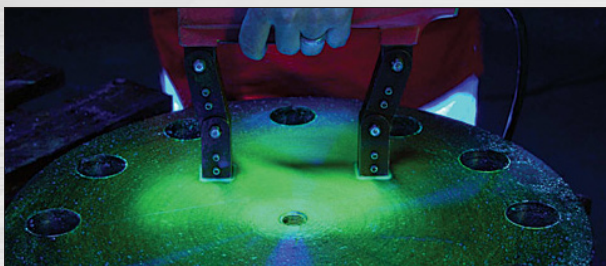


Consistent awareness is the key to consistent maintenance

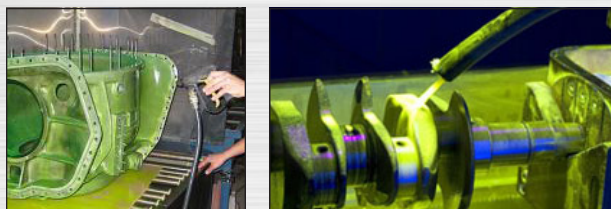
Hi-Speed's non-destructive testing techniques give you the inside story on efficiency.

Part of keeping your facility up to speed is avoiding disassembly or alteration of your machinery whenever possible. At Hi-Speed we can often evaluate, troubleshoot and research welds, structural integrity, defects and other time killers and money flushers through a series of additional non-destructive testing techniques.



Magnetic Particle Testing

By inducing a magnetic field into ferromagnetic material and dusting the surface with dry iron particles, we can detect any microscopic cracks in the surface and subsurface of your machinery. The process can be done on site or in our facility, minimizing the impact on your operations.



Dye Penetrant Testing

Imperfections in the housing of your machinery can't hide from dye penetrant testing. And while the process itself is rather straightforward, it takes an experienced technician to evaluate the situation and determine the proper type of penetrant, to choose what developer will work best, and to know how to properly remove the excess penetrant. This is where Hi-Speed's decades of experience makes a big difference.



Weld Verification

There are a number of typical welding defects that could cause a structure to break, including cracks or porosity inside the weld, variations in weld density and lack of fusion to the base metal. Hi-Speed uses a wide range of non-destructive techniques to test the integrity of welds and indicate potential problems.



Remote Monitoring

Hi-Speed can keep constant watch over your equipment and detect early warning signals through remote monitoring services. Ideal for motors that are inaccessible due to their location, the machinery is analyzed while in operation and triggers alarms when problem indicators are present.

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Seeing infrared can keep your business in the black.

Loose connections. Overloading. Heat loss. Excessive friction. Your facility has these issues. You just don't know how to find them.

With Infrared Diagnostics, Hi-Speed can see problems in your machinery, your electrical systems and even your roof and walls that are costing you money now and can cost you significant downtime and repair costs down the road if left unchecked.

By capturing and examining heat signatures, we can quickly and effectively find situations in your shop that you wouldn't otherwise know exist. And by detecting and addressing these problems now, you can avoid outright failures and create significant savings.

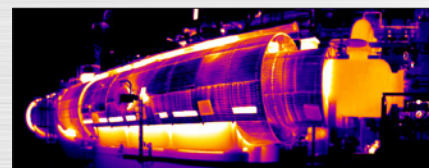
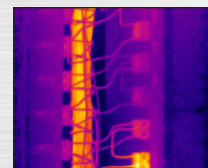
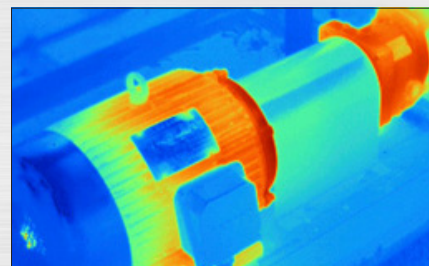
Where can Infrared find issues in your facility?

- Motors
- Pumps
- Heat Exchangers
- Steam Traps
- Bearings
- Gearboxes
- Drive Belts
- Electrical Distributor Panels
- Machine Tool Controls
- Switchgear
- Transformers
- Roofs and Hidden Areas

What Infrared Diagnostics can find in your facility.

- Under designed components
- Component failure
- Poor cooling and reduced air flow
- Poor alignment
- Insulation problems with motor winding
- Bearing problems
- Friction

CNA Insurance estimates an average loss of \$750,000 for an electrical fire resulting from faults that could be detected by Infrared Thermography.



Hi-Speed's highly trained team of inspection techs are experts both at utilizing Infrared Thermography and interpreting the findings to identify problems and recommend the most efficient solutions.

That sound you're not hearing is money blowing away.

***Air leaks can easily waste 30% of a compressor's output.
That's wasted energy and wasted power.***

The sound that air makes when escaping from hoses, couplings or joints can often be undetectable by the human ear. At Hi-Speed, we use Ultrasonic analysis equipment to not only discover leaks but to pinpoint the exact source and location where simple repairs can create dramatic results.

Escaping air may not sound like a big issue, but leaks can create a wide range of problems, including:

- Fluctuating system pressure - causes air tools and other air-operated equipment to operate less efficiently, possibly affecting production
- Excess compressor capacity - results in higher than necessary costs
- Decreased service life
- Increased maintenance of supply equipment
- Increased demand on air dryers and equipment

Typical Cost Associated with a Single Point of Air Loss

LEAK SIZE	CUBIC FT/ MIN	CUBIC FT/ DAY	LOSS PER YEAR
1/32"	1.60	2,304	\$186.00
1/16"	6.45	9,288	\$744.00
1/8"	25.80	37,152	\$2,981.00
1/4"	103.00	148,320	\$11,904.00
3/8"	234.00	336,960	\$27,036.00

Based on 100 PSIG, \$0.22/MCF, 8,760 hours per year

Hi-Speed Predictive Maintenance inspection technicians specialize in using advanced ultrasonic detection equipment and receive continual training on the most current techniques and best practices.



Hi-Speed's Ultrasonic Analysis & Diagnostics can address all of the following:

- Air, steam and non-flammable gas systems including pipes, fittings, valves, traps, cylinders and pressure vessels
- Bearing and gear wear
- Arcing in electrical systems
- Refrigeration and HVAC systems leaks
- Cracks in moving rubber v-belts
- Vacuum systems leaks



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Consistent awareness is the key to consistent maintenance.

The average cost of unscheduled downtime due to mechanical failure is \$10,000 per hour.* Can you afford that?

The slightest variance in the performance of your rotating equipment that runs consistently can create tremendous stress and cause significant premature failure. But with skilled inspection and a consistent monitoring program, Hi-Speed can help you address potential problems and avoid costly interruptions in your operation.



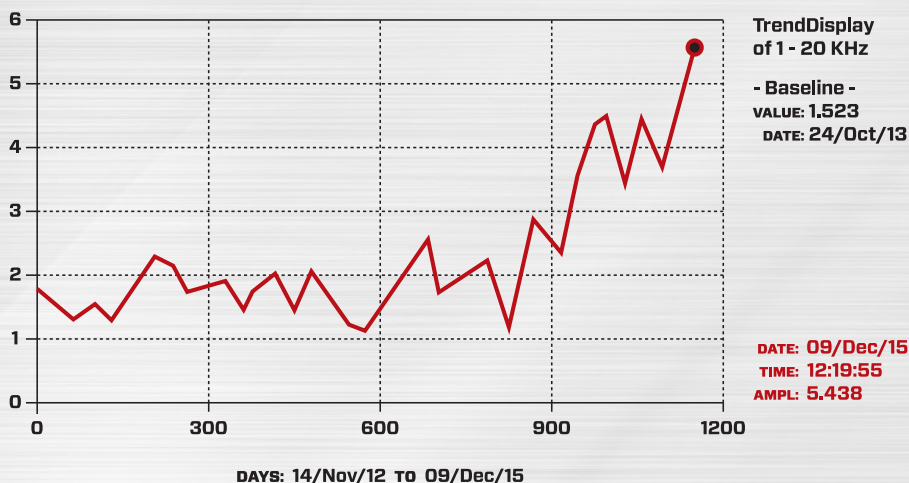
Hi-Speed goes the extra mile to make sure you stay up and running.

We keep you rolling with regularly scheduled surveys of all critical equipment. While on site, our Vibration Analysis program identifies potential problems throughout your facility and hones in on the most susceptible elements in your operation including:

- **Bad bearings** - Race and rolling element defects, cocked bearings, loose fits, lubrication
- **Misalignment** - Couplings, belts sheaves, gears
- **AC motors** - Rotor bar defects, stator eccentricity, soft foot
- **DC motors** - Drive issues, bearing fluting
- **Gearboxes** - Worn gears/bearings, eccentric/misaligned gears
- **Pumps/blowers** - Imbalance, wear, cavitation, recirculation looseness
- **Fans** - imbalance, looseness, wear, air flow

The graphic below shows an example of vibration analysis applied to a horizontal out-board fan in an industrial manufacturing facility. Our technicians not only discovered the excessive vibration levels (a Class III Defect), but also identified growing deterioration in the bearings as the cause. By simply replacing the bearings, the facility was able to avoid an unscheduled shutdown along with any secondary damage that could have occurred by leaving the problem unchecked.

RMS Acceleration in G-s



Hi-Speed regularly tests and monitors facilities just like yours. Our technicians gauge the amplitude of your machinery to determine the level of vibration present and measure the frequency to determine the source or sources of vibration.

*Barringer & Associates

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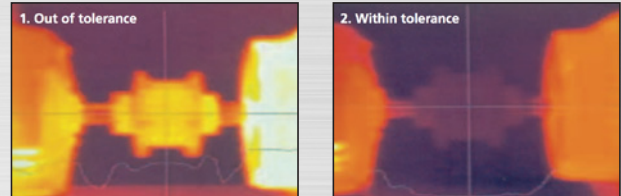
Reliability starts with precision shaft alignment.

Did you know that up to 50% of all damage to rotating machinery is directly related to misalignment?

Using highly precise laser alignment equipment, Hi-Speed can make sure your machinery operates within tolerance. Our preventative maintenance program protects the large investment you've made in your shop's equipment and increases effectiveness while extending its working life.

Precision alignment guarantees:

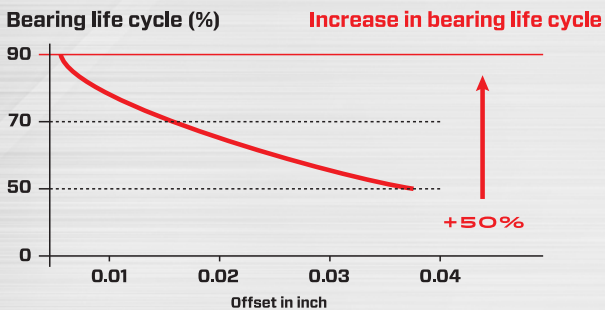
- Reduced energy consumption
- Reduced vibration
- Reduction in bearing, seal, shaft and coupling failure
- No breaking (or cracking) of shafts
- Reduced bearing and coupling temperatures
- Secure foundation bolts



Benefits of Precision Alignment

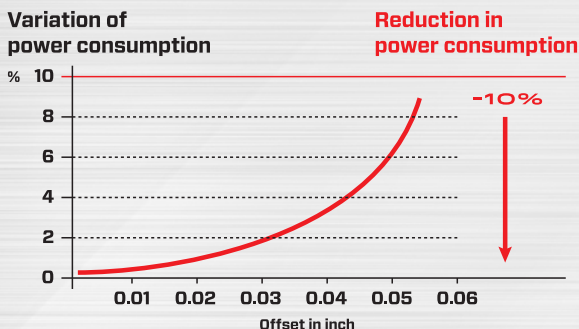
Reduced Energy Consumption

Precise alignment eliminates reaction forces and reduces energy consumption by up to 10%.



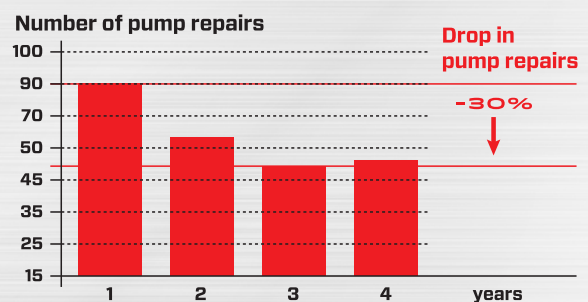
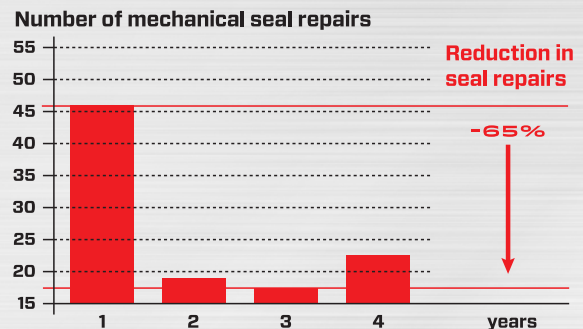
Longer Machine Life

The smaller the offset misalignment, the greater the expected bearing life cycle.



Reduced Incidents of Repairs

Mechanical seal repairs decline by up to 65% when precision alignment is carried out on a regular basis. Pump repairs decline by up to 30%.



A recent survey of nearly 200 machines found that only 7% fell within acceptable alignment tolerances and fully 60% were completely out of tolerance.

Hi-Speed combines industry-leading technology and equipment with decades of experience to help you identify, correct and avoid the misalignment problems that can plague industrial machinery.

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