

Furnace Process Data Analysis of Steam Cracking Furnace Coils (Basis for Implementation of New Technologies)

Steam Cracking today is the leading technology for the production of ethylene. Each single plant has its own history, individual targets and boundary conditions resulting in a high variation in design, coil configuration as well as individual operating conditions. Therefore, the deterioration mechanisms for the installed cast materials are depending on the coil design but also on the position within the coil.

In order to propose the ideal combination of alloys & technologies for a certain furnace design, it is imperative to know first of all the current situation of the furnace (alloy configuration, failure mechanisms, tube metal temperatures across the coil length, etc.) as well as the limitations in operations, the desired targets and/or additional intended modifications.

Defining the current furnace situation might not always reflect the conditions when it is based on oral information only and therefore a solid data evaluation of the entire set of (historical) process parameters is favourable, especially in terms of crossing effects which are typically not stated by oral information.

The operating conditions determined from the data analysis are then used to establish base cases and on top of this, the effects of the implementation of new alloys and/or new technologies or different alloy/technology combinations are simulated, the resulting benefits analysed.

Evaluations will be exemplarily presented.