Heat Loading of Steam Boilers Heating Surfaces

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This paper deals with the comparison of an analytical solution of the temperature field of a steam boiler pipe membrane wall using a numerical method calculation in the COSMOS/M programme. The result analysis showed that analytical calculating methods which are limited to 1D and 2D task types can be used for the approximate calculation of temperature in the selected locations of the membrane wall. With these methods it is not possible to obtain a complex view of the heat loading of the entire membrane wall or of the stress conditions caused by the thermal and pressure effect of steam-water mixture in the wall pipes. The results of numerical simulations have provided a complex image about the temperature and pressure distribution in the entire membrane wall of a steam boiler taking into account the material properties.

Keywords: Boiler, Membrane wall, Heat flux

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References


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