Jason Farrell Case Study

Jason Farrell (#841) is a top running AMA Superbike racer, engine builder, and founder of Speed Tech Motorsports in Oshkosh , Wi. During the 2009 season, Jason tested Abradable Powder Coating™ (APC) piston skirt coatings on some race bikes.   Based on the results below, he will use APC™ piston skirt coatings on all his engine builds - race or street.
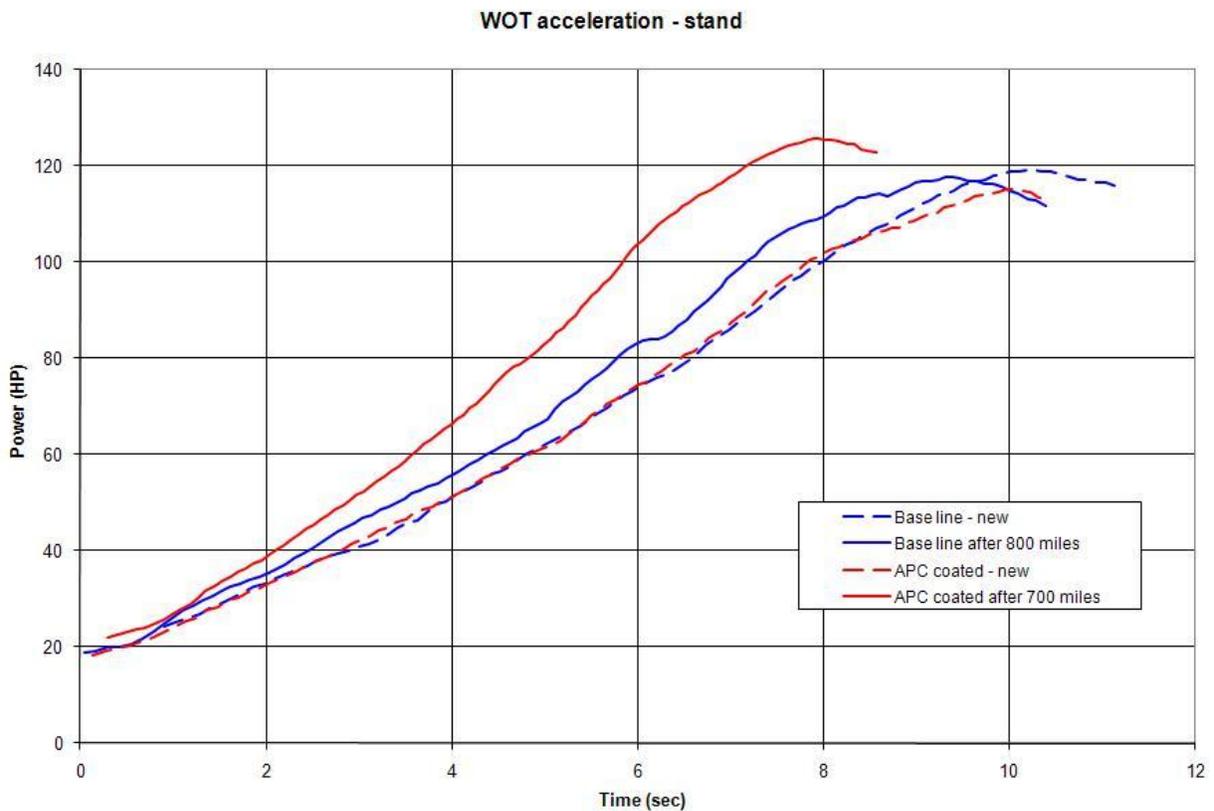

Figure 1 - Kawasaki ZX-6R (600cc) Supersport Motorcycle Race Engine Power Curves.   Identical engines except piston coatings.

Farrell was reluctant to build the engine so tight, but gave APC™ a try with the coated pistons snug in the bores.   After two warm-cool cycles they went to the dyno. The power was a little low on the fresh built engine (red dash) , but better than expected considering the tight build.   On the track the engine sounded quieter and felt better with less vibration. **After 700 race miles (coating break-in complete), the APC™ engine made significantly more power than Farrell has ever seen from a ZX-6R engine (red solid).**

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The parts below are from two Kawasaki ZX-6R race engines which were built identically except for piston coatings.   Both engines were raced for 2500 miles on the same tracks by the Speed Tech Motorsports Team in 2009.   The condition of the stock engine was typical for a 2500 mile scheduled teardown.   The relative appearance of the components was the same across all cylinders.

Left Side – Stock Coating   Right Side - Abradable (APC™) Coating

Figure 2 - Stock coating (left) smaller **skirt** contact pattern (bad for oil film) and scratches. Full skirt contact on APC™ piston means **better oil film and lower friction**. Stock coated piston has larger contact area and more wear on the **top land**.   The APC™ pistons also had a thermal barrier crown coating.

Figure 3 - APC™ engine (right) has less distress on bearings.

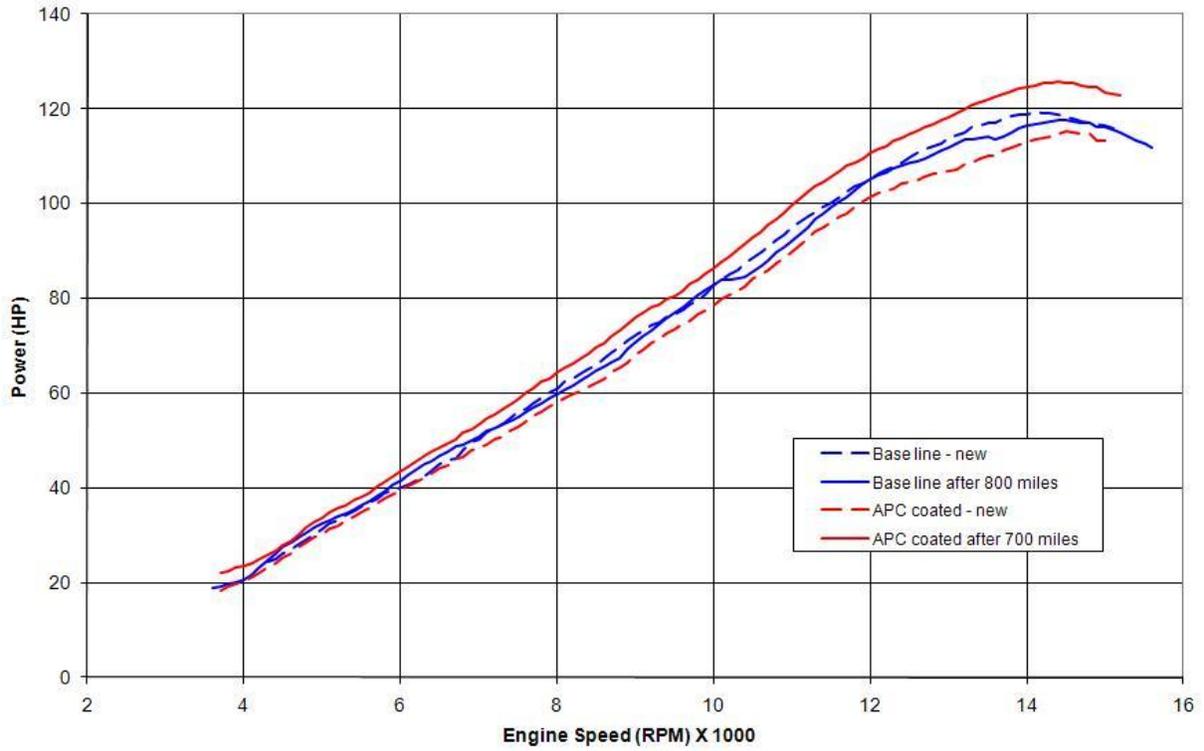Figure 4 – APC™ engine (right) has less wear on wrist pins.

Figure 5 – Same dyno curves as Figure 1, but shown in engine RPM domain.