

Could package treatment plants be alternative to onsite solutions?

Jarmo Sallanko, University of Oulu, Finland

In Finland about 300 000 residual buildings are not connected to sewerage systems. In addition about 400 000 holiday homes are outside of communal or municipal sewerage system. This scattered settlement generates remarkable amount of diffuse pollution. The waste water treatment requirements tightened, and all buildings must be connected to a well-working waste water treatment system latest at 2014. In buildings with water closet, the required waste water treatment purification efficiency is at least 90 % by BOD₇, 85 % by P and 40 % by N. Municipalities may also take local conditions into account to some extent and enforce slightly higher or lower standards in municipal environmental protection regulations where this is justifiable.

Often soil treatment systems are economic solutions for onsite waste water treatment for detached buildings. However, in some cases municipal regulations do not accept soil treatment systems, e.g. in groundwater and shore areas. In those cases closed tanks for toilet wastewaters or package treatment plants may offer a solution. Also when the building site is small or the ground is not suitable, e.g. very rocky, package treatment system is a good alternative. When the building already has three appropriate septic tanks, biofilters could be used, as they are easy to be installed inside or above the last septic tank. When there is a need for pumping or for a more intensive P-reduction in soil filtration system, a package waste water treatment plant can be an economical alternative.

Often residential buildings form small groups and the distance between the groups is too long for a municipal network. In general, joint water supply and sewerage is economical when population density is over 20 persons/km². For waste water treatment of small villages or for a group of detached buildings, package treatment systems are satisfactory solutions. When the size of package treatment plant grows, investment costs per one building decreases. For example in Finland, investment costs for 10 persons are about 21 000 € and for 100 persons about 138 000 € (VAT 0%). This is also the case if you consider total costs, i.e. investment & operating costs (fig. 1). Small scale cooperation in waste water treatment may also produce a more economical service contract of the plant and make the waste water treatment more reliable, more effective and easier for an individual residential building.

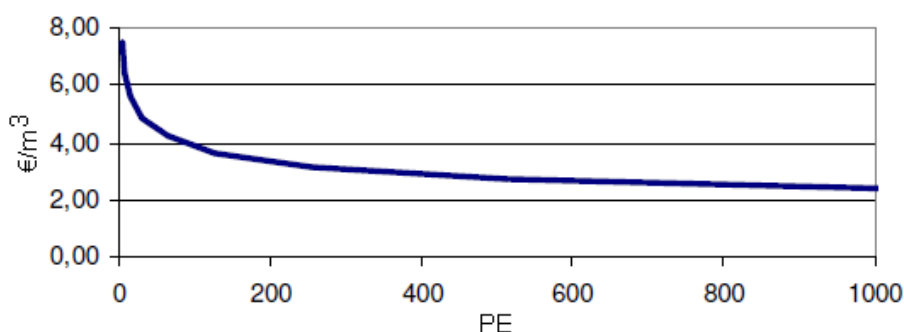


Fig. 1. Total cost of waste water treatment in different sizes of waste water plants (Päijät-Hämeen haja-asutuksen vesihuollon kehittämissuunnitelma (Plan for water supply and sewerage development in Päijät -Häme), 2009, Ramboll Finland Oy / Päijät-Hämeen liitto).