Popularization Period (1991 ~ 1998)

普及

After the 1-2-3 finish by Yamaha riders on the YZE750T in 1991, our Paris-Dakar activities once again centered around production models. With the release of the production competition model "XTR850TRX" as the culmination of nearly twenty years of development efforts, the dream of participating in the exciting world of the Paris-Dakar came within the reach of many more people. All this also represented a big first step in realizing Yamaha Motor's corporate ideal of "Creating Excitement through Humachine Technology."

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve parallel twin-cylinder 802.5cc**
- **Fuel tank capacity: 64ℓ (main 38ℓ + rear 26ℓ)**
- **Weight: 194kg**

1991 YZE750T Super Ténéré (OWC5)

The competitiveness of the twin-cylinder YZE750T Super Ténéré machine that had finished 2nd the year before was further boosted by measures such as improving performance in the low- to mid-speed range and improving durability to accommodate the quality of gasoline available in Africa. A total of eight of these machines were entered this year from the Sonauto and Italian teams. The result was a glorious 1-2-3 finish for the Yamaha machines, their first victory in ten years. It was Stéphane Peterhansel who won the rally in his fourth try, and this would be the first of a record six individual wins he accumulated in the coming years.

There is a lot to a Paris-Dakar machine that only comes to you from experience. The jet needle of the carburetor wears down quickly due to the vibration. The needle used is an aluminum one with Alumite coating. But, we had to try again and again with increasingly thick coatings of Alumite before we finally got a needle that could stand up to rally use. The air cleaner is designed with the box on top and the element is inserted at the bottom. Experience taught us that if you don't do it this way sand gets into the intake system. (Motor Sports Engineering Division, Performance Development Engineer: Kenju Tamura)

1992 YZE750T Super Ténéré (OWD8)

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve parallel twin-cylinder 849cc**
- **Fuel tank capacity: 67ℓ (main 42ℓ + rear 25ℓ)**
- **Weight: 189kg**

This was the year of the 14th Paris-Dakar and for the first time the course was laid out to run the full length of the African continent. Beginning in Rouen, France, the course continued for 12,500 km, from Syrte on the Mediterranean coast to Le Cap (Cape Town,) South Africa. Now in its third year, the YZE750T Super Ténéré was bored out to 850cc and given especially rigorous tuning by the factory team to handle this super-long rally course. Peterhansel would win his second straight victory in this rally and his YZE750T Super Ténéré would be the last Paris-Dakar machine developed by YMC's Motor Sports Engineering Division.

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve parallel twin-cylinder 849cc**
- **Fuel tank capacity: 53ℓ**
- **Weight: 210kg**

1995 XTZ850R

The regulation change in 1994 led Yamaha to postpone its factory participation in the Paris-Dakar Rally for one year. This was the machine that was developed to meet the new regulation that limited participation to machines that had sold at least 15 units on the general market. This machine was manufactured by Yamaha Motor France using the liquid-cooled DOHC, 5-valve 850cc engine from the TDM850 road sport model released in 1991. Even though it was a production machine, its competitive potential was on par with the factory machines and it would provide many privateers with a potent competition bike for the Paris-Dakar.

The "TRX850" would later be developed as a factory machine. The number of engine mounts was increased and the rigidity increased to prevent "snaking in the desert sand." It has quite a bit more rigidity, I believe, than the models of the single-cylinder era. We also conducted tests where we would add the weight of a human rider to the machine and then drop it from a given height. (Motor Sports Engineering Division, Performance Development Engineer: Kenju Tamura)

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"The Paris-Dakar Rally - 20 Years of Challenge" Exhibition

Dates: September 28 ~ November 23, 2002
Venue: Yamaha Communication Plaza

For twenty years beginning with its first holding in 1979, Yamaha continued to take on the challenge of the Paris-Dakar Rally, a race across the desolate sands of North Africa that is often called the world's toughest. The nine Yamaha victories won during these 20 years were the most by any maker in the motorcycle category, and French Yamaha rider Stéphane Peterhansel's six victories were the most for a single rider.

Looking back over these two decades of ongoing challenge, we can divide the rally's history into four periods. In the Emerging Period when the rally was young, many participants chose the Yamaha XT500 as the machine for the task. In the Development Period Yamaha's production model development groups sought to build models with all the qualities necessary to conquer the desert sands. As the rally became internationally famous, professional teams formed specifically for the Paris Dakar competed intensely under new regulations in the Period of Challenge. Finally, competition models embodying years of research and development became widely available to bikers and the Paris-Dakar evolved into an adventure rally accessible to many more people from around the world in its Populalization Period.
Throughout these years and the changes they brought in the Paris-Dakar's size and organization, the one thing that never changed was the spirit of challenge of the Yamaha staff in their pursuit of the ultimate in human-machine unity as they worked to grasp the nature of the African desert rally and build the world's strongest, fastest machines.

With the holding of "The Paris-Dakar Rally – 20 Years of Challenge" exhibition, we hope that visitors will discover the excitement and the "Kando" that was born of the Yamaha spirit of challenge and the "Humachine Technology" that lies at the heart of everything we build.

Emerging Period (1979 ~ 1981)

胎動

It was in December of 1978 that Thierry Sabine sent out a call for a new kind of rally that would be a challenge for those who went and a dream for those who sent them off. Until the third holding, when it became an internationally certified race, the first two Paris Dakar rallies were pure adventure runs with no class regulations. In this, the rally's Emerging Period, many riders chose to take on the sands of the Sahara on Yamaha's big 4-stroke trail bike, the XT500, and as yet there were no factory teams competing.

- **Engine type: Air-cooled 4-stroke OHC single-cylinder 499cc**
- **Fuel tank capacity: 38ℓ** ● **Weight: 147kg**

1979 XT500 Modified

This is the same type as the modified XT500 machine that Cyril Nevue rode to that memorable overall victory in the very first Paris-Dakar Rally. The machine #3 in the photo at left is the one that Christian Rayer rode for the Sonauto team and finished 8th overall. Taking as its base the TT500 competition model of the "XT500" that would be the forerunner of this 4-stroke big single off-road model launched on the market in 1976, the fuel tank capacity was increased and the front and rear suspensions strengthened. The "XT500 Modified" would go on in the 2nd Paris-Dakar to sweep the top four places.

Development Period (1982 ~ 1987)

模索

In this period, Paris-Dakar replica models with their oversized fuel tanks became a common sight on the streets of Paris. The Paris-Dakar became well known in Europe and its reputation grew rapidly as it began to attract the attention of the world's media. Yamaha's French importer Sonauto (present Yamaha Motor France) fielded teams in the rally, as did constructors from Italy and Spain. In Japan, as well, development teams began to work on production models geared toward Paris-Dakar type competition. Building bikes for this ultimate challenge of man and machine sparked a quantum leap in the kind of man-machine technologies we at Yamaha now call "Humachine Technology" and narrowed the gap between a rider's confidence and uncertainty.

- **Engine type: Air-cooled 4-stroke OHC single-cylinder 660cc**
- **Fuel tank capacity: 51ℓ (main 39ℓ + rear 12ℓ)**
- **Weight: 146kg**

1985 XT600 Ténéré (OU26)

The machine with the race number 80 was ridden by Jean-Claude Olivier (present President of Yamaha Motor France) to finish in 2nd place. It had a displacement of 660cc and was developed by Yamaha's production model advance development group. It had a fuel tank capacity of 51 liters that was divided into a main tank and two side tanks in order to achieve a machine layout that allowed an ideal riding position and weight balance. This kind of "Humachine Technology" helped produce a model that had good knee grip and neutral handling.

With the 1983 "XT600 Modified" I had worked non-stop from May to October of the previous year to get from the design stage to the prototype and part way into assembly. With my main emphasis on rigidity and reliability I had worked from scratch on the frame design, being the novice designer that I was at the time. For the engine we used the same unit as the previous year's model. I had been told that the sand of the African desert required a special kind of paper filter for the air cleaner, so I asked one of our affiliated companies to make me up a special unit. When it was finished I remember having the desire to leave my mark on the final machine in some form, so I took an electric pen and engraved my initials on the side of the gear box cover.

(Production model development department, test engineer, Hirosuke Negishi)

- **Engine type: Air-cooled 4-stroke OHC single-cylinder 665cc**
- **Fuel tank capacity: 52ℓ (main 33ℓ + rear 19ℓ)**
- **Weight: 146kg**

1986 XT600 Ténéré (OU26)

The 1986 machine was a further modification of the XT600 Ténéré that Olivier rode to a 2nd place finish the year before. Improvements to the engine boosted torque and running speed, with the top speed extended by 10 km/h. The suspension was the same type used on the '86 model motocrossers. A two-piece fuel tank was adopted. This year Olivier drew attention by riding the "FZ750 Ténéré" and this XT600 Ténéré also performed well, with a top place of 4th for the machine ridden by Thierry Charbonnier.

By 1986, the idea of what the basic requirements for a Paris-Dakar machine should be, what form it should take, was already taking shape within Yamaha and the know-how and innovations were already being passed on from one team to the next. An engine guard became standard from the '85 machine, as had putting side stands on both sides of the machine. On the '86-'87 machines the side stand also doubled as a tool box. To help the rider see a greater distance, twin headlights were adopted, with one set straight on the horizontal plane and the other slanted down at the usual angle. The tail lamp assembly was also used to hold first aid supplies. Cowling was used from the '86 machine. It featured a compact design that integrated the fuel tank covers and it was divided into sections for easier transport and replacement. The cowling and bush guards on today's off-road models all originated with these Paris-Dakar machines. (Former 21 development group, second research group, Masae Watanabe)

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve 4-cylinder 749.6cc**
- **Fuel tank capacity: 62ℓ (main 37ℓ + rear 25ℓ)**
- **Weight: 197kg**

1986 FZ750 Ténéré (OU26)

Having suffered from a decisive disadvantage in top speed compared to rival teams, J-C Olivier surprised everyone by entering the 1986 Paris-Dakar with a prototype machine mounting the liquid-cooled in-line 4-cylinder DOHC 5-valve power unit from the road sport model FZ750 with a six-speed transmission. Despite this bold attempt, the heavy 200kg weight and lack of traction of this prototype failed to meet the demands of the Rally and Olivier had to settle for 12th place. This was also the year that the Honda NXR works machine joined the Rally for the first time. This would turn out to be the worst Paris-Dakar in the rally's history, with its founding father, Thierry Sabine, dying in a helicopter accident during the rally and only 15% of the field finally finishing.

Rider Serge Bacou came to Japan and did test rides with us at places like the Shiomizaka hills. The tests concentrated exclusively on the FZ750 Ténéré, which was definitely fast but left us with doubts about its handling performance on the desert sands. These doubts made me want to find out as much as I could about the Paris-Dakar Rally and led to the opportunity for me to join the Belgarda team from Italy as a mechanic. That experience from the initial preparations to the final rally finish in Dakar still remains one of the most valuable experiences I have ever had. I feel it has been a big inspiration in all the work I have done since.

(Production model development department, test engineer, Minoru Saito)

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve 4-cylinder 912cc**
- **Fuel tank capacity: 62ℓ (main 37ℓ + rear 25ℓ)**
- **Weight: 197kg**

1987 YZE920 Ténéré

As the Paris-Dakar Rally became a faster and faster race, J-C Olivier further increased the displacement of his machine. Whereas he had surprised the competition with a prototype machine powered by the 750cc engine of the FZ750 road sport model the year before, now he appeared with a new prototype mounting a 912cc 4-cylinder engine. On this second-year prototype, the max. power output was kept down despite the increased displacement in order to improve the low-speed performance. This made for better stability, but the chassis weight of 197 kg was still a big handicap. Serge Bacou, who rode this prototype along with Olivier in the rally, managed to finish 7th.

The Paris-Dakar Rally is a race where a single machine can't run fast on its own. Because of the real fear of getting off course, motorcycles (motos), cars (autos) and trucks (camion) form groups and run together. For that reason, this is a race where it is hard to make judgments about how fast an individual rider or a machine is.

It is also not a race that you can win just by running fast. You need the cool judgment to get to that day's camp without damaging your machine. And, if you run into trouble along the way you have to be able to fix it yourself. That's why there were even some Paris-Dakar riders like Franco Picco who did the machine set-up by themselves.

(Motor Sports Engineering Division: Kazuhisa Takano)

Period of Challenge (1988 ~ 1990)

挑戦

By the time the ideal form of the Paris-Dakar machine began to show itself clearly after years of trial and error, our race and development activities were taken over by a specialized racing group of YMC's Motor Sports Engineering Division. Yamaha's Paris Dakar factory machine at this time, the 4-stroke liquid-cooled, parallel twin "YZE750T," opened the way to Stéphane Peterhansel's coming string of consecutive victories. The big strides in Humachine Technology were matched by equal progress in the skills of the support crew and the systematic organization of the teams in this Period of Challenge.

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve single-cylinder 756.8cc**
- **Fuel tank capacity: 55ℓ (main 33ℓ + rear 22ℓ)**
- **Weight: 179kg**

1988 YZE750 Ténéré (OW93)

This was the first pure factory machine constructed by a specialized race group (YMC's Motor Sports Engineering Division). Their aim was not top speed but a well-balanced machine as they sought to the expand the possibilities of a compact, lightweight single-cylinder engine. The powerful engine on this machine was liquid-cooled with a 750cc displacement, DOHC, 5 valves and 2 spark plugs. The fuel tank had a 55-liter total capacity divided between a main and two side sections to contribute to smoother handling. Throughout the machine was know-how gleaned from the years of the Rally's "Development Period," such as the side stands incorporating a tool box function that enabled the bike to be stood up on either side.

In the Pharaohs Rally that we used as a warm-up race in October, the engine had split completely in half. We took the broken parts and carried them all the way back to Narita, Japan via Cairo, Paris and Amsterdam. When we got back we redesigned the engine. As I worked on the new engine I could still see the angry face of Mr. Olivier after that engine fell apart. It seemed to say, "At Sonauto we are out there risking the lives of our top management and our company's fortunes on this!"

In order not to repeat the calamity of the Pharaohs Rally, we completely redesigned and reevaluated the cylinder head and the cylinder and just made it back to Paris for the start of the Paris-Dakar by the skin of our teeth. Riding this machine that had been completed in just two months, Picco would have won the rally had an official not mistaken the goal location.

(Former 2nd Motor Sports Group, OW93 Project Leader: Haruo Tatsumi)

1989 HONDA NXR750

The Honda factory machine NXR750 mounted a liquid-cooled V-twin 750cc engine on a compact chassis. Debuting at the 8th Paris-Dakar Rally in 1986, it would win the rally four consecutive years. The #100 machine was the one ridden to victory by Gilles Lalay in the 11th Paris-Dakar in 1989.

(Cooperation: Honda Collection Hall)

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve single-cylinder 756.8cc**
- **Fuel tank capacity: 55ℓ (main 33ℓ + rear 22ℓ)**
- **Weight: 178kg**

1989 YZE750 Ténéré (OW94)

This machine that the Yamaha factory team developed in its second year working on the Paris-Dakar would be the last single-cylinder machine built for this Rally. The two-plug design used the year before was returned to a single-plug and both the engine and chassis became about as mature as they could possibly be. Riding this machine for the Italian Yamaha team, Franco Picco waged a hot battle with Gilles Lalay of the Honda NXR team before eventually finishing 2nd by just 54 minutes. Later, Stéphane Peterhansel would say, "I won in '91 and '92 with a twin cylinder engine and I probably could have won with that YZE750 as well."

During the development of the '88 model YZE750 (OW93), we were doing tests in the middle of the summer out of Tunisia. We had set up a circular course out in the middle of the desert that normally took about 45 minutes for one circuit. But one day the riders didn't come back from their test. Even by nightfall they had not returned, so we asked the local police to search for them. On the second day the air force also joined in the search but with no results. The riders were Peterhansel and Luigi Medardo and we were hearing rumors that they had been captured or shot. On the third day we got a notice from the Algerian border patrol that the two had been released. It appears that the Algerian border police had fired warning shots at them and then arrested them and held them in jail for two days. When we got back the machines we found bullet holes in them.

(Motor Sports Engineering Division, Engine Test Engineer: Akira Takeda)

- **Engine type: Liquid-cooled 4-stroke DOHC 5-valve parallel twin-cylinder 802.5cc**
- **Fuel tank capacity: 64ℓ (main 38ℓ + rear 26ℓ)**
- **Weight: 199kg**

1990 YZE750T Super Ténéré (OWB8)

As each successive year brought calls for an even faster machine, this would be the first twin cylinder machine developed by Yamaha for the Paris-Dakar after years of competing with single-cylinder engines. It took the European model "Adventure Tourer XTZ750 Super Ténéré marketed in 1989 and bored out its liquid-cooled DOHC, 5-valve parallel twin engine to 802.5cc. This brought a big boost in high-speed performance to the famed reliability and handling stability of the YZE machines. After a fierce battle with Edi Orioli on the Cagiva 900, Spanish Yamaha team rider Carlos Mas piloted this machine to a close 2nd place finish.

There was a feeling that we had reached the limit of the single-cylinder engine's potential. The mousse tube tires used in the Paris-Dakar start to heat up at 160 km/h and if you keep running at that speed they are going to burst. In other words, it is enough for a desert race machine if it can run at 160 km/h, so we knew from the start that 70 to 80 horsepower is enough. And, when you increase the number of cylinders that traction suffers. The single gives you the best traction, but a single will only get you up to 150 km/h. If you take into account both power and traction the answer is going to be a twin-cylinder engine.

(Motor Sports Engineering Division, Running Test Engineer: Hiroshi Kishimoto)