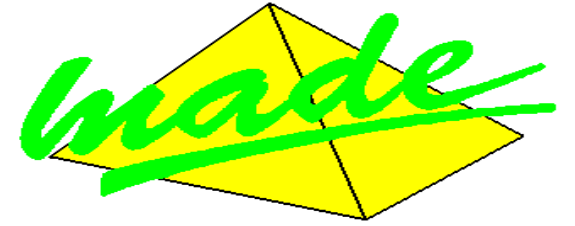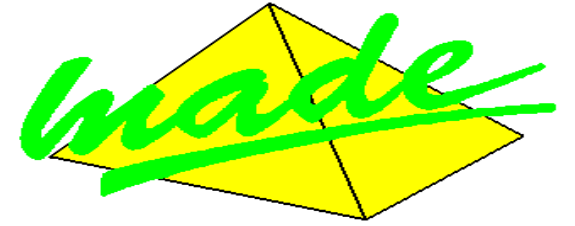# Gas Tracker II by

- The **GAS TRACKER II** is a great improvement on the original Gas Tracker

- It has greater detection sensitivity, and thus is able to trace the pipe much further from the transmitter.

- The tablet interface is readable in bright sunlight and is robust and rainproof.

- The interface software is much simpler and enables tracing the pipe much more quickly.
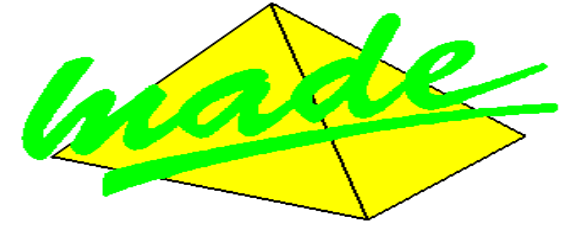
Gas Tracker II by

- This system is intended for

- ### Locating and Tracing

buried polyethylene or other plastic gas pipes from the surface.

- Whilst normally used on gas pipes in service, the system will work on "dead" pipes full of air at atmospheric pressure.

Gas Tracker II   by

- ## Principle :
  - An acoustic wave is injected into the gas and propagates along the pipe ***through the gas***, stimulating vibration of the pipe wall and the soil around it. This tiny signal is detected at the surface by a vibration detector, giving the position vertically above the pipe, even in a noisy urban environment.

buried PE pipe

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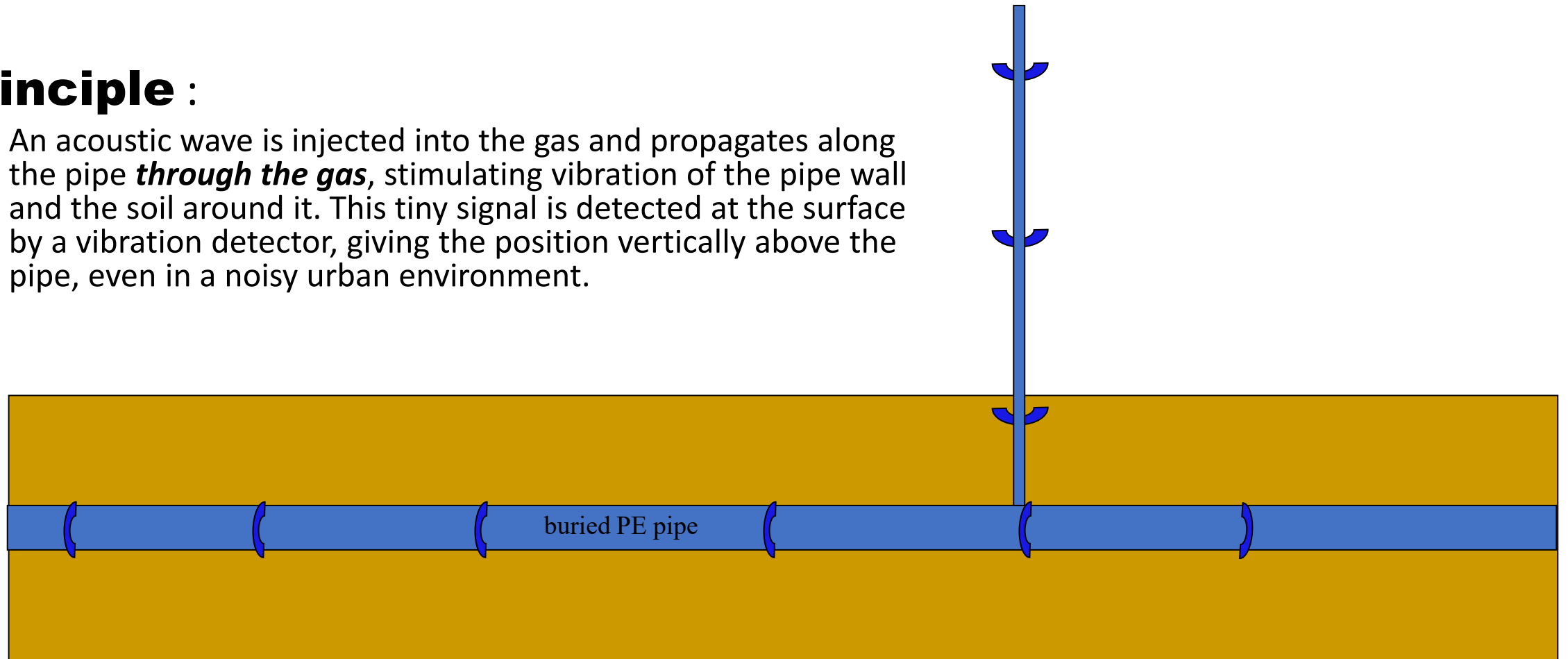
Gas Tracker II by
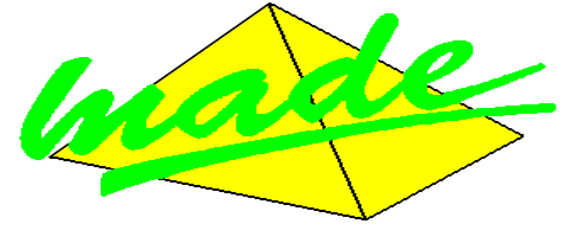
- The Acoustic Signal is propagated along the pipe in the GAS, and not in the pipe wall.

  - Thus –

  - If the pipe being tracked is in contact with another plastic pipe, the signal will not travel along the wrong pipe

  - The signal can travel along a metal pipe, which cannot be tracked, to a length of plastic pipe which can be tracked.

  - The most common use of this possibility is when the resonant volume is connected to a metal service leading to a plastic main which is to be tracked.
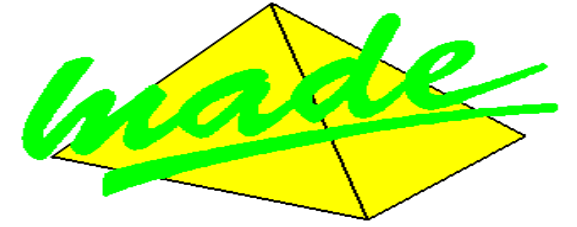
Gas Tracker II   by
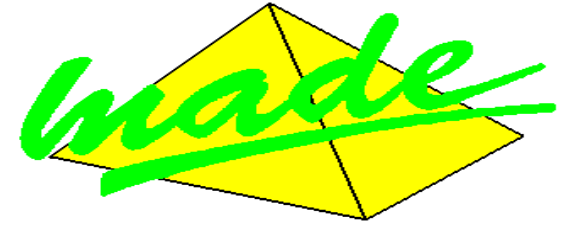
- The system works best from a tarmac road or pavement surface, and paving stones also give good signals. The received signal level is dependant on the compaction of the soil between the pipe and the surface. A road is ideal, whereas shingly or pebbly soil will give lower signals and a less precise location of the pipe.

- Ensure that the three points of the detector are on a firm surface, and not in cracks between paving stones for example.

- Pipes inserted in ducts or old metal pipes cannot be traced except sometimes intermittently, but the line of the pipe can usually be found by locating the lengths of the plastic pipe which are in contact with the soil, at service connections for example.

Gas Tracker II   by
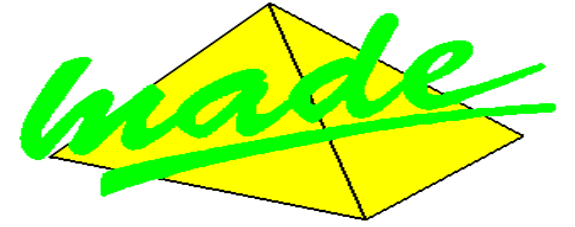
- The system works less well on soft ground, but unprepared ground which has been compacted, for example by vehicle passage, can give good results.

- For soft ground there are two methods

- 1) Push the three pins into the ground until the flat face of the detector is in contact with the soil.

- Or 2) Place the detector on a small paving slab, preferably whilst standing on this to ensure good contact with the ground. Clear away any undergrowth to give a flat, smooth surface for the slab to lie on.
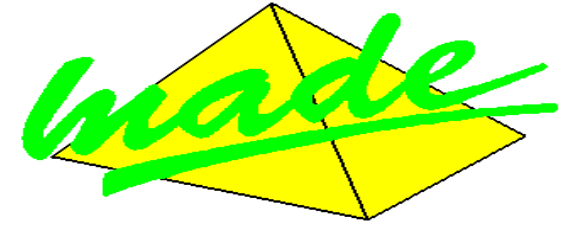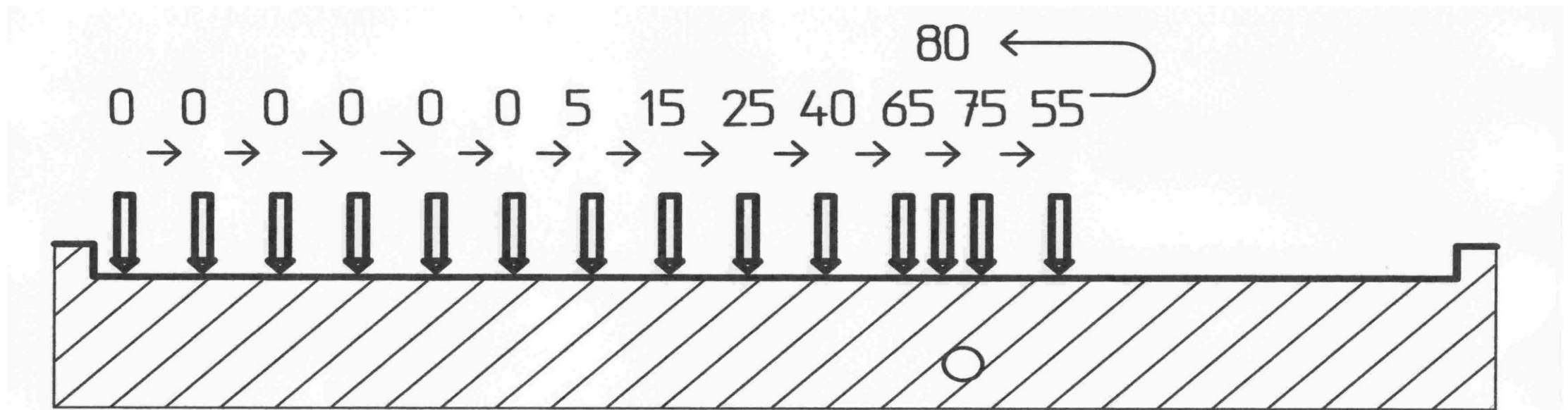
Gas Tracker II by

- An example of soft ground working
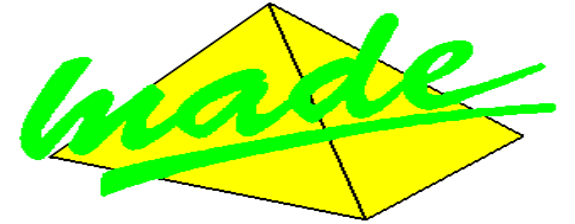
Gas Tracker II   by

The pipe is located by seeking the highest signal at the surface.
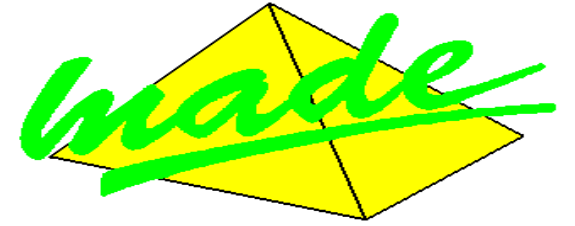As an example, to find a buried pipe running along a road –

Gas Tracker II by

- Another method of locating a main under a road is to follow a service from the meter. Where the signal falls the main has been passed. A connection to one service can enable the tracking of several other services.

- If possible, follow the signal from the transmitter to the area of interest, even if quickly and without seeking accuracy. The continuous display of the received signal level speeds this up.

- Always try to establish a « line » of peak readings as this establishes the « lie » of the pipe with confidence.

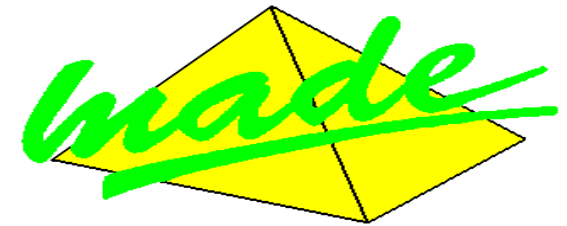Distributor **A. T. M. S.** 07717763510

Gas Tracker II by

- Installing the **TRANSMITTER**

  - Do **NOT** make the electrical connection between the resonant volume and the transmitter case *before* the resonant volume has been connected to the gas network and purged.

  - Any point of access to the gas can be used. The best access is via a « top tee » into the main. Frequently, the resonant volume is connected to a customer connection in place of the meter.

  - The system will not trace metal gas pipes from the surface, but a connection can be made to a metal pipe which leads the signal to a plastic pipe which can then be tracked from the surface

Gas Tracker II   by

Gas Tracker II by

- When using a customer connection –

1. Close the customer supply valve before disconnecting the meter.
2. Connect the resonant volume in place of the meter.
3. **Open** the purge valve on the resonant volume.
4. Open the supply valve _slowly_ (5 seconds) to pressurise the resonant volume. This avoids the possibility of damaging the loudspeaker diaphragm or the operation of any pressure-drop sensitive shut off valves that may be upstream.
5. **Close** the purge valve when the gas is purged,
   DO NOT close the service valve as well.

Use a similar procedure for any other type of connection

Gas Tracker II by
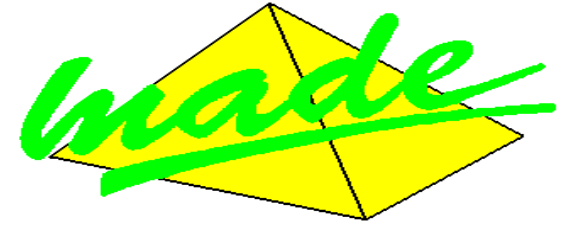
- After closing the purge valve, check for leaks at the valve and other connections.

- Now make the electrical connection to the transmitter.

- Press the green « ON » button and transmission begins.
-
- Check the battery charge state. The green led indicates 4 hours plus duration from a full charge. The transmitter can be operated from a from a vehicle battery, or a mains supply, also charging the batteries.

- To turn off, press the red « OFF » button

Gas Tracker II by
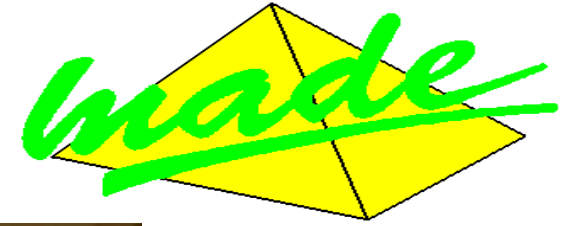
Typical
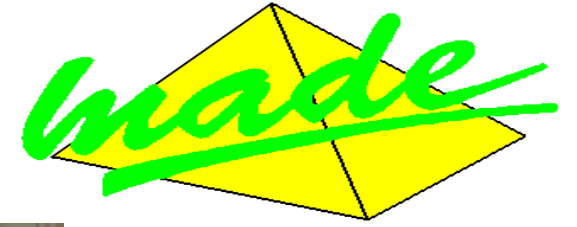transmitter
Installation

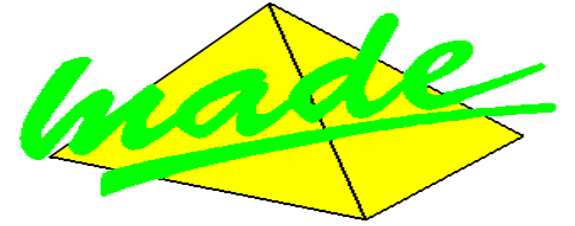Note the « foot »
to support the
cylinder

Gas Tracker II   by

Optional extended purge
tube and flame trap for
indoor installations

A second purge valve
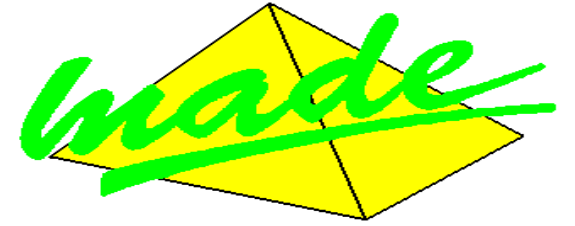is adjacent to
the flame trap

Gas Tracker II   by

- The GAS TRACKER II Receiver system consists of the Ground Acquisition Sensor and the Tablet (or substitute) which communicate by Bluetooth.

- The Acquisition Sensor has an NiMH type battery pack, giving 10 hours life. The battery charge level is indicated on the tablet, and both a mains charger and a converter for charging from a cigarette lighter socket in a vehicule are provided. It has a removable Stick Handle of adjustable length.

- The IP66 Android Tablet has a Li-Ion rechargeable battery 9.6 Ah, autonomy 8 h, and a charger is provided.

- To pair the Tablet with the Acquisition Sensor, the sensor must be turned on with the push button on the top (the Red LED flashes rapidly for 5 secs. and then slowly when initiation is complete). Then the software application in the tablet is started by pressing "GasTracker 2" on the screen, or by pressing the standby button if it was already active with the tablet in idle mode.   If the connection is not made, press the "Bluetooth" button and the connection will be made.
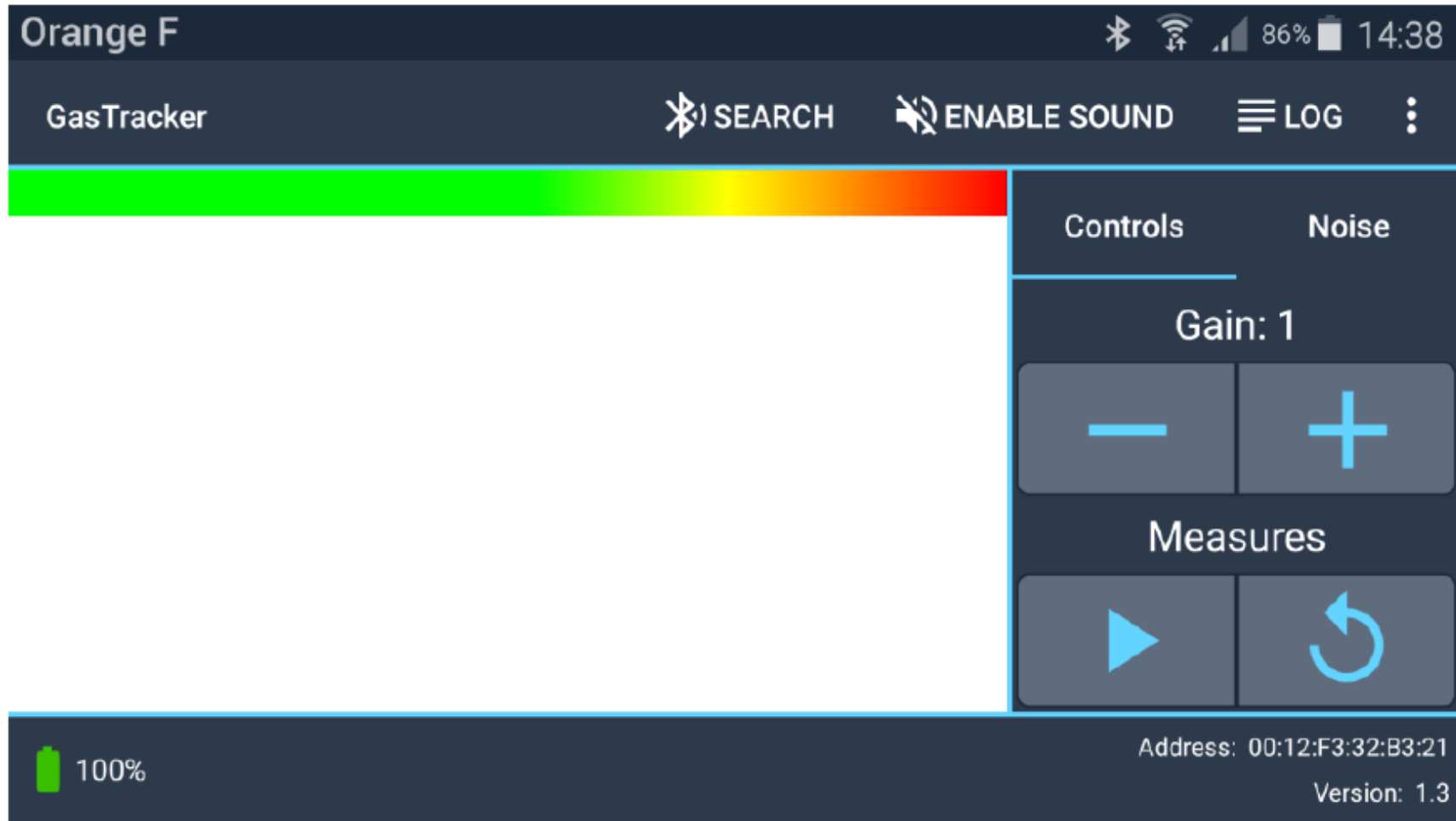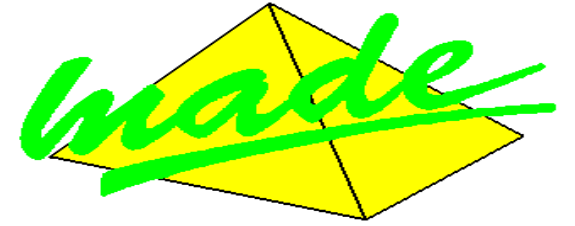
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Gas Tracker II by

- **Receiver Settings**

- First choose the Noise Level Mode (estimated ambiant noise). Low, Medium, High (default) or Extreme.

- This selection directly impactes the acquisition time (Low is quicker), and can be changed at any time.

- After Mode selection, the measurement window opens and location can be started by moving the Sensor from place to place. The Bargraph across the top of the screen gives a continuous indication of the signal level detected by the sensor. There is also a « bip » sound with a repetition period proportional to the signal level. Adjust the Gain to keep the signal level in the « Green » if possible.

- Once the pipe has been located approximately, take a Measurement by pressing the « Arrowhead » button.

- A digital analysis measurement is taken, and the the Histogram below the Bargraph shows both the amplitude and the quality of the measurement. The height of the column shows the amplitude, and the colour the quality. A **Green** column shows excellent quality with a very good signal to noise ratio, **Yellow** shows good quality and **Red** indicates insufficient quality. Black « Hatching » indicates that the sensor is saturated, and the Gain must be reduced. The quality is improved by changing the Mode selection towards « Extreme » (ie from Low to Medium, or to High, or to Extreme if necessary) to give a longer sampling time. After a series of measurements, the CircleArrow button can, be used to clear these measurements from the screen.
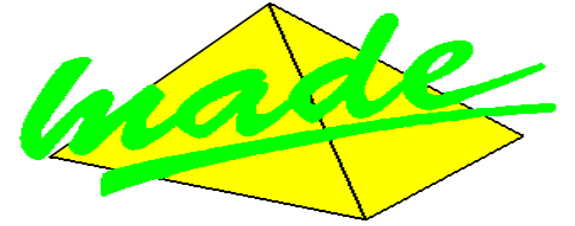
Gas Tracker II by

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Gas Tracker II by
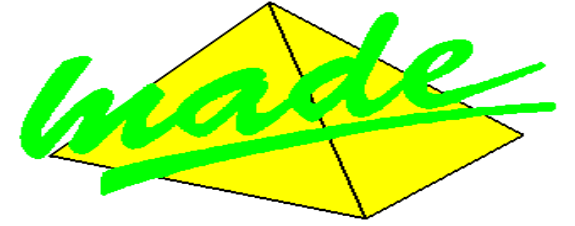
- **GPS Location**

- The activation of the GPS Location will be offered on Start-Up of the software. If activated, each Measurement will have a record of the GPS co-ordinates (latitude and longitude) in Decimal Degrees format. These coordinates will be obtained from the GPS incorporated in the tablet, unless an external GPS detector is connected, in which case the coordinates will be taken from the attached detector. The tablet will normally give a position of better than 5 meters accuracy, whereas an external GPS detector can improve this to centimeters.

- Each measurement is recorded in a Log, and the information stored includes time & date, gain and signal quality, and also the GPS coordinates. To retrieve these files on your computer, connect the tablet to it by USB, and open the directory GasTracker/logs in the root of the Tablet's memory. The position information can be transferred to Location Files of the operator's creation.

Gas Tracker II by

- **Tips for good use**

- It may be impossible to make measurements close to the transmitter due to saturation.

- Use the bargraph as much as possible to quickly visualize whether the signal sought is present (Check for the red line which represents the average level of the desired signal, the remainder being noise, often with large variations). Do not hesitate to adapt the GAIN according to conditions.

- Choose to make measurements in low or medium noise MODES whenever possible (faster acquisition time).

- Do not initially search for maximum positional accuracy, but rather try to ascertain the global direction of the desired pipe rapidly. Then, it will then be easier to take measuremants of a few precise points at the most probable positions of the pipe. Do not hesitate to change GAIN and MODE when necessary.

- Above the pipe, the signal level is maximum: if this is not the case - diffuse measurement, improbable location of the maximum – this could mean that something in the soil prevents direct propagation. Proceed with other measurements a little further on.

- When a local maximum is identified, clear the histogram and move to a new search.