

Modelling and tension regulation of a 12 rod hanger system in CHP plants

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Steam furnaces, which are utilized in combined heat and power plants (CHP), are typically suspended using complex hanger rod systems consisting of numerous vertical rods [1]. During the operation of such plants the distribution of tension in rods tend to vary over time and as such it is essential to monitor and adjust it on a regular basis, in order to ensure the reliable operation of the furnace [2].

Figure 1 shows a typical 12 rod hanger system of a furnace front wall with tension distribution obtained from measurement performed at an CHP plant. In this work, the numerical modelling of such a system is presented using both finite element method and analytical equations. Additionally, possible tension regulation of such a system is proposed, employing optimization techniques and reinforcement learning methods.

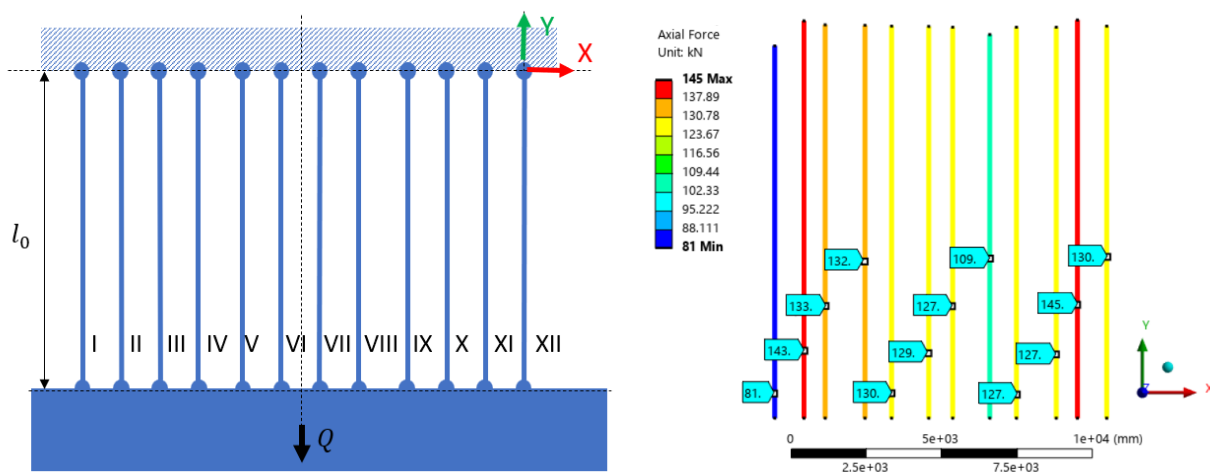


Figure 1. 12 rod hanger model of a front furnace wall (left); tension distribution from experimental data (right)

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