

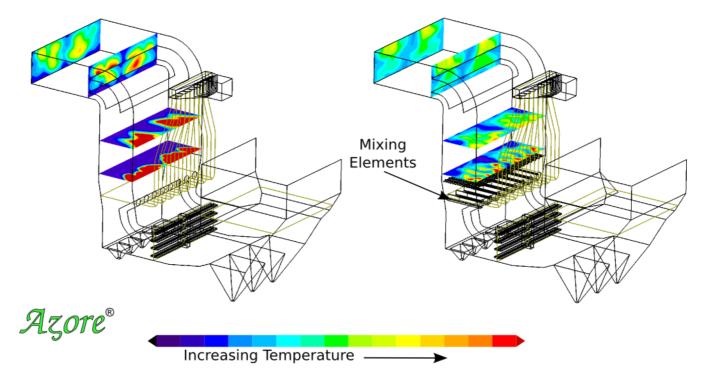
Temperature Mixer Design

Engineering Challenge

Well mixed temperature distributions are often essential to proper industrial processes. This case explores the addition of temperature mixing elements in an industrial power plant duct work. The geometry of this model starts after the hot gas stream has been split into two streams, one that is cooled and one that remains hot. The hot gas stream is then reintroduced into the main cooled gas stream. This creates a situation where the hot gases must be mixed with the cooled gases to avoid high temperature zones that may harm the emission control equipment down stream from the mixing location.

Azore Solution

Azore proves to be a very cost-effective solution for evaluating flows such as these and predicting the performance of the design candidates. Multiple objective functions that define the effectiveness of design are easily predicted using Azore CFD to simulate the complex physics involved. Employing polyhedral mesh strategies also simplifies the task of modeling complex mixer designs.



Two simulations have been performed one with the mixing elements and one without. Notice that without the mixing elements the large areas of the red color (indicating high temperatures) are much smaller.