

Petroleum Institute Mexico Uses SIMDIS Technology to Accurately Determine TBP Physical Distillation



RESULTS

- Complete, accurate analysis in less than an hour
- Tight correlation to the results of True Boiling Point physical distillation

CUSTOMER QUOTE

“PAC’s gas chromatograph with SIMDIS software is great. It’s easy to operate, and the software is very user-friendly. SICA [PAC’s exclusive representative in Mexico] provides me standards, parts, and services. I get the results of my research in % volume and the results are totally reliable. They give the same result that was obtained in a physical distillation in a shorter time and with a smaller amount of sample.”

— Laura Aleman, Researcher
The Petroleum Institute of Mexico

APPLICATION

Correlation of true boiling point (TBP) distillation data of upgraded crude oils with high-temperature simulated distillation.

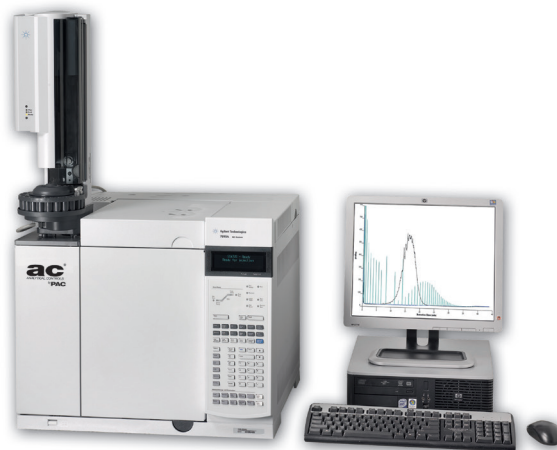
CHALLENGE

The Petroleum Institute of Mexico was conducting research on effective methods of applying new lab technologies to convert heavy crude oil into the more valuable lighter crude oil. One of the most important parameters in this process is to be able to accurately calculate the increase in distillates that occurred in the conversion process. Calculating true boiling point (TBP) physical distillation is a time-consuming process that takes a minimum of eight hours. Because of this, the Petroleum Institute of Mexico looked for a simulated distillation solution through gas chromatography as an accurate alternative.

SOLUTION

The Petroleum Institute of Mexico evaluated several options, but eventually selected PAC’s AC Analytical Controls gas chromatograph with SIMDIS. PAC was selected for three reasons.

First, they had a local representative, SICA, who offered exceptional support, training, and service. Second, they installed and started up the equipment for the research team. Third, the SIMDIS software was a proven, accurate, and reliable solution that required less than an hour for a complete analysis.



PAC’s AC Analytical Controls SIMDIS technology provides a full range of solutions that accurately determine true boiling point data from naphtha up to crude oil samples.

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Application Highlight — Refinery

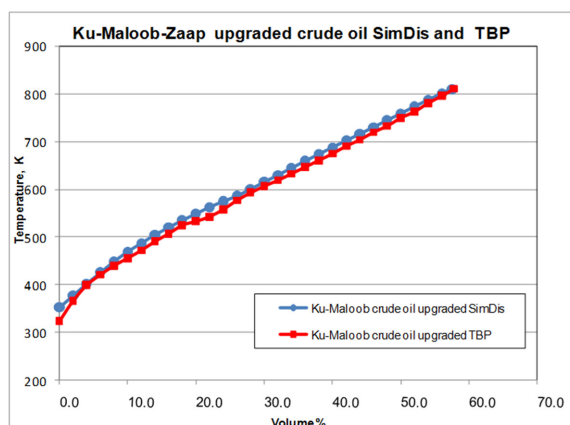
RESULTS

The research team at the Petroleum Institute of Mexico conducted a pilot test of heavy crude oils from two fields – Ku Maloob Zaap and Altamira.

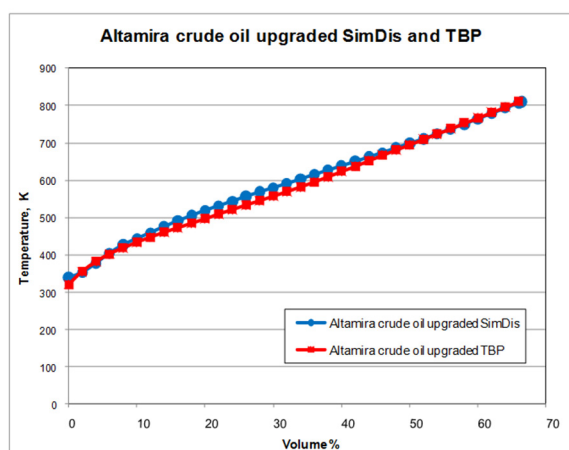
| | Heavy Crude Oil (Pre-Processing) | Upgraded Crude Oil (Post-Processing) |
|----------------|----------------------------------|--------------------------------------|
| Altamira | 13.7 API | 16.5 API |
| Ku Maloob Zaap | 12.7 API | 13.4 API |

They analyzed the distillation curve of the heavy and upgraded crude oils by applying two test methods: ASTM D2892-13 and ASTM D5236-13 Standard Test Methods and the ASTM D7169 GC-Simulated Distillation Method. The results proved that the PAC SIMDIS technology reproduced the true boiling point distillation data for heavy and upgrade crude oils within the reproducibility limits, with a reduced analysis time and smaller sample requirement. The Petroleum Institute of Mexico determined that the SIMDIS technology is a fast, reliable method for assessing the increased yield of valuable distillates in the upgraded heavy crude oil.

DATA



| Temp. K | Fraction | Ku-Maloob-Zaap Crude Oil Feed SIMDIS (Upgraded) Yield | Ku-Maloob-Zaap Crude Oil Feed TBP (Upgraded) Yield |
|-----------------|----------------------|---|--|
| TIE-477.15 | Naphtha | 10.85 | 12.53 |
| 477.15-547.15 | Kerosene | 8.88 | 10.01 |
| 547.15-616.15 | Light gas oil | 10.37 | 8.97 |
| 616.15-727.15 | Vacuum light gas oil | 15.44 | 15.58 |
| 727.15-811.15 | Vacuum heavy gas oil | 11.95 | 10.72 |
| 811.15+ | Vacuum residue | 42.50 | 42.20 |
| Yields Increase | 538 °C-, vol% | 57.50 | 57.80 |



| Temp. K | Fraction | Altamira Crude Oil Feed SIMDIS (Upgraded) Yield | Altamira Crude Oil Feed TBP (Upgraded) Yield |
|-----------------|----------------------|---|--|
| TIE-477.15 | Naphtha | 14.19 | 16.83 |
| 477.15-547.15 | Kerosene | 10.37 | 11.50 |
| 547.15-616.15 | Light gas oil | 11.62 | 10.67 |
| 616.15-727.15 | Vacuum light gas oil | 18.34 | 15.43 |
| 727.15-811.15 | Vacuum heavy gas oil | 11.89 | 11.52 |
| 811.15+ | Vacuum residue | 33.60 | 34.05 |
| Yields Increase | 538 °C-, vol% | 66.40 | 65.95 |

For more information about PAC's AC Analytical Control SIMDIS technology, visit us online at www.paclp.com.

