

Owner of Konrad Marine, Ken Konrad (right) with engineering manager, Chad Stewart preparing for a test run.



Driving Force

By Eric Colby

By identifying customer needs at the right time, Ken Konrad and his company Konrad Marine have become a major player in all facets of marine propulsion.

Charlie and Lois Amarosi have had their Velocity 390, Tsunami II, for six years. They've participated in about 60 poker runs and Charlie says his favorite component on the boat has been his Konrad ACE 540 drives.

"They've been the best part of the boat since I owned it," said Charlie, who is 67 years old. "What I like about the drives more than anything is they shift so nice."

When he built the boat, he had originally wanted to put surface drives on it, but Velocity had difficulties getting them to line up and work right with the boat. "One of my friends said Konrad had these new drives, so Steve Stepp (the president of Velocity) and I talked to them and they sent the set down and we put them on and the rest is history," said Amarosi.

Since the rather large holes of the surface drives had already been cut, going with the Konrads, which have the transmission in the extension box that mounts between the drive and the boat's transom, was a perfectly smart idea. They fit easily into position and bolted right up.

Originally, the boat had 888 hp Pro Rock Marine high performance engines that pushed the boat to around 102 mph, but in 2008 Amarosi blew up an engine and didn't want to deal with an expensive rebuild. He re-powered with a pair of 525 hp naturally-aspirated big blocks that push the boat to about 84 mph. He runs Hydromotive 15 1/4 x 31 four-blade props on the drives, which he has hardly touched throughout the time he has owned them.

"The only thing I've done in the six years I've had them is I took them off once, sent them back to freshen up the gears and put them back on the boat," said Amarosi.

He has taken Konrad personnel to a number of poker runs through the years and Amarosi will tell anyone who listens how much he thinks of his drives. Since Konrad first came out with its PRS 1 (Performance Replacement System) that fits and bolts in place where old Mercury TRS drives would have been, virtually all the feedback from the go-fast world has been positive.

That momentum should carry over to the new 600 series of drives that made its debut at this year's Miami International Boat Show. The drives in the 600 series include the 620, a single-prop



Konrad Marine's 600 series drives include (l-r) the 620, 660, and 680. The series also offers a 640.

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drive that can handle up to a 20" wheel, the 640, which can take a 16" prop, the 660, a dual-prop drive for 16" diameters and the 680, also spinning twin counter-rotating props up to 20" in diameter.

"You're going to find that our drives will perform excellently in high-performance," said company owner and founder Ken Konrad. "We're going to be picking at the bottom end of the Six drive."

One of the primary differences between the 500 and 600 series is the size of the gears. The 500 series has 4" gears and the 600 has gears more than 6" in diameter. The upper gear housing is much more substantial and, as with all Konrads, the drives are built to exacting engineering specifications as opposed to more typical manufacturing specs.

Konrad admitted that getting into the performance game happened almost by chance. "The high-performance people started talking to us and asked us if we had a 16" lower unit," he explained. "It so happened that when we came out with the 500 series, we copied the TRS bolt pattern."

While MerCruiser had stopped making its TRS drives now with the Konrad PRS, boat owners could upgrade to new units without having to change a thing on the transom of their boat.

It's Ken Konrad's knack for identifying a need in the marine industry and designing a drive to fill that niche that has made Konrad Marine a major force in propulsion in a relatively short period of time.

"I'm one of those dreamers," said Konrad. "I go to the boat show and walk the aisles and go through a lot of magazines and get a feeling for what a need is and say, 'How can I solve that need?'"

He also has a natural ability to fix things and honed those skills in the Navy as a repairman on Swift boats in Vietnam in 1966 and '67. When Konrad left the

service, he started Konrad Corporation, which made universal joints from 8" diameter up to 24" diameter to handle seriously huge torque loads. Some of those spindles have three 1200 hp engines feeding into a single gearbox turning only 100 rpm and Konrad's universal joints area absorbing up to 100,000 foot pounds of torque.

The entry into the marine industry came through a Konrad Corporation sales representative who came to the boss with an idea. "He was an Alpha drive lover and he said these things break all the time," said Konrad. "There's a huge business in rebuilding them."

Konrad Corporation went to the Miami Boat Show in the early 1990s with its Alpha One aftermarket drive, which it called the Omega, but soon diesel engine builders came calling asking if the company would be willing to work on a drive that could handle the extra torque created by their engines. The Konrad 500 series of drives was born and its job was to work with diesel engines.

"Once we had the 500 series, we stopped making Mercury aftermarket equipment and concentrated on our own design drives," said Konrad. A key to the company's success has been its owner's willingness to invest in equipment and suppliers to make the drives robust enough to handle big torque loads over long duty cycles. That's why the company's drives are popular in commercial marine applications where 3,000 to 4,000-hour life expectancy is the norm.

"The commercial guy wants it to last forever and ever and ever," said Konrad. "A racer wants it to make it through the race without breaking and the performance-boat owner wants to run months and months without breaking," said Konrad.

Konrad's dedication to trouble-free operation led the company to invest in a new \$1.5 million gear cutter from Gleason Corporation in Rochester, NY. It's one of only three such



The home of Konrad Marine, a 27,000 square-foot manufacturing and R&D facility based in Hudson, WI.

machines in the world. One is in Germany being used by the Bosch corporation and the other is in a BMW facility in Brazil. The machine is a six-axis computer-controlled machine with an optimized tooth cutter specifically targeted at cutting gears for stern drives. "There's nobody out there who can produce a gear that's optimized for a stern drive except us," said Konrad.

One of the driving forces behind such an investment was to take as much control of the gear-making process as possible. Several years ago Konrad experienced problems with outsourcing some of the gear manufacturing steps for their drives. "We did everything we could, as soon as we knew what the problem was, to correct it," said Konrad. "This included purchasing a state-of-the-art gear machine that enables us to produce the strongest gears in the industry."

A few years earlier at the Miami Boat International Boat Show, both Konrad and Mercury Racing were set to debut new performance drives that were intended to handle more power than a Bravo but be less expensive than a Number Six drive. Konrad's was the 540 ACE, while Mercury Racing's was the ACE that would eventually need to be re-named the NXT-1. Konrad had applied for the copyright two days earlier.

"I was real surprised that Mercury had a hole in their product line between the Bravo

and the Six drive," recalled Konrad.

As tenacious as he was about making sure his product was copy-righted properly, Konrad Marine is equally obsessive about testing its drives to make sure they can handle the torque loads they are rated for over a long period of time. "If we over-push the drive, we see failures also, we see the limit," said Ken Konrad. In one torture test, a boat



Owner Ken Konrad during the construction of Konrad Marine's 80,000 gallon underground test tank that was completed in 1996.

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that was killing other drives has met its match in the 680. "It ate up every drive until it hit this 680," Konrad said proudly.

The company gives a warranty on the 600 series of up to 1,200 foot-pounds of torque. If a customer wants to put more power through the drive, Konrad will make him fill out a waiver before taking delivery.

Nowhere near retiring at age 66, Konrad is fortunate that he has good people handling his sales and administrative management so he can focus on engineering and research and development. He loves anything mechanical and has even looked at such diverse areas as wind power for new ideas.

Konrad is partnering with Gale Banks Engineering on its Chevy Duramax-based marine engine and has worked with Cummins, Yanmar and other diesel companies.

But he remains intrigued by the performance market and thinks the 600 series will be welcomed by the go-fast crowd because of the torque loads it can absorb. And that will make customers like Charlie Amarosi quite happy. **PRA**



Konrad Marine machinist foreman Troy Graetz performing a prop shaft turning operation.



Ken and Kathy on Konrad's shop floor.