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Waukesha

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MAINTAINER

Issue Topic: Coolant

Coolant Filters Can Help Extend Uptime

When it comes to engine longevity, the impact of proper fuel, oil and intake air filtration are well known. However, there is another area that's worth considering: Coolant Filtration.

A properly designed coolant filter can remove harmful contaminants, thereby greatly extending engine life. Many Waukesha Engine users, both gas compression and power generation, have discovered the benefits of Waukesha Engine's Coolant Filtration Filter, also commonly referred to as a "glycol filter". Let's face it, engine cooling systems have a big job to do. Poor maintenance today may show up years from now as a cooling system problem.

Canadian Case Study

A large gas compression user in western Canada recently installed coolant filtration systems on three new engines prior to startup. Although each was at a different site, the benefits of the filtration system soon became evident for all of them.

Red rust was present at the first two-hour check of each engine and on one of them a black, undetermined substance was also found. The filters were cleaned at that point, again at six and twelve hours, and then every three days until the coolant was clear. Now the system is checked bi-weekly and it remains clear.

Another user had problems in the past with cracked engine heads. The installation of a coolant filter apparently solved the problem. The user states "without these coolant filters, I'm sure we would have had costly, premature engine failure. With these systems in place, we are able to increase uptime substantially."

Stainless steel cleanable element, P/N 489508.

Cost-Effective Engine Life Extender

Adding a coolant filter to your engine is one of the most cost-effective means of keeping the cooling system clean. Another great benefit is that it extends the life of water pump seals. Even more critical is it helps keep calcium and magnesium mineral scale deposits from forming on the inside of the cylinder heads, which can lead to heat retention — a major cause of cracked heads.

Another benefit is cylinder liner packing ring life can be extended. When not filtered out, dirt particles and iron oxide gather at the top packing ring area. These abrasives, when left unchecked, are harmful to the liner packing rings (O-rings), the liner and the lower liner bore. Premature wear could necessitate an expensive cylinder block repair.

Convenient Kit Form

Waukesha Engine offers two filter assemblies, part number 489501, (pictured) which consists of a stainless steel filter housing, a stainless steel cleanable element (rated at 50 microns), a mounting kit, a stand, fittings, isolation valves and a flow indicator, and a larger version, number 489625. The kits are pre-assembled for ease of installation. Additional stainless steel filters can be ordered under Waukesha part number 489508 for the smaller unit and 48926 for the larger.

Approximately 2% of the total system coolant flow circulates through the filter. A convenient sight glass and flow indicator provides a quick means of determining whether or not the stainless steel filter media need to be cleaned.

The coolant filtration system works with all Waukesha engine models. ■

What Happened Here?

The engine on the Plains had been running along fine for many years, oil and filter changes having been done on schedule. In addition, all engine protection parameters have been permissible.

One day, the operator needed to increase the load in order to maintain normal output. Since then, two of the engine parameters have changed — the jacket water temperature alarm light would flicker and cylinder temperatures had increased. Therefore, he decided to see what the problem could be.

A compression check revealed 30 percent lower readings on the number one, three and five cylinders.

He then bore-scoped these cylinders. While he discovered normal amounts of ash deposits on the pistons, and cylinder head valve face and seats, the liners showed deep scratches.

What happened here?

Answer on Page 2 . . .

How Tight Are Your Water Pump Belts?

The v-belts on the VHP engine need to be tightened correctly to protect belt life and water pump life, too. Incorrect belt tension will reduce belt life through stretching or overheating. If belts are significantly over tightened, water pump bearings can be affected, also. How are operators to know when belts are tightened to the correct tension? This can be accomplished with a v-belt tension tester, part number 474016. When the engine is shut down, the tester can be used to deflect the belt between the span of two pulleys. The gauge will indicate if the force required to deflect the belt through a specified distance is correct. This inexpensive tester such as this can save unnecessary down-time and parts replacement. It also takes the guess work out of maintaining correct belt tension for even the most experienced operators. ■

V-Belt Tension Tester P/N 474016

Distributor has Cooling System CDs, Videos

Want to know more about cooling system maintenance? Your Waukesha Distributor has a complete set of training videos and CDs for your engine. The VHP Engine Operator Technology program, Form 476604 for instance, is a detailed training video developed specifically for engine operators who need to learn the requirements to maintain the VHP series engine's cooling system. The system description is explained, along with piping, flows, pump maintenance, belt tension, coolant filter maintenance, bleeding trapped air, coolant analysis, system performance evaluation, and much more. A review workbook is also included.

Other programs in the series are also available. Call your authorized Waukesha Engine Distributor. ■

To prevent water pump seal failure, avoid using automotive antifreeze in your industrial engines.

Service Tip: Use The Correct Antifreeze

This water pump seal failed in less than a week. The failure was attributed to a high concentration (531 PPM) of silicates formulated in the automotive type antifreeze used in the engine. Automotive antifreezes should never be used in your industrial engine because they are formulated to protect aluminum engines during periods when they are not operating. The silicates formulated in automotive antifreezes have been known to cause fouling deposits as well as to cause water pump seals to fail prematurely. ■

What Happened Here?

Answer:

A technician from the Waukesha Engine Distributor was called in to dig deeper into the problem. He began by removing the cylinder head and pulling the piston. The side of the piston had become scored and the rings stuck in the grooves, which is evidence of "coking." Discovering this, he pulled the cylinder sleeve for a closer look.

The outside diameter of the sleeve was coated with calcium mineral deposits, which caused a lack of heat transfer to the engine's cooling system that resulted in scored pistons and stuck rings.

Proper cooling system chemical treatments would have prevented the problem from occurring. Engine users often think of additives as anti-freeze enhancers and rust inhibitors. However, that "rust inhibitor" does more than simply prevent corrosion. A proper inhibitor will react with hard water elements, forming a soft compound that, for the most part, will remain in suspension thereby preventing hard, high-temperature deposits from forming. Any deposits that do form are soft in nature and can be easily removed with commercially available cleaning compounds. One such manufacturer that offers an excellent product is Union Carbide. Unfortunately, however, once hard deposits are formed there is very little chemical cleaning will accomplish.

For more information on Waukesha Engine coolant requirements, refer to Technical Data S-6699-7 available on our website.

waukeshaengine.dresser.com/coolant

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The Waukesha Maintainer, printed quarterly, is intended to enhance and promote communications to all areas of the Waukesha Engine Family.

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