

**Presentation for CEOCOR congress 2008 in Slovakia (21 - 23 Mai 2008)**

Title of presentation: **Technical assessment of Concrete Sewage network : from recorded observations to sewer evaluation methods**

**Evaluation technique des réseaux d'assainissement en béton : de l'enregistrement des observations aux méthodes d'évaluation des canalisations d'assainissement**

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**Abstract :**

Within the framework of integrated management of sewer networks, asset management tools (which includes, operational follow-up, decision making assistance in terms of maintenance, rehabilitation or renewal), are being developed.

In the long term, these tools will make it possible to evaluate the performance of sewer networks by type, and also to analyse the serviceability of a sewer.

Deterioration and corrosion of sewers, as well as the wastewater treatment plant, are a direct concern of owners and operating companies. For many years, some of them have initiated the recording of observations made of their networks. Most of them are based on CCTV inspection and codified according to European Standard EN 13508-2. This collation of data gives a picture of the network, or in most cases a part of it, due to the lack of data. It cannot be considered as a method for assessing the condition of the drain or sewer as this requires subjective judgement and additional information. Some communities also include information concerning the environment of the pipelines (such as type of effluent, geotechnical data, live loads, pipe installation date...).

Theories and methods of evaluation of sewer systems are intended to give an understanding of their behaviour. An exhaustive knowledge of the sewer network condition cannot be achieved due to complexity. Technical assessment is therefore based on a statistical approach.

Two main types of models have been developed :

- **Deterministic** ones identifying the probability for a pipeline subjected to identified ageing parameters to be in a given condition,
- **Probabilistic** ones defining the probability for a class of pipeline to pass from one condition state to another one depending on the probability to be subjected to given conditions.

Evaluation of the condition of an individual pipeline section cannot be predicted by probabilistic models which only allow the evaluation of the probability of defective sections in the network.

The multiple approaches of the sewer pipeline ageing illustrate the various patrimonial and/or operational priorities of the owners:

- expected life of the pipeline sections;
- percentage of defective pipeline section;
- mean transition age from one condition state to another one;
- proportion of the pipeline sections in a critical state;
- percentage of emergency intervention on the pipeline section.

Good performances of the concrete sewer have been established by different studies based on the approach presented above.

Ageing models are being developed to predict the condition of the concrete pipes. They need further development for them to be relevant and accurate for some specific parameters which cannot be established without further studies on operational network.