




## **TECHNICAL GUIDE:**

# **Why the Computrac<sup>®</sup> Vapor Pro<sup>®</sup> XL Moisture Analyzer is a Disruptive Technology to Karl Fischer Titration (KF)**

 Repeatable  Reliable  Accurate

# Disruptive Technology To Karl Fischer Titration

## INTRODUCTION

In industries where precise moisture content is critical – such as pharmaceuticals, plastics, oil/gas, chemicals, and manufacturing – accurate moisture analysis is essential for ensuring product quality, shelf life, and performance. For years, Karl Fischer titration has been the gold standard for precise, water-specific moisture measurement, especially for low water content levels. However, as technology has evolved, new solutions have emerged that provide advantages in speed, environmental impact, and ease of use.

This guide explains why the Computrac® Vapor Pro® XL Moisture Analyzer, an advanced, disruptive technology from AMETEK Brookfield, serves as a superior alternative to the traditional Karl Fischer method. We'll cover its operational advantages, application flexibility, and reduced environmental and operational costs. Whether you work in R&D, quality control, or production, this guide will help you understand why Computrac is transforming moisture analysis.



# Disruptive Technology To Karl Fischer Titration

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# Disruptive Technology To Karl Fischer Titration

## Overview: Karl Fischer Titration vs. Computrac Moisture Analyzers

### Karl Fischer Titration (KF):

Karl Fischer titration is widely used for accurate moisture measurement, particularly for low moisture level samples. This technique uses a reaction between water and iodine to provide precise quantitative analysis. However, KF comes with several limitations, including toxic reagents, complex sample preparation, and long test times.

Karl Fischer Titration



VPXL



### Computrac® Vapor Pro® XL Moisture Analyzer:

The Computrac® Vapor Pro® XL Moisture Analyzer, also known as the Computrac VPXL, is a fast, eco-friendly alternative to KF. Using non-physical methods, it measures water content quickly and accurately, eliminating the need for harmful reagents. The Computrac VPXL works across a wide range of applications, delivering significant operational and environmental benefits.

# Disruptive Technology To Karl Fischer Titration

## 2. Speed and Efficiency

### **Karl Fischer Titration:**

While highly precise, Karl Fischer titration is time-consuming. Sample preparation, reagent handling, and the titration process require multiple steps, which can take significant time, especially in high-volume labs.

### **Computrac Vapor Pro® XL Moisture Analyzer:**

The Computrac VPXL offers a competitive edge in accuracy and ease of use, particularly where sample preparation and precision are essential. The Computrac VPXL provides accurate, consistent results without reagents, offering reliable moisture readings for applications where efficiency and minimal sample preparation are crucial. The VPXL also has virtually no chemical interferences.

### **Key Benefit:**

Computrac VPXL eliminates the complex, time-consuming titration process, providing fast results without extensive sample prep or lengthy analysis without chemical interferences.



# Disruptive Technology To Karl Fischer Titration

## 3. Accuracy and Precision

### **Karl Fischer Titration:**

Karl Fischer titration is known for its accuracy at detecting very low moisture levels, often in the parts per million (ppm) range. However, KF's accuracy can be compromised by environmental conditions, sample contamination, and reagent handling errors. KF also has lengthy processes such as methanol extraction and reagent interferences.

### **Computrac Vapor Pro® XL Moisture Analyzer:**

Computrac VPXL offers comparable precision and accuracy, especially for low-moisture samples, with added robustness and ease of use. Instruments like the VPXL can detect moisture as low as 10 ppm, meeting the stringent requirements of industries such as pharmaceuticals and chemicals, while also reducing errors related to chemical reagents and environmental contamination.

### **Key Benefit:**

Computrac analyzers provide similar precision to Karl Fischer titration with a simplified testing process, reducing operator error and contamination risks.



# Disruptive Technology To Karl Fischer Titration

## 4. Environmental and Operational Impact

### **Karl Fischer Titration:**

A major drawback of KF is its dependence on chemical reagents, such as methanol and sulfur dioxide, which are toxic and require careful handling and disposal. This contributes to higher operational costs and environmental concerns, especially in high-volume labs. Additionally, KF often requires special facilities and handling procedures due to the hazardous nature of these chemicals.

### **Computrac Vapor Pro® XL Moisture Analyzer:**

Computrac VPXL is an eco-friendly alternative that requires no chemicals or reagents. The VPXL utilizes non-destructive testing, eliminating the need for hazardous substances and reducing operator risk. This also reduces costs associated with procuring, storing, and disposing of chemicals, resulting in significant long-term savings.

### **Key Benefit:**

By eliminating toxic chemicals, Computrac VPXL reduces environmental impact and operational costs associated with moisture testing.



# Disruptive Technology To Karl Fischer Titration

## 5. Versatility Across Industries

### **Karl Fischer Titration:**

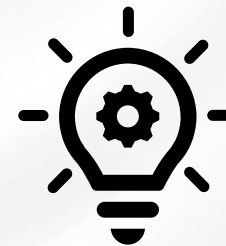
Karl Fischer titration is highly accurate for specific applications but is limited in versatility, especially with complex samples or materials that are difficult to dissolve such as plastics. Depending on the sample type, the method often requires specific solvents and reagents, adding complexity to the process.

### **Computrac Vapor Pro® XL Moisture Analyzer:**

The Computrac VPXL provides unmatched versatility across industries, accurately measuring moisture in powders, pellets, pastes, and liquids without needing different solvents or reagents for each material. This versatility makes it an ideal solution for industries such as pharmaceuticals, plastics, oil/gas, cosmetics, chemicals, and more.

### **Key Benefit:**

Computrac VPXL handles a wide range of sample types, providing flexibility and reducing the need for specialized handling.



# Disruptive Technology To Karl Fischer Titration

## 6. Ease of Use and Maintenance

### **Karl Fischer Titration:**

KF requires highly trained operators to handle highly complex sample preparation, reagent management, and calibration. Regular maintenance, including cleaning electrodes and replacing reagents, adds to operational complexity and downtime.

### **Computrac Vapor Pro<sup>®</sup> XL Moisture Analyzer:**

Computrac VPXL is designed for ease of use, with intuitive interfaces and automated processes that minimize operator intervention. The VPXL features a user-friendly touchscreen and simplified sample loading, reducing the need for specialized training. Additionally, Computrac systems require far less maintenance than Karl Fischer titrators, enhancing efficiency.

### **Key Benefit:**

Computrac streamlines testing, reduces operator expertise requirements, and minimizes maintenance downtime.

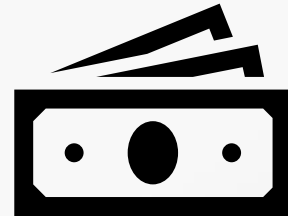


# Disruptive Technology To Karl Fischer Titration

## 7. Conclusion: The Future of Moisture Analysis with Computrac

Computrac VPXL provides a superior alternative to Karl Fischer titration across nearly all categories. VPXL offers the same level of precision and accuracy without hazardous chemicals, delivering faster results, greater versatility, and reduced operational costs. The eco-friendly operation and user-friendly design makes the VPXL an ideal choice for industries aiming to modernize their moisture analysis processes.

By investing in Computrac, businesses can improve productivity, reduce environmental impact, and achieve accurate moisture measurement across diverse applications.



# Disruptive Technology To Karl Fischer Titration

Thank you for downloading our guide - Why the Computrac® Vapor Pro® XL Moisture Analyzer is a Disruptive Technology to Karl Fischer Titration (KF). We're pleased to show how Computrac can streamline moisture analysis, reduce costs, and enhance accuracy across diverse applications.

We hope you've found valuable insights into Computrac's advantages over traditional methods. For questions or more information, our sales and support teams are here to help with consultations, demos, and options to meet your needs.

AMETEK Brookfield is committed to supporting every phase of your moisture analysis journey, helping you achieve accurate, reliable results with our innovative solutions.

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Repeatable



Reliable



Accurate

