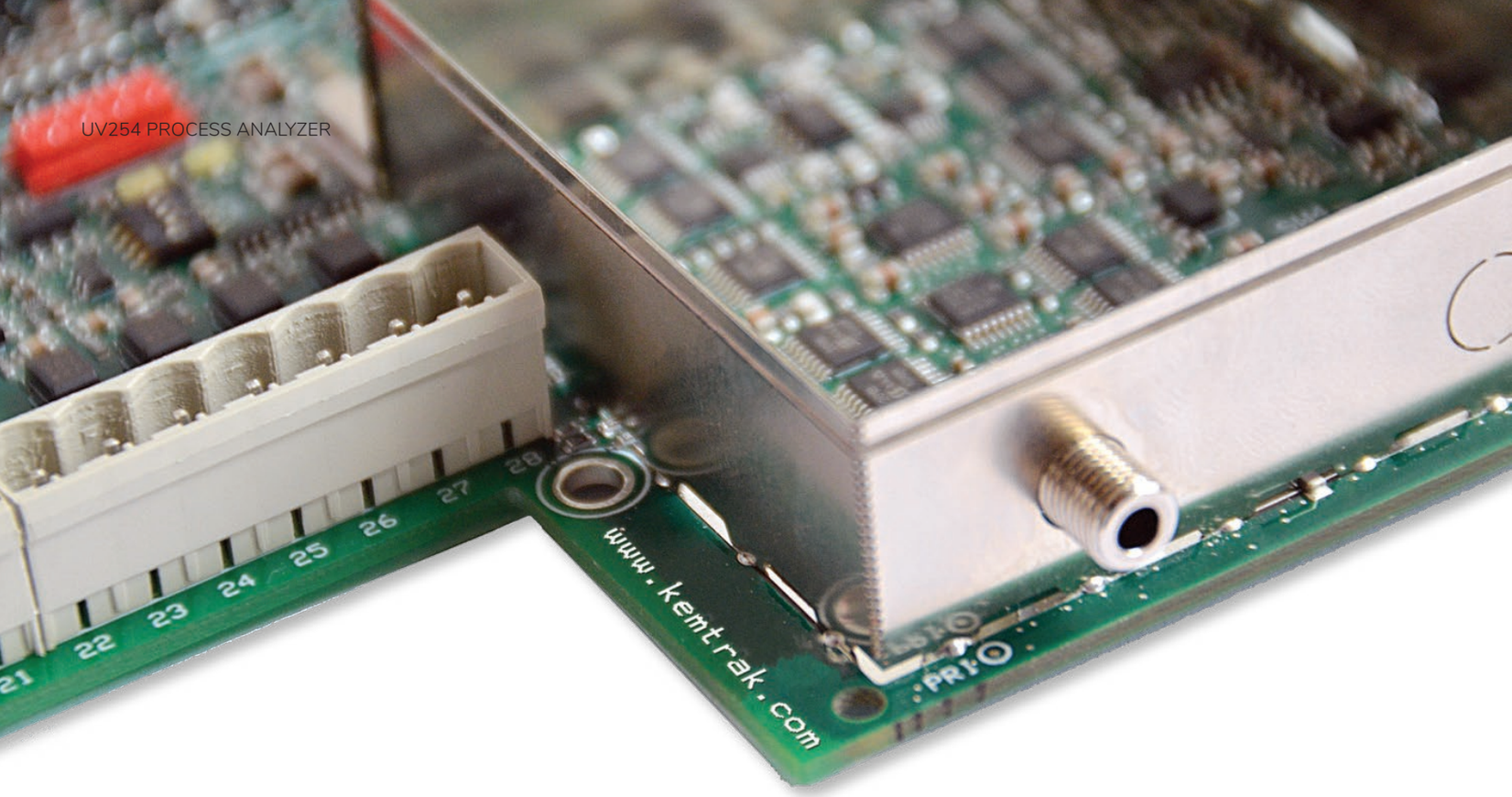
Landfill leachate

Landfill leachate contains dissolved organic matter exhibiting high ultraviolet absorbance at 254nm. UV254 measurement is used to limit leachate co-treatment with municipal sewage by optimizing downstream UV disinfection efficiency at wastewater treatment plants.

05 /

Industrial wastewater

UV254 absorption measurement is used to optimize coagulation, carbon absorption, and other water treatment processes that remove harmful organics.



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 ClO_2 and 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 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.

KEMTRAK
Willys

Kemtrak AB
Polygonvägen 45
187 66 Täby
Sweden

Phone: +46 10 511 0700
Email: sales@kemtrak.com
Website: www.kemtrak.com