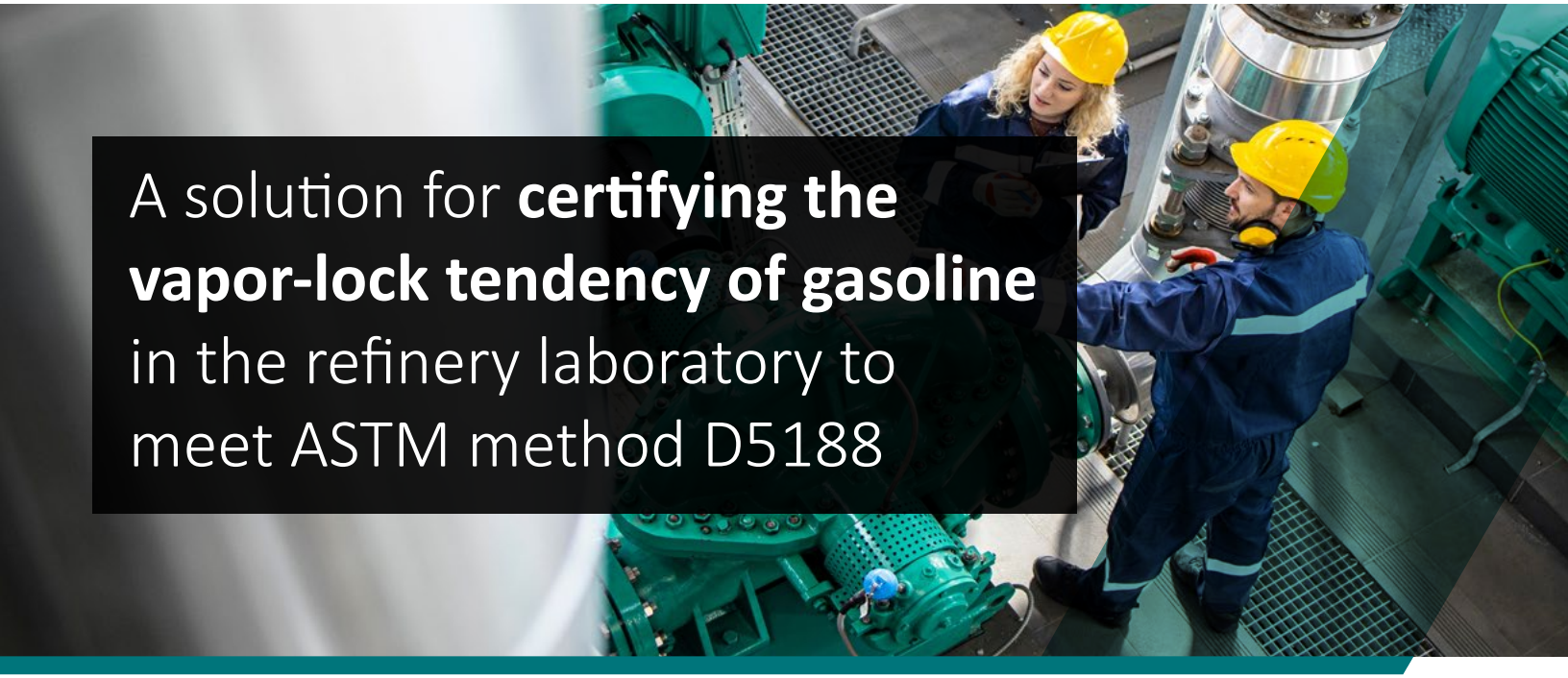
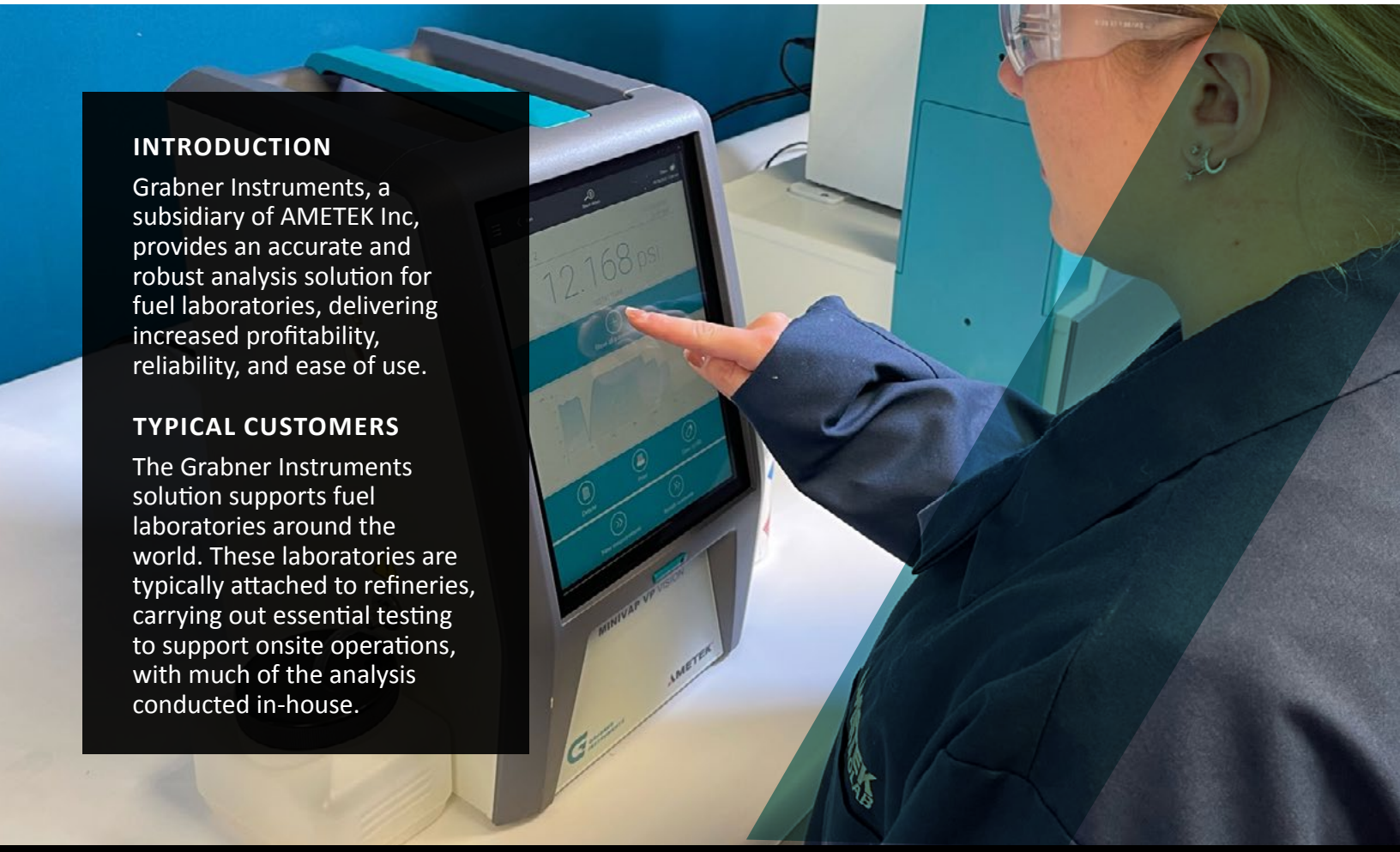
GRABNER INSTRUMENTS® / AMETEK®

CASE STUDY



A solution for **certifying the vapor-lock tendency of gasoline** in the refinery laboratory to meet ASTM method D5188



INTRODUCTION

Grabner Instruments, a subsidiary of AMETEK Inc, provides an accurate and robust analysis solution for fuel laboratories, delivering increased profitability, reliability, and ease of use.

TYPICAL CUSTOMERS

The Grabner Instruments solution supports fuel laboratories around the world. These laboratories are typically attached to refineries, carrying out essential testing to support onsite operations, with much of the analysis conducted in-house.

THE CHALLENGE

Producers of gasoline and gasoline-oxygenate blends operating in the United States must certify their products for vapor-liquid ratio temperature (commonly referred to as ‘V/L’), according to regional and federal regulations.

The industry-standard test method for vapor-liquid ratio temperatures T(V/L=20) is ASTM D5188 (Vapor-Liquid Ratio Temperature Determination of Fuels). This is one of many fuel-characteristic methods that are required within the standard specification for automotive spark-ignition engine fuel (ASTM D4814).

The vapor-liquid ratio temperature indicates the tendency of a fuel to vaporize, within a vehicle’s fuel system. Modern vehicles have the highest under-hood operating temperatures of all time. This means that V/L is critical for avoiding fuel vaporization that causes fuel handling issues such as no starts, rough idling, and poor full-throttle acceleration.

V/L has an inverse relationship with vapor pressure – as the vapor pressure of a sample increases, its T(V/L=20) decreases (higher tendency of vapor-lock). The producer’s goal is to blend less expensive, volatile components that increase vapor pressure, making it more profitable, while complying with the V/L specification. The refinery must perform many V/L measurements daily and therefore needs multiple reliable units.

To meet requirements, fuel labs require the most accurate, precise, and robust laboratory analyzer capable of performing T(V/L=20) measurements according to the piston-based method ASTM D5188.

This analyzer must be easy to operate and maintain, with a fast return on investment (ROI) and low cost of ownership. Additionally, the manufacturer or vendor must be able to provide continued service and calibration.

THE SOLUTION

Brand recognition is an important factor in why many clients approach Grabner Instruments to supply the analytical solution required.

Grabner Instruments' benchtop vapor pressure analyzers have been the standard in vapor pressure measurement for decades, and the ASTM D5188 standard is a 'volatility' characteristic closely related to vapor pressure.

Another important consideration is Grabner Instruments' proven expertise in delivering precise, accurate, and reliable results. The fuels lab is responsible for monitoring T(V/L=20) during blending and final certification of the product, so it is paramount that results are accurate to ensure product performance, profitability, and compliance with federal regulations.

Many laboratories may already use the company's benchtop vapor pressure analyzer models, or have an ongoing relationship with Grabner's sister company Petrolab, which has successfully provided on-site service and calibration to refineries for many years.

In one recent example, Grabner Instruments replaced the existing, aging V/L analyzers at a refinery site with two VP Vision units, along with an on-site service and calibration agreement.

The VP Vision analyzer uses a closed-system, automatic oiler that greatly increases the service life of moving components such as the piston and valves, while decreasing the cost of ownership.

In addition, Grabner Instruments' proprietary 2-D calibration provides unmatched accuracy and precision over VP Vision's full measuring range. VP Vision's automatic dead volume calculation program – critical for reliable V/L measurements – ensures the most accurate volume of sample injection, for best-in-class precision.

With an industrial, 10-inch color touchscreen and intuitive user interface that allows for one-button operation, the VP Vision offers the utmost simplicity for all levels of user.

The VP Vision is highly flexible, as it not only measures V/L, but also global vapor pressure methods. A rapid test program allows operators to automatically perform dry vapor pressure equivalent (DVPE) and T(V/L = 20) measurements, back-to-back. If a dedicated vapor pressure analyzer fails, the VP Vision can perform vapor pressure measurement workloads until the dedicated analyzer is returned to service, adding redundancy to the system.

THE RESULTS

With the replacement of the previous analyzers complete, the refinery is running successfully, resulting in more profitable and reliable gasoline-blending and certification operations.

A leading instrument technician at the refinery said: “We are very pleased with the results of upgrading to the VP Vision. Reliability is critical to us, and both the products and service have met our expectations, with much less downtime than we experienced before. We don’t have any VP Visions out of service, and every unit has a quality control check every day to ensure regulations are met. The Grabner units have proved much more consistent and robust than competitor units.”

“The Grabner Instruments team has proved to be friendly, knowledgeable, and professional, providing us with timely communication and support throughout the installation process. Victor, our contact for service and calibration, delivers top-notch support, with reports and communication that are second to none. This excellent customer service adds value, and certainly gives Grabner an edge over other competitors.”

A leading instrument technician at the refinery said:
“...delivers top-notch support, with reports and communication that are second to none. This excellent customer service adds value, and certainly gives Grabner an edge over other competitors.”

Explore further analytical solutions at:
www.grabner-instruments.com and **www.petrolab.com**

GRABNER INSTRUMENTS® / AMETEK®

CELEBRATING OVER 35 YEARS OF ANALYTICAL EXCELLENCE

GRABNER INSTRUMENTS® Messtechnik GmbH A-1220 Vienna/Austria Dr. Otto-Neurath-Gasse 1 | **+43/1/282 16 27-0** | **www.grabner-instruments.com**
PETROLAB COMPANY (USA) 2001 North Indianwood Avenue, Broken Arrow, OK, 74012, USA | **+1-918-459-7170** | **www.petrolab.com**