

## **A TESORO DEALERS PERSPECTIVE**

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What is Pulse Induction?

Your current machine is likely a Motion VLF detector that has two coils, one for transmitting and one for receiving, they operate at between 3-30kHz. A basic detector works by transmitting a signal and receiving it back. This creates electromagnetic lines around the coil. As metal passes through the field it breaks or distorts the lines. The machine measures the amount of distortion and beeps, or not depending on the settings of the machine.

The Pulse induction has one coil in the search head that transmits a rapid pulse of electromagnetic energy through the coil into the ground before it quickly shuts down. During the transmission phase any metal target in the field will attract the eddy current. The eddy current dissipate immediately from poor conductors such as wet salt sand and ground minerals. Metals hold eddy currents because they are better conductors, the better the conductivity of the metal, the longer the eddy currents will flow around it. During the shut down phase of the coil, the coil acts as a receiver circuit that picks up the returning signal from metal. Machines that have discrimination use a different transmission pulse width, or use a high to low or low to high tone.

VLF machines have to have to cancel out the effects of ground minerals while sending out a constant electromagnetic field. Most VLF machines have a problem with wet salt sand, this is where PI machines excel. PI machines are the first choice for many gold nugget hunters in other countries.

On the minus side, iron is a problem that makes PI difficult to use on most inland sites. Although depth is a great asset, nobody likes to dig down 12inches to find that the target is a hairgrip. Discrimination properties at the current time still leave a lot to be desired.

There have been no technical improvements to VLF machines over the last 20 years, except to make them easier to use. With more R. & D., I see the PI machines being the machines of the future.