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Abstract

The Belgrade district heating system relies on fossil fuels in heat production, where natural gas has the largest share of around 95% and fuel oil with around 4.4%. The Zemun heating plant is completely fueled with fuel oil. Currently, it is the largest plant that is not fueled with natural gas. The objective of this paper is to assess the impact of NO₂ from the Zemun heating plant on local air quality by analyzing and comparing the concentration of NO₂ which originates from the heating plant and the total concentration of NO₂ measured at the nearest local measuring station. For the NO₂ spatial distribution modeling from the heating plant emitters (stacks), the AERMOD model was implemented. The stacks were modeled as point sources. The meteorological data were processed using the AERMET data preprocessor. When comparing case study model results with the results from the nearest local monitoring station, it can be concluded that the heating plant contributes with the maximum share of approximately 10% in total NO₂ concentration in air. In order to investigate the effects of emission control measures, the implementation of the flue gas recirculation technique that reduces NO₂ emissions from the heating plant was modeled. The results showed that with the application of the recirculation measure, the modeled NO₂ concentrations in the surrounding of the heating plant could be reduced by up to 50%.