

STRUCTURAL MONITORING OF A 100 YEAR OLD SEWER

The so-called Moerriool (“mother sewer”) dates from around 1900 and is the oldest sewer of the municipality of Arnhem in The Netherlands. The 2,30m wide and 2,00m high brickwork sewer is also the main artery of Arnhem’s sewer network.

Based on earlier inspections it was considered advisable to monitor the structural integrity of the 1.150m long sewer at a number of locations.

The municipality commissioned Inventec to monitor the convergence of the sewer’s cross section for an extended period of time. For that purpose we installed a number of SAAFs as shown on the pictures. The SAAF (Shape Accel Array / Field) consists of the chain of 0,305 or 0,500m long segments. These segments are joined together in such a way that they are free to move in all directions in relation to one another. Each segment contains a tri-axial MEMS accelerometer / inclinometer.

The SAAFs are connected to a reading unit. The software converts the measurements of the segments to a presentation of the actual shape of the sewer’s vault. By taking subsequent measurements at time intervals any deformation is made visible with an accuracy of 1mm.

