

Equipment for the detection of pipeline position

Written by ?evad Kold♦o

Monday, 10 September 2012 09:02

<p class="HeadingSW1">For the implementation of water loss detection it is absolutely essential to know the section of the pipeline quite well. Unfortunately, we are witnessing that the GIS is quite often not precise enough and misses information, and it happens that the instrument operators perform sounding of the soil below which there is no pipeline.</p> <p style="text-align: justify;">Equipment that shall be described serves the purpose to define a pipeline section in which the detection shall be done. Equipment for the detection of pipe position is divided into two basic categories:</p> <p>1.Equipment for the detection of metal pipes and</p> <p>2.Equipment for the detection of non-metallic pipes.</p> <div> <p class="HeadingSW2" style="text-align: justify;">Detectors of Metal Pipe Position</p> <p class="HeadingSW2" style="text-align: justify;">There is a great range of metal pipe detectors. The simplest ones are usually regular metal detectors or the so-called devices for manhole cover detection which are used for the detection of background valves, hydrant lids and other metal object up to 0,5 m depth, and sometimes up to deeper depths, depending on the size of relevant object. Such devices only operate in the passive navigation mode and therefore training for their use is short and simple. </p> <p style="text-align: justify;"></p> <p style="text-align: justify;"></p> <p style="text-align: justify;">The second group of metal pipe detectors is, in addition to passive navigation mode, based on the detection of pipe position in an active navigation mode. These devices consist of two parts: a generator and a receiver. A generator is connected with cables (mostly clamps similar to those for car accumulator recharging) with one end to the pipeline (valve, hydrant or alike), and with the other end is used for earthing. </p> <p style="text-align: justify;">The generator is switched on, and pipeline frequency is being determined. Following that, the receiver is switched on and set to the same frequency as the generator. Having eliminated all disturbances caused by the surrounding pipelines and having an acceptable resistance value, walk slowly with the receiver above the relevant pipeline section. Arrows and signals on the transmitter on the display will direct the operator to the pipe position and, by pressing one button only, data on pipe depth could be obtained.</p> <p style="text-align: justify;"></p> <p class="HeadingSW3" style="text-align: justify;"><span style="font-family: arial, helvetica, sans-serif; font-size:

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12pt;">Preparations: Advice on Metal Pipe Detector Use</p> <p style="text-align: justify;">The generator and the receiver have their own battery power supply. If the batteries are rechargeable, it is necessary to recharge them before the measurement and double-check whether all appurtenances (cables, connectors etc) are packed in the original box of the device. During the operation of the metal pipe detector, the following should be taken into consideration:</p> <p>1. Resistance value (shall be shown on the generator display) should be as low as possible that is not the case, try to pour water over the small pole to which the earthing cable is connected (naturally, salty water gives even better results),</p> <p>2. Never operate the device if you wear safety steel toe work boots because it will ♦confuse♦ the device</p> <p>3. Never switch the device on before connecting the cables because it can cause an electric shock which is not life threatening, but is still very</p> <p>4. Metal pipes with rubber seals will make the detection more difficult, in some cases even impossible,</p> <p>5. Best frequency for pipe detection is 82kHz</p> <p class="HeadingSW3" style="text-align: justify;">Non-metallic Pipe Detector</p> <p style="text-align: justify;">Detection and location of water pipes can be difficult if the pipes are made of material which is not electrically conductive. This refers to materials such as asbestos-cement, PE and PVC. This difficulty can be avoided with the use of acoustic impulse technique. Thanks to the acoustic impulse transmitter, the pipe is being exposed to the acoustic vibration. Depending on the type of material, profile and soil characteristics, these acoustic impulses are spreading along the pipeline and can be detected on the surface with the geophone. Covered distance differs from one case to the other and can be up to maximum 50 m. This acoustic location method can also be applied to metal pipes is, for instance, location with the application of eclectic method is made impossible due to electrical disturbances. In case of metal pipe, the distance at which the detection is possible is slightly longer.</p> </div>