



## **New methodology to design a combined trough canal drain-trench system to manage stormwater runoff in urban area for a sustainable development**

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We present in this communication a new methodology to design a trough canal drain-trench system (percolation facility) which can be used to manage stormwater runoff in urban area.

Indeed, urbanization and the development of infrastructure lead to a steady increase of the fraction of sealed surfaces. The direct consequence is an increasing volume of surface runoff. The disconnection of impervious areas from the general sewer system by guiding the stormwater runoff to an infiltration/percolation facility is a measure to capture a defined volume of stormwater runoff, retain it, and infiltrate all or part of that volume directly to the soil profile.

Our methodology is suitable for all urban area categories. The model takes into account the most relevant components of on-site storm water management: retention in ponds and swales, infiltration into the ground and drainage through perforated pipe. The usual procedures for determining the required dimension of the trough canal drain-trench system contain some spurious assumptions. These assumptions have been removed, resulting in a more realistic design procedure for trough canal drain-trench system to make sure that the discharge of stormwater is guaranteed. Moreover, we have calculated the evolution of the water table level and the water recharge quantity in the different soil layers beneath the trough canal drain-trench system as a result of infiltrated surface water.