

Malesinska, A., Chudzicki, J. Change in Hydraulic Resistance of Water Supply Pipes Being Renovated with Polyethylene Pipes. *Ochrona Srodowiska* 2014, Vol. 36, No. 3, pp. 29–35.

Abstract: Effect of the existing water supply pipe renovation on hydraulic resistance was analyzed. Trenchless relining method of pipe renovation and reconstruction was considered, using polyethylene (PE) pipes of smaller outside diameter than the inside diameter of a renovated pipe. Hydraulic analysis was carried out of roughness coefficient influence on linear friction factor as well as on hydraulic conveyance of pipes of various inside diameters, made of cast iron and polyethylene. Roughness (k) was demonstrated to affect the head loss inversely proportionally to the inside diameter of the pipe. On the basis of the conducted analysis, an approximate threshold diameter $DN=800$ mm was estimated for which change in roughness (k), at the reduced inside pipe diameter, may lead to measurable hydraulic benefits of renovation.

Keywords: Pipe hydraulic conveyance, friction factor, relining method.