Do You Believe in Magic?

The Truth about all those Miracle Oil Additives

Just watched a pretty good magician work a small carnival at our local elementary school this week. The magician had all the small folks believing the power to transform and make things disappear was contained in black wand. At the end of the show you could purchase a wand with the same magical power complete with instruction video for only $19.95. Now that’s a real bargain compared to the secret potions our industry is being hammered with on the Internet, some Radio, TV and at local HVACR wholesalers in the gulf region.

Our product evaluation took place about ten years ago when we were approached to distribute a new compressor oil additive having remarkable chemical enhancements. The additive was guaranteed to reduce friction by molecular bonding to all internal moving parts. As mechanics we realize less friction will give us a better running motor, and these molecules electrically bonding to metal really sounds good. The answer to mechanical powered motion the world has been waiting for.

Now I do not have all the answers on the way things work or how the magician performed all his amazing tricks, but the information I shall provide is worth considering before you part with your hard earned dinero. Or better yet, before you unknowingly sell a bombshell to one of your trusted accounts.

The products I am referring to are the Chlorinated Hydrocarbon Lubricants, a.k.a. Chlorowaxes, Chlorinated Paraffin’s, Polarized Additives. After almost ten years of hibernation there back again. These oil additives demonstrate incredibly well under just the right conditions.

The Infamous Bearing Under Load Test

The bearing load test is the most popular demonstration unit. A bearing is mounted on a motor shaft and a hand held fulcrum lever is used to apply metal-to-metal contact on a spinning bearing surface. Without a layer of oil the bearing smokes and squeals. When oil is applied onto the spinning bearing, the grinding stops and everything rides smooth. That is until the pressure applied by the fulcrum lever is increased to a point exceeding the pressure limitation of the oil. Next, the bearing surface is properly cleaned in preparation for the application of our miraculous Chlorinated Oil. The bearing is stressed to near maximum fulcrum pressure but the bearing runs quiet and smooth showing the superior lubricating strength of the Chlorinated Oil.

Convinced me the first time I witnessed this demo at a trade show, convinced a lot of people. That is until a little knowledge comes to light. The bearing pressure test can be beat with many materials. Common bar soap, Ivory, for one, and believe it or not, Hydrochloric Acid. Yes, Hydrochloric Acid molecules bond to protect metal surfaces and reduce friction for quite a long time, that is, until it starts dissolving the metal.

The Plot Thickens

The Chlorinated additives are marketed with a basket full of wondrous claims. Lower head pressure, quieter running compressor, lower energy consumption, cleaner more efficient heat transfer just to name a few. Maybe we should actually add the Chlorinate to a system in the field to see if we can duplicate those inflated claims of a 25% boost. Well, we did. A five ton R-22 packaged A/C system received the recommended dose of 10 ounces of Additive. The cost for the treatment was a mere $600.00. Better
cooling, more cooling, less energy use, we should easily recover our investment. Says so right on the bottle.

We injected the Chlorinate Additive, and within a few minutes, the compressor ran noticeably quieter. The head pressure dropped about 15 PSI and the amp draw fell 5%. WOW...

This is it, we were sitting on a gold mine. This stuff will make us $$$ millions. Should we inject more additive to see if we could really peak this system to even better performance?

Wait a minute, hold your horses partner, I have seen this symptom before, recalling an incident back in my service days when I screwed up a customers walk in box by mistakenly adding R-12 to an R-22 system.

**The Magicians Trick is Exposed**

When a compound having a low vapor pressure (such as R-12) is added to a system containing refrigerant of a higher vapor pressure (R-22), the bulk system pressure will fall. Charge the same R-22 system with R-11, and the head pressure will dive faster than a lead weight. So will the amp draw, compressor noise, and system cooling capacity as measured by the rise in supply air temperature.

We blew the experiment. We forgot to take the temperature of the evaporators supply air before injecting the Additive and watch for any rise in supply air temperature thereafter. It appears that the Chlorinated Lubricant acts upon the refrigerant mass inversely, we could not show proof from a baseline measurement because we were unprepared. Who would have known?

**The Magic Wears Off**

After two months of unit operation we hooked up the gauges, thermometers and an amp probe to see if any factors had changed. The first condition noted was the compressor sound. Nothing clanking or grind just a normal sounding compressor not nearly as quiet as right after the additive was first injected. The amp draw had returned to normal, and the generous head pressure drop almost completely recovered to former levels. The air temperature coming off the supply side of evaporator was still lagging but acceptable.

I am a fan of oil testing so we decided to drain enough fluid to obtain a complete chemical profile. As everybody knows, getting 100 cc of oil out of a 5 ton hermetic is no joy.

The oil would reveal what changes, if any, have taken place. The oil was dark brown, very thin and fuming with a distinct odor. Lab analysis indicated high acidity, chlorine, tons of dissolved metal and the viscosity had completely dropped out. Granted, we did not do an oil test before we used the Additive, but a four year old system virtually untouched should never have oil in this bad of shape.

The Chlorinated Lubricant obviously became unstable because of heat, compression or shear. The Chlorinate fueled hydrochloric acid production. We are not talking trace amounts of acid in the oil: we are talking mega acid.

We put our system back on line with new oil, refrigerant and liquid line drier. Unfortunately, we lost our compressor about two years later to a real nasty burn-out. Could have just been the compressors time to go; could have been the real hot summer; could have been our thermostat jockeys. Could have been
from the damage caused by the Additive, but not likely, says so on the bottle. Maybe we could call the Additive manufacturer and threaten law suit unless he pays for our compressor; can’t do that either says so on the bottle. Besides, the original company we were dealing with had been acquired by someone else and that someone else got legal immunity for any liabilities of the previous owners, says so in their letter.

**Houdini Never Died**

Our investigation was conducted on a product peddled ten years ago. We have not tested any of the new bees of today. We’ve studied their theory, promises, lavish claims and patent references. The language used to promote the present day Additives are carbon copied from the literature of the old.

Marketing gimmicks never die; they just undergo resurrection. Hopefully, the second coming will be the final act.

I for one will not miss them. Don’t take me wrong, I enjoy watching magic. But face it, magic is no fun after you’ve discovered how the trick is done.

*Authored by John Pastorello*

*Chief Engineer for Refrigeration Technologies*

*A member of the MSAC for RSES*