

Nevertheless, GT 63 managed to arrive second in the Naples leg, and, as I have said, fourth overall in the general classification at Montecarlo.

The 1991 Venice-Montecarlo ended with a sweeping victory by Della Valle, with my second tri-engine monohull, which was just like the Fiat Uno, minus the safety bubbles, and powered by three twin-turbine Endurance engines. Renato, who was racing with Gianfranco Rossi, Renato Pozzetto and Moreno Di Giusto, was amply gratified when, at the helm of my three-engine craft, he out-paced Rampezzotti's and Capoferri's much more powerful light-alloy, four-engine Seatek, built in England by Cunningham boatbuilders. Technically, it was a new demonstration of the superiority of advanced composite constructions over those in aluminum. Renato Della Valle won the endurance trial in 19 hours, 43 minutes and 57 seconds, ahead of Andrea Bonomi and Emilio Riganti with our small 38-footer, driven by 2 Seateks, and Capoferri's 4-engine craft. With GT 63 placing fourth, I had the satisfaction of seeing our four boats in the first four lead positions, ahead of a score and ten other competing craft.

Incredibly, the 1991 Venice-Montecarlo marked the end of GT 63, a boat whose beauty was matched only by its ill fortune. Mr. Kitami, in fact, found it deplorable that "his" boat only placed fourth, and, what was even more deplorable, that the three boats ahead of it were mine! Out of pure spite towards me, he decided to destroy it. After all, being his property, and having almost finished paying for it, he could dispose of it as he saw fit. So, he engaged the services of an oversized caterpillar and, with no mean amount of effort, he set about breaking GT 63 into smithereens on a deserted landing dock in Port St. Philippe du Rhone, making sure that the pieces were brought to two different dumps so as to make it impossible for some highly improbable "puzzle aficionado" to piece it all together. Such an attitude can be understood only if viewed from the different perspective of the Japanese, for whom harakiri is an honored

practice. Again, one is reminded of that rather oddly vindictive husband, who, in order to spite his unfaithful wife, cut his own balls off.

46. TRM 1

After building the 7.8-liter Seatek, which had been designed only so we could use three such engines - which barely squeezed within the cylinder-capacity limits set down by the UIM Class 1 - the idea of a trimaran was slowly but surely taking shape. I was particularly intrigued by some new concepts, but still didn't feel confident enough to risk the cost of such an innovative 3-engine boat. As I had spent the last three years working almost exclusively on engines and on engine-related problems, I again started doing research on advanced composite materials, testing them together with new molding systems which were being implemented, especially in France, where the building of very sophisticated regatta sail boats in composite was rather widespread. In this, I was assisted by Sandro Quaglia, an expert Franco-Italian technician, who had joined our team for a few months. As our theme is that of "winning projects", I can't but expatiate on the little single-engine trimaran, christened TRM 1, which proved a veritable test bench for technological experimentation.

TMR 1 is the perfect example of an authentic experimental project, conceived at the very outset to test the utmost in new ideas and technologies. I wanted at the time to experiment with many things which were absolutely different among themselves, but I wanted everything to be useful and utilizable; not a sterile laboratory test without practical applications, but a sensible project aimed at achieving some well-defined objectives, such as:

1. Building a boat with the utmost in terms of vacuum-bagging technology, in epoxy resin, epoxy gelcoat and new pluriaxial fibers.
2. Testing some hull concepts, like the high-aerodynamic lift trimaran, and semi-symmetric sponsons.

3. Testing a new single-engine transmission with two counter-rotating surface propellers placed side by side.

4. Having a single-engine hull, with a maximum 2.5-meter width, and therefore easily transportable, in order to test Seatek engines, since all our boats had twin-engines, and therefore were too costly to be utilized for testing.

5. Having a boat capable of racing and winning in offshore classes 3 and 2, and later utilize it to set new world speed records.

6. Having a more maneuverable boat than the hydroplane for long-distance races, such as my beloved Pavia-Venice, where I had understood that, with a hydroplane I could only do myself great harm, and that the latter could perform in light-swell conditions, and consequently could also be used on the lake.

Certainly, all this design input amounted to a welter of often contrasting notions, but I think that few projects have been so on-target as TRM 1. The boat was almost entirely built in August 1991, with the secret hope of using it in September on the Lario Round. Practically speaking, I can say that I spent my holidays that summer with TRM 1.

In order to build my new twin-prop transmission, I designed a new splitting gearbox, with a cast casing with two transmission shafts, 300 mm one from the other. This is why TRM's tail was rather wide, and capable of supporting the two shafts carriers and the two prop shafts, which extended from the main transom through two adjustable ball-bearing carriers, which are by now classic features of Trimax transmissions. With much effort, TRM 1 was tested the very day before the "Giro del Lario", and, like all new projects, it was fraught with problems. First of all, it didn't glide. Thus, as I had already done in 1982 with my first Iveco, I spent an entire day cutting propellers until the strange object made up its mind to glide. But gliding isn't everything; in fact, we also lacked speed. From our drawing-board 120 mph, correlated to the weight-power ratio, the actual speed dropped to only 100 mph; and, with tail winds, even less. As I have always maintained

that races are also excellent experimental test-benches, I entered TRM 1 all the same in the 1990 "Lario Round", arriving third, behind one of Tullio Abbate's catamarans, powered by a 12-cylinder BPM, and Eugenio Molinari's gasoline-powered hydroplane.

The slight success we had with TRM's debut-run only acted as a further incentive to get my new boat running like clockwork. The following month I continually tried out new solutions; but, even with more powerful engines, TRM 1 only managed a top speed of 105 mph (with strong winds) and 95 with tail winds. After innumerable trial runs, measurements and adjustments, I decided to raise the central sponson, which was cut from the hull and repositioned approximately 30 mm higher. It was an enormous job, but which yielded only one extra mile! Finally, I thought: perhaps it's the transmission that's eating up power, and, in a moment of despair, I removed one of the two propellers, trying the boat with only one prop, off-centered, of course, but at least with the right diameter and pitch. Only with these adjustments, did TRM 1 finally make up its mind to go over 120 mph.

The hull, therefore, performed well; it was the transmission, instead, that ate up all the power. Probably, more than on the transmission, the boat's inefficiency was dependent on the two counter-rotating propellers, which, having a small diameter, failed to yield sufficient thrust. TRM 1, therefore, was completely modified, with only one central propeller, and in 1991 it was entered by Andrea Bonomi in some offshore Class-3 competitions.

In its Formia 1991 debut, as Andrea Bonomi has already related, TRM 1 splendidly managed to get its crew disqualified. In fact, after having won handily, it was down-classed for having jumped a buoy. Subsequently, proving to be very fast but particularly ill-suited to rough-water conditions because of the rather low position of its tunnel, it competed in the European 3/6-liter class Championship, arriving second overall and also winning a trial run. Nevertheless, it was a sufficient result to enable us to take a shot at

the speed record in the offshore categories. Thus, with all its parts oiled, in November 1991, TRM 1 set the new class 2 and 3 speed records (respectively 197.261 and 190.080 km/h., at Moregallo, with Giancarlo and Monica Rampezzotti.

Nevertheless, TRM 1 continued its career as a "lab hull", but sinking woefully during the 1992 Pavia-Venezia, with Andrea almost asleep at the helm, or, to say the least, greatly distracted. With Carlo Bodega it set an incredible class-2 offshore record traveling at over 218 km/h in December 1992, and taught us many very basic things which we were to implement on our next project: an offshore Class-1 trimaran powered by three 7800 cc Seatek engines, identified with the logical name of TRM 3.

47. TRM 3

Our experiments with TRM 3 had yielded decidedly positive results. In terms of speed performance, especially as far as the weight-power ratio is concerned, TRM 1 held well in the right-curve area, in itself a higher performance indicator in spite of its greater torque owing to having only one surface propeller. When, in order to reduce appendix-drag-resistance, the propeller is surfaced and made to function only with the lower blades immersed in water, a transversal force is created which bears on the prop carrier, causing the boat to tilt more to one side because the propeller, working only with its lower part, behaves like a gear moving along a ratchet.

Banking on all the useful experiments I conducted in the winter of 1991-1992, I started building a new Class-1 hull; a trimaran powered by three 7800 cubic centimeter engines, big brother to TRM 1, with three propellers and only one rudder. Following this arrangement, two of the propellers were on the right, one on the left, thereby voiding the two transversal forces. Furthermore, the asymmetric position, with respect to a single-engine solu-

tion, was reduced to only 33% of the third central propeller. Having adopted only one rudder was a winning idea, especially as it contributed to reducing drag resistance, primarily because there was only one water-intake for all three engines.

TRM 3's hull was built implementing a new system of pre-impregnated monodirectional tapes, mixed with S glass and Kevlar, and impregnated, by "DSM", with a new experimental system. In other words, the days of uncontrolled normal lamination were over, making room for much more sophisticated materials and systems which allowed for considerable weight diminution, and, often, increased sturdiness. The only drawback were the costs, which soared disproportionately, and in many cases I was able to assess that each kilogram of weight "taken" from the hull cost close to \$ 800,000.00.

This is easily reckoned, when one considers that a new hull, in very advanced composite construction, costs \$ 300,000.00 more than an aluminum hull, while having the advantage of weighing approximately 500 kilos less. Therefore, it is a matter of simple logic to foresee that, if a weight limit is not imposed, the costs of hull-construction will soar, and offshore racing will become a sport only for a choice handful of nabobs.

TRM 3 was designed with an $R = 2.6$ kg/hp and a speed of 130 mph. It was test-run in the spring of 1992, reaching, soon after having been fine-tuned, the incredible top speed of 135 mph. Its only shortcoming, however, was that it had very little acceleration, because of the low 7800 cc capacity of its engines, which although very powerful, totally lacked torque.

In the 1992 season Antonio Gioffredi, together with Andrea Bonomi, entered a competition with my new trimaran, thus forming the most "mismatched" team in offshore circles. Antonio, the improviser, carefree and lively, and more than ever "Neapolitan", with superstition as his only exact science, was the exact opposite of Andrea, who measured every gesture, every movement, was elegantly "deep-frozen", and terribly absent-minded. In

spite of this apparent clash in characters, this "odd couple" managed to set a new world speed record with my trimaran, winning the Pescara competition at an average speed of over 198 mph.

But it also succeeded in landing in the office of an eye specialist to have their vision checked, after having missed the pole position at the Ostend race, and terrorizing the members of the jury boat to the extent that one of them leaped overboard for fear of being crashed into.

48. Tecno 40

Seatek, meanwhile, continued to grow, thanks especially to the devotion and care that Carlo and Andrea Bonomi, I myself, Fumagalli and ingegner Molla put into the project. Seatek's image also continued to grow because of the many exceptional victories it achieved in all classes, in Endurance races such as the Venice-Montecarlo, and also because of the very impressive results achieved by boats produced in other shipyards, but which utilized Seatek engines. Among these, Ferretti, for whom I designed a multistep 48-footer, with either two or three Seatek engines. Paolo Martin designed its deck, creating a veritable work of art; a hull which broke with tradition, was totally practical, with two "real" cabins, a spacious lounge and a very useful sliding roof.

Little by little all shipyards began to show interest in Seatek engines, attracted especially by their rather contained dimensions and their proven reliability. Novamarine, a leading Sardinia producer of rigid inflatable boats (RIBs) was among the many to get in touch with the people at Seatek. My meeting with this firm's top manager, Giuseppe Carlini, took place during the Genoa Boat Show in 1991, by then the fourth year running that Seatek had its engines on display. Chatting amicably of our shared interests, he asked me to design a small boat, which could be fitted

with a Seatek engine, and used either as a megayacht tender or as a rapid-patrol boat. I immediately let my interlocutor sense that the idea didn't particularly attract me; I wasn't very familiar with the inflatable-boat sector and, above all, I considered rigid-hull constructions as combining all the possible defects of rigid hulls with those of pneumatic hulls. Thus, I declined the offer.

Then, little by little, a certain idea started taking shape in my head. First of all, and taking an analytical approach, I said to myself that you can't just design what you want, even though up to that moment that is exactly what I had always done. A good project designer has to do whatever is requested of him, and do it to the best of his ability, but, above all, to do it better than has ever been done before. Thus, I thought of utilizing my 38-foot monohull (multi-time offshore champion) in order to make a rescue-type craft capable of meeting a few basic requisites: speed, esthetics, safety, and stability in rough seas. This last point I found particularly challenging, and therefore fascinating; in fact, the inflatable collar could automatically act as suspensions when the going got rough. Then, I started taking a look at all the available RIB constructions, and, to be absolutely honest, they all seemed terribly ungainly to me. There were only a few boats that went beyond a certain dimension, and they all resembled a cross between the Michelin-tire man and a Swiss chalet! So, I lowered the pilots' position as much as I could, creating a lower space with respect to the deck level, but capable of containing only four people. However, I ensured their protection so that I could tap the great advantage offered by the inflated structure, which would allow the boat to move at high-speed in rough-sea conditions.

Once construction of a deck model was underway, I devoted my attentions to studying the seat positions. The many years I had spent in offshore racing afforded me a valuable store of experience. In particular, experience had taught me that racing in a standing position was certainly more suited to the spinal