

## **Reducing CO2 Emissions by Using Temperature Technology to Improve Process Efficiency of Steam Methane Reformers and Ethylene Crackers**

*James Cross, Global Industry Manager Hydrocarbon and Petrochemical Industries (HPI), AMETEK Land*

Bold strategies to reduce carbon emissions are released with growing regularity, often with aggressive targets and recommendations. The new economic and technical regulatory environment means that refineries and petrochemical industries must radically change in the long term and make significant improvements in efficiency in the short term. A sensible place to start is with the optimisation of the most carbon-intensive fired-heater processes.

Two of the largest and most carbon-intensive refinery and petrochemical fired heaters are steam methane reformers (SMR) supplying hydrogen to refineries for ammonia/ methanol production and steam crackers for ethylene production.

To achieve a reduction in CO2 emissions, process adjustments are made, including reducing oxygen setpoints and increasing the hydrogen content in fuel stocks. These trends increase the need for closer visual and temperature monitoring inside crackers and reformers.

Three technologies can be used to meet this requirement: infrared pyrometers, thermal imaging borescopes, and reference pyrometers. Each of these methods use a non-contact temperature measurement technique which, while providing highly accurate and repeatable temperature data, requires an understanding of this challenging application.

Implementing digital solutions and infrared technologies with the necessary technical understanding could help cracker and reformer operators improve temperature homogeneity and fuel efficiency – improving reliability and product yield in an increasingly competitive environment.