Ford Powerstroke High Failure of Injectors and Stiction Explained, By Harry Johnson

The 6.0 liter Ford Powerstroke engine (actually a Navistar International VT365 engine) model was from 2003-2007. This is the Ford Powerstroke engine with the highest failure rate for injectors and stiction issues. The previous model Ford Powerstroke 7.3L engine(also a Navistar International engine), model years 1994-2003 were also prone to stiction issues as well, but not as badly as the 6.0L. In 2003, it was a year that they offered both Powerstroke engines in the same year model, the last of the 7.3L and the introduction of the 6.0L. By 2008 year model, they went away from the HEUI (Hydraulic Electronic Unit Injector) type fuel injectors and went to the most common widely used type nowadays, peizo ceramic electronic injectors, which only have fuel running through them and no motor oil like HEUI type injectors. Many of the International medium duty trucks ran HEUI type injectors in many different models for many years. Ford no longer has a relationship with Navistar International truck and engine, which started to go sour with the 6.0L powerstroke and progressed till it ended in 2010. The 2011 model Ford Powerstroke is now made in house by Ford.

The issue why the 6.0L is more prone to injector issues is due to a few factors.

1. It runs the high pressure engine oil system almost twice as high as it was in the 7.3L Powerstrokes. "4000 psi" in the high pressure engine oil system is achieved instantly when accelerating hard in a 6.0L.(very hard on motor oil), causing shearing of the oil molecules themselves, and can reduce the base oil long and short chain polymers ineffective in a short period of time, thus reducing the oil to a thinner grade, broken down oil.

2. The 6.0L injector itself is also much more complex. It uses 2 internal electric coils to operate the opening and closing of the injector fuel flow via the spool valve (the one that is prone to stiction or sticking and not moving freely as commanded) where the 7.3L Powerstrokes used a return spring to close the injector, and only one coil to open it. The 6.0L injector is capable of much faster reaction times to changing conditions or commands from the engine electronics, than the 7.3 was.

3. This extreme high pressure engine oil system inside the 6.0L engine (which uses a separate high pressure oil pump, called the HPOP) is used to pressurize the fuel within the fuel injector for proper atomization and direct injection into the cylinders.

4. So, in a nutshell, the fuel injector "spool valve" is trying to move back and forth inside the injector while trying overcome anywhere from 700-4000 psi oil pressures being generated. It needs to be clean and slippery inside the very small orifice that the spool valve operates in (http://dan.prxy.org/Truck/6L_bible_html/html/Page_043.html). Any contamination can cause sticking, especially when the oil is cold and thicker and isn't flowing as well through the injector. Any wear can cause sticking, or side loading (where it gets stuck due to free play-wear of the spool valve).

5. My theory, if these injectors are capable of breaking the motor oil down on a molecular level, then it's working very very hard, which will generate heat and varnish build up, especially when the oil is being worked that hard in this small area inside the fuel injector.

6. My normal, fully warmed up engine idling, high pressure oil readings, used to be at 770psi with Rev-X®, but are now reading 790psi with the AR9100 in my oil and I have run the same motor oil from day one (5w40 Shell Rotella synthetic). So the benefits of AR9100 are not only for the rest of the friction generating areas of the motor, but the all so important high pressure oil system of the 6.0L and for the older 7.3L Powerstroke engines, or any mechanical engines or systems for that matter.