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Light My Fire

ACCEPTING HIS AWARD AS PERFORMANCE BOATER OF the Year, Mark Nye humbly thanked the large go-fast crowd gathered in Rice Lake's Rhino's Restaurant, event headquarters for the final event of the Performance Boat Club of Canada (PBCC) season.

While he clearly enjoys the rewards of boating, Nye's real passion is power, specifically turbines and the performance delivered by these small, lightweight engines. Though he considers it a hobby, his interests are seeping into the family welding and fabricating business. Nye Manufacturing offers a limited selection of custom turbine components and he's looking for opportunities to rig turbine-powered boats.

A General Electric T58 8F free-shaft gas turbine, bolted to the floor of a 23-foot aluminum hull, may indeed appear radical, but as Nye casually points out, turbines have long powered some very famous performance boats – most notably Howard Arneson's fire-breathing Skater catamaran and Unlimited Hydroplane Racing's *Miss Budweiser.*

Still, by most people's standards, any time you mate boats and aviation, especially when a 1,500-lb. hull is coupled with a 1,370-hp jet engine, a new chip is required before one's brain can process the data. Though Nye described turbines' practicality and efficiency, he failed to convince me that his project wasn't rocket science.

Okay, maybe if you have a mind that works like Mark Nye's, you can get past the design challenges and eccentricities of it all. I don't, so it was a "show me how this thing works" approach that helped me through the whine of the gas producer spinning at 27,300 rpm.

First, Nye assured me that his Alberta-built Eagle Step-Tech boat could handle the speed we were about to experience. Next, he expressed his faith in the custom jet drive, built by Acceleration Enterprises in Alberta and developed in co-operation with American Turbine. From there Nye rolled out the stats.

Weighing just 350 lbs., the engine is rated at 1,370 hp at 6,000 rpm output shaft speed with 1,270 lbs. per foot of torque. The power turbine or windmill part spins at 20,500 rpm, and the engine has 10-stage compressor airflow amounting to 13.7 lbs. per second.

As Nye carried on with his explanation of inverse torque curve and how the Kaman SH2 helicopter gearbox strength limits torque at low rpm, I found myself gazing at a dash full of meters, switches and instruments. "I never really knew how much power I had left to turn up, but now that the torque meter works, I'm happy to discover the engine is only producing 50 percent of its rated torque! SCARY!!!" Nye exclaimed.

Scary is right. What we have here is a welded aluminum river boat that draws next to no water, can accelerate from 40 mph to 80 mph in three seconds and sounds like a jet fighter blasting through the clouds. The preferred fuel is Jet A or kerosene, but Nye alternately runs a mixture of gas and stove oil, a smell foreign to my boating senses.

Though Nye has never taken the boat over 90 mph – and this he has done with his 9-year-old son sitting beside him –

Part boat, part barbecue, this baby cooks!

when he decides to turn up the power at the fuel control, triple digits will surely be seen.

I recently had the opportunity to ride in, and then drive, Mark Nye's fire-breathing beast. In preparation for our run, matching radio communication helicopter helmets and PFDs were donned in ritual-like fashion.

The sequence of events is always the same. Turn on the master switch, fuel boost/supply pump, and enable the igniters. Motor the engine on the starter and wait for rpm to increase to 19 percent N1. Set the run-stop switch to run, whereby the fuel will flow to the combustor. Monitor the exhaust gas temperature as the rpm builds. Keep EGT below 600C and release the starter button when N1 reaches about 45 percent. Allow engine to level off at 55 percent. Check oil pressure and temps.

Idling away from the pier in direct gear forward, Nye ran through a safety and explanation checklist that included shutting down the engine via the emergency stop button. He then hit the afterburner switch, a "for show only" flame effect synonymous with turbine engines.

After a few seconds of turbine lag, power came alive. Like a stone from a slingshot we accelerated to nearly 90 mph. The combination jet drive/shallow deadrise hull allows for the execution of tight, river-racer turns, all fully controlled and predictable. Of course it is a jet drive, and throttle is needed for steering.

While driving the boat was intriguing, I'll most remember the sound of the turbine. Close up, it's very loud, but since high frequency noise doesn't travel far, spectators hear little more than water slapping the bottom of the hull. As the boat gets closer, a "rushing" sound is heard, similar to the sound of a well-tuned Shop-Vac.

As we approached the trailer after our final run, Mark Nye jumped up in the cockpit and shouted "Man, I love that sound...that power!"

He's not the only one.