There is no better time to deal with a problem than before it becomes a problem. And this is what we achieve for our clients again and again. We keep you ahead of the curve.

In predictive maintenance, we use new technologies of Infrared Thermal Imaging and Ultrasound Detection to see and hear things that we as humans could not otherwise see or hear.

Mechanical and electrical systems allowed to run to failure are proven by past history to cost 5 to 7 times more to fix because of the collateral damage that may occur, in addition to unscheduled down time, loss of production, and potential penalties. Leaks that go undetected in your facility silently bleed away thousands of dollars from your bottom line.

Peterson Predictive Maintenance can give you a head start on a potential failure in your operation, saving tremendous costs in down time and otherwise more expensive repairs.
**THE POWER OF WHAT YOU CAN’T SEE**

Infrared imaging constitutes an invisible band of radiation that is visible at the lower end of the visible light spectrum. Because this radiation shows the temperature of an object, infrared thermal imaging is a process which generates images based on differences in temperature. This makes it possible to collect information that would otherwise be undetected by the human eye. With this technology, Peterson Predictive Maintenance can gather extremely accurate information about the heat signature of an object or environment. This information makes it possible to pinpoint trouble spots and detect areas of potential failure. The infrared thermal images are recorded and can be analyzed many different ways to provide valuable information.

**Electrical Equipment:**

- Ensure integrity of electrical installations
- Find faulty components and overheating
- Reduce downtime
- Fire safety, and insurance compliance

**Buildings/Processing Equipment:**

- Examine internal properties in walls and pipes
- Building and cool room/even insulation
- Furnace refractory breakdown and efficiency
- Seal and fluid build-up in composite structures

**Environmental Assessment:**

- Locate ruptured gas and water pipes
- Determine water level spread
- Monitor pest/tune spread in woodwork

**Flood Applications:**

- Pipeline inspection - leak, stress, corrosion, and cracking detection
- Environmental inspections - pollution dumping and thermal dumping of waste water
- High voltage transmission line inspection

**ADDITIONAL APPLICATIONS:**

- Thermal heat loss inspections
- Moisture contamination evaluations
- Concrete integrity inspections
- Concrete water heater flame inspections
- Flat roof leak detection
- Power generation generator inspections
- Steam plant boiler fuel gas leak detection
- Substation electrical inspections
- Overhead Electrical Distribution Systems
- Electric motor inspections
- Mechanical bearing inspections
- Cold storage cooling systems
- Refinery process evaluation
- Heat exchanger
- Furnace inspections
- Fire protection explosion systems
- HVAC equipment evaluation
- Plumbing insulation
- And many more

**LISTENING TO THE HIDDEN DETAILS**

Ultrasound is composed of high-frequency sound waves above the range of human hearing. Peterson Predictive Maintenance uses active/structure-borne ultrasound technology which senses frequencies ranging from 20 to 100 kilohertz. These are electronically translated down into the audible range where operators hear the sound through headphones, as well as view it as intensity increments on a meter or display panel.

All manufacturing, process, and electrical equipment produces a broad range of sounds when operating. The high-frequency ultrasonic components of these sounds are extremely short wave and tend to be loosely directional and low. As a result, it is easy to isolate these sounds from the background noise and pinpoint their source. Therefore, as changes begin to occur in equipment, the subtle nature of ultrasound allows you to detect these potential warning signs early, before something fails.

With ultrasound detection, Peterson Predictive Maintenance can determine not only the condition of components or systems that may be hidden from view, but also establish a trend in its sound signature to determine potential failure. Because of the remarkable accuracy of this technology, this is possible even in extremely noisy environments.

**BAD BEARING**

The tonal quality of a bad bearing varies depending on the problem. It is often marked by popping or cracking noise.

**GOOD BEARING**

A good bearing that is lubricated properly should sound smooth and even, almost like air escaping from a leak.

**NEVER OVERLUBRICATE A BEARING AGAIN**

It is common in many scheduled maintenance programs to inadvertently over lubricate a bearing, and shorten its life. In the process. With ultrasound detection, it is possible to not only predict and verify when a bearing is needing greased, but also tell precisely when it is properly lubricated. Note the noisyon the sound file waveform above. This shows when the bearing has received exactly the right amount of lubrication.

**JUST FIXING LEAKS...**

Sunflower Manufacturing Inc. in Beloit, KS builds a wide array of farm implement. Peterson Predictive Maintenance, upon ultrasound inspection of their plant, was able to locate six leaks that had gone undetected, including compressed air and argon. After tagging and documenting each leak, it was possible to show a potential savings of over $146,000 per year upon their repair.