

# **IF YOU'RE BURNING H<sub>2</sub>, YOU'RE BURNING MONEY**

## **Use New H<sub>2</sub> Management Techniques to Improve Refinery Margins and Meet New Fuel Requirements**

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### **ABSTRACT**

One of the most-critical issues in producing low-sulfur fuels is managing the impact of the new requirements on the refinery hydrogen balance. The combination of low-sulfur fuel specifications, reduced production of hydrogen in catalytic reformers, and the desire to process heavier, more-sour crudes make hydrogen management a critical issue. Generating, recovering, and/or purchasing hydrogen have a significant impact on refinery operating costs. More importantly, overall refinery operations may be constrained by the availability of hydrogen.

New transportation fuel specifications are forcing refiners to look carefully at their existing hydrogen systems. This situation presents an excellent opportunity to identify ways to actually increase the refinery's profitability, rather than simply minimizing the negative impact of the new rules.

A methodology has recently been developed for systematically analyzing the refinery hydrogen balance as a network problem. This methodology provides a means of setting minimum consumption targets and getting some direction on where network improvements can be made. It can lower refinery operating costs or new hydrogen plant capacity, by reducing overall hydrogen needs.

UOP has found that combining this methodology with a detailed understanding of the role that hydrogen plays in hydrogen-consuming processes can increase refinery profitability far beyond the benefit realized by simply reducing hydrogen costs. Hydrogen, specifically hydrogen partial pressure, has a strong impact on profitability because of its effect on throughput, product quality, conversion, yield, and catalyst life. This paper uses commercial examples to demonstrate the great potential to increase refinery margins by *optimizing*, rather than *minimizing*, the use of hydrogen in the refinery.