

ELECTROMAGNETIC LINE LOCATING

Electromagnetic line location (EMLL) techniques are used to locate the electro-magnetic field resulting from an electric current flowing on a line. These fields can arise from currents already on the line (known as passive, or ambient signals) or currents applied to a line with a transmitter (active). The most common passive signals are generated by live electric lines, grounded water lines, and re-radiated radio signals. Active signals can be introduced onto conductive utilities by directly connecting the transmitter to the line at accessible locations, causing the signal to travel along the utility. This is referred to as electromagnetic conduction (EMC).

Additionally, a signal can be introduced onto a line through electromagnetic induction (EMI). This involves transmitting a high frequency electromagnetic field through the air with the transmitter placed on the ground surface in close proximity to the utility. Alternately, an induction clamp can be placed around specific metallic conduits in vaults or breaker boxes.

The detection of underground utilities is dependent upon the composition and construction of the line of interest. Utilities detectable with standard line location techniques include most continuously connected metal pipes, cables/wires or non-metallic utilities equipped with tracer wires. These generally include water, electric, natural gas, telephone, and other conduits related to facility operations. If there are no passive currents present, then these utilities must be exposed at the surface or accessible in utility vaults in order to have an active signal placed on them. Utilities that are not detectable using standard electromagnetic line location techniques include those made of non-electrically conductive materials such as PVC, fiberglass, vitrified clay, and metal pipes with insulating joints.

The EMLL instrumentation consists of a Radiodetection RD-400 line locator and a Fisher TW-6 inductive pipe and cable locator.