
WASTE HEAT UTILIZATION FOR INDUSTRIAL WASTEWATER TREATMENT

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This paper deals with an industrial wastewater treatment utilizing waste heat from related industrial processes. More than 280 mil. m³ of wastewater is produced yearly and much more is consumed by the industrial sector in the Czech Republic. It is also a significant consumer of different energy sources. Unfortunately, more than 17.5 TWh of thermal energy leaves annually from the industry without any form of utilization. This study proposes a possible solution, which is capable of reduction of industrial wastewater on one side and effective utilization of industrial excess heat on the other. For this purpose, well-proven desalination technologies (Multi-effect distillation and multi-stage flash distillation) are briefly introduced and their typical operational parameters are discussed. Simple design and reliable operation are one of the main advantages of these methods, while low specific energy consumption would be another plus, if the industrial waste heat could be utilized. Wide range of different wastewater could be treated by the means of evaporation, as it is presented in many studies. Interesting experimental results from these studies on metal-working, coke, pharmaceutical or biological wastewater treatment are further discussed. Finally, the potential of wastewater treatment by the means of multi-stage flash distillation in the Czech Republic is thoroughly considered and several calculations are done. The results indicate huge potential of this approach. With only 0.94% of the overall industrial waste heat utilized, the evaporation technology is capable of decreasing water consumption in the industry by 8.5 mil. m³ per year.