

VROOM

INTERNATIONAL KARTING

FACTORY ROTAX

EXCLUSIVE!
IN THE REIGN
OF ENGINES
■ WE PAYED A VISIT TO
ROTAX BRP-POWERTRAIN



PHOTO S. BUUR

SKUSA SUPERNATIONALS XV, LAS VEGAS (USA)

Abbasse, et voilà

At last, French Sodikart driver Anthony Abbasse manages to grab the win in the most hotly contested category, K22, after nearing victory several times in previous editions.

SPECIAL CHASSIS HOMOLOGATION 2012/2018 PART 2

TRACK TEST MARANELLO RS RANGE ■ **CLOSE UP** ITALCORSE
■ SPECIAL CIK-FIA HALL OF FAME 1964-2011





IT IS BASICALLY IMPOSSIBLE FOR ANY KART DRIVER NOT TO KNOW THE ROTAX BRAND NAME, SEEING THAT ITS MAX CHALLENGE HAS BECOME THE MOST POPULAR CLASS THROUGHOUT EUROPE

EXCLUSIVE!

IN THE REIGN OF ENGINES

We went to see BRP-Powertrain at Gunsirichen in Austria: it is the factory where Rotax engines for karting are made, but they don't just make engines, a production that goes from snowmobiles to ultra-light planes. A real temple in the manufacturing of engines where 1100 people work and aim to get best quality and reliability

REPORT: MAURIZIO VOLTINI – PHOTOS: DOMENICO PAOLICELLI (STUDIO BONAGA)

What do karts have in common with other vehicles like quad, snowmobile, ultra light aeroplanes, boats and water scooters? Well, it is the fact that they all have an engine. Not only: often it is an engine manufactured in the same factory. Because not only does Rotax put its brand name on engines for each class mentioned, often or nearly always it does so in a wide range, dominating the markets; directly or through other associate brands like Evinrude, which together with Rotax is part of the Bombardier BRP group. Or, by making them for well-known firms in the two-wheel field like BMW and Aprilia. It is basically impossible for any kart driver not to know the Rotax brand name, seeing that its Max Challenge has become the most popular class throughout Europe, even if it hasn't had as much success in Italy. Then again the concepts at the base of the success that the Rotax Max engine has had are somewhat unpopular in our environment, at least for the way it has been made to involve: we are talking about expense, reliability and ease to run it. Just to mention all the qualities that are excellent when defining the engines for the KF International classes, many have tried to copy the basic technical characteristics of the Rotax Max but without really having captured their true philosophy. However, let's get on and see what welcomed us on our visit to the central plant in Austria.

WELCOMED BY THE FIRST SNOWMOBILE

Just on the side on the road that goes from Wels to Gunskirchen, hidden from view by one or two houses, BRP-Powertrain plant spreads out before our eyes. The impression we got is clear from the aerial pictures here, but I assure you that even from below it is amazing, even if you can see just a part of it all. And this site in Northern Austria is “just” headquarter, the main plant of BRP-Powertrain that develops in 5 factories in America too. Not to mention the entire group BRB better known to many of you as Bombardier. On entering there is a beautiful first Sky-Doo, that is, the first snow mobile designed and made by J.Armand Bombardier powered by a Rotax engine: a “small thing” very simple but also very efficient in its use, which eventually became today’s snow mobiles that mount Rotax engines up to 1200 cm³ and up to 164 horse power. Here we meet no other than Christian Mundigler, general manager of the karting and air engine department. And with great pleasure (you can see the justified pride when he shows us the various engine assembly lines and other r things) he shows us around the factory. So we are able to appreciate the 4 assembly lines of engines and all the other things done to avoid or at least reduce any loss of time due to unexpected surprises. Even coffee breaks are planned (several) to make sure that they all go together and production doesn’t suffer. Also the canteens are really well set up.

Below, BRP-Powertrain entrance, the main plant in Austria where they make Rotax engines, also karting engines. The workers’ entrance is regulated by magnetic cards. In the big picture there are two examples of destination of Rotax motoring products: kart and snow mobiles. But there are also water scooters, ultra light, three wheeled roadster, and quad and so on, with bands like Evinrude, Johnson, Can-Am, Ski-Doo, Lynx, Sea-Doo, and BMW and Aprilia in the motorcycling field. The “banner” also reminds us of the millionth Mojo kart tyre made (Rotax owned brand), while with the Max Challenge engine they hit the 70, 000 mark!



NEARLY EVERYTHING IS HOME MADE

The visit continues going round practically the whole site, each time re-measuring our standards as far as engine manufacturing and anything connected with it, is concerned. We therefore see the specific tests and then engine being taken to pieces and the test for each single part; the employees and collaborators’ instruction centres in the assistance points: to the centre for control quality where all the components made by external suppliers are thoroughly checked. Here we must add that nearly all the main components are made by Rotax: as we are told, all those that start with a “C” (obviously in English) hence connecting rod, shafts and so on. Piston and others.

We ask information about the lamps on the big round tables that we see, every now and then, in the factory: well, they are where the leading managers meet every morning, next to the assembly line, not far from the offices, to check and see how production is going and see if there are any innovative changes that could be made to improve final product.



AT THE ENTRANCE
THERE IS THE FIRST
SKI-DOO, THAT IS,
THE FIRST SNOW
MOBILE DESIGNED AND
-MADE BY J. ARMAND
BOMBARDIER WITH
ROTAX ENGINE.





MAX CHAIN

In the end, here we are, the thing that interests us most: an assembly line for kart engines, that is, the Rotax Max. Here too we see the same standard used in the other assembly lines, even if it is small also because of the simplicity of this engine, the gear box is missing and everything boils down to the thermal group and a bit more. In any case, you can see that even so the attention paid and efficiency is the same, each phase is documented in the given pictures. Here we have Karl Steckbauer with us too, among other things; he is responsible for this line too.

The difference that we notice though is at the end, where differently to the other "assembly lines" we have the usual test bench. In fact, the Rotax Max does not foresee this. This is because all considered they believe in their product or because in the end, it is a component for racing to be given to the racing team, because to make the engine work you must put water and lubricant in it: this could change classification in transport and would mean added cost on overall expense. And on the final price. At Rotax they care and really don't want the final consumer to spend more money so they carry out a final check before putting the engine on the market.



ROTAX CIK TITLES AN OUTSTANDING HERITAGE

■ WORLD CHAMPIONSHIP

- 1988 - FA (E. COLLARD)
- 1990 - FK (J. MAGNUSSEN)
- 1990 - FA (D. ROSSI)
- 1991 - FA (A. MANETTI)
- 1992 - FK (D. ROSSI)
- 1992 - FA (N. GIANNIBERTI)
- 1993 - FSA (N. GIANNIBERTI)
- 1993 - FA (D. TERRIEN)
- 1994 - FSA (A. MANETTI)
- 1994 - FA (M. BARINDELLI)

■ WORLD CUP

- 1991 - FK (D. CREVELS)
- 1992 - FA (D. ROSSI)
- 1992 - FK (A. PEDEMONTE)
- 1993 - FSA (N. GIANNIBERTI)
- 1994 - FSA (J. TRULLI)
- 1994 - FA (L. CASAZZA)
- 1995 - FA (D. WHELDON)
- 1996 - FA (M. PAVLOVIC)
- 1997 - FA (K. MATSUURA)
- 1998 - FSA (T. MATSUYA)

■ EUROPEAN CHAMPIONSHIP - FA

- 1989 - (J. VERSTAPPEN)
- 1991 - (A. MANETTI)
- 1993 - (G. DE NIES)
- 1994 - (D. FORÉ)
- 1995 - (G. PANTANO)

■ EUROPEAN CHAMPIONSHIP - ICA

- 1988 - (M. KOENE)
- 1989 - (J. VERSTAPPEN)
- 1990 - (E. COUBARD)
- 1991 - (D. PARRILLA)
- 1993 - (A. SARRAZIN)
- 1995 - (A. LECONTE)
- 1996 - (L. VEVE)

■ EUROPEAN CHAMPIONSHIP - JICA

- 1990 - (B. LEINDERS)

HERE ARE THE DURATION OF SPECIFIC TESTS AND THEN THE DISASSEMBLY OF THE ENGINE AND THE TEST FOR EACH SINGLE COMPONENT; INSTRUCTION CENTRES FOR WORKERS AND COLLABORATORS AT THE ASSISTANCE CENTRES.



OTHER NUMBERS OF THE ROTAX BOMBARDIER BRP-POWERTRAIN

- 5** plants altogether with GunsKirchen (Austria), Juarez (Mexico), and Waukegan, Sturtevant and Spruce Pine in the USA, for the Powertrain Division
- 1700** employees altogether, of which 1100 in GunsKirchen (6000 if we include Bombardier plant in Canada too)
- 280,000** engines made every year
- 7,000,000** made altogether from the start
- 70,000** the number (now more) of Rotax Max engines from karting products
- 1,000,000** karting tyres branded Mojo
- 47** distributors throughout the world for karting products
- 328,400,000** euro invoiced over the last year
- 25,000,000** euro invested last year just in the driving shafts sector
- 44** test benches
- 4,000** litres fuel used daily for testing engines
- 70%** or more for exportation to USA



DATES OF THE ROTAX BRP-POWERTRAIN

- 1920** Rotax Werke AG Factory opens in Germany
- 1947** They move to GunsKirchen in Austria
- 1959** Lohner Werke GmbH buys majority shares
- 1962** Production of Bombardier Sky-Doo engines start
- 1970** Fusion between Rotax and Bombardier
- 1986** Homologation of the first Rotax 100 karting engine
- 1999** Birth of Rotax Max Challenge
- 2002** Model RM1-DD2 launched
- 2003** Sale of Bombardier Recreational Products
- 2007** Production of engines for Can-Am Spider starts and assembly of ATV in Mexico
- 2008** Reached sale of 50.000 Rotax Max products. First 2-stroke engine for the snowmobile line
- 2009** New denomination in BRP-Powertrain GmbH & Co KG
- 2010** RIC (Regionales Innovations Centrum) inaugurated and the start of production of first vehicle with seats next to one another, the Can-Am Commander
- 2011** 7 millionth Rotax engine manufactured

Where possible the processes are atomized but you always need man to do his share and you also need a good old hammer sometimes: top, bearings being put into the casing. Furthermore, each phase looks to maximum efficiency and in the end some main guide lines for assembly that is carried out at the test bench for each engine.

HOW THE MAX CAME INTO BEING

Our visit to Rotax was illuminator even to get the feeling of how production is aimed for elements such as – kart engines, extra light, snow mobile and so on – which in the end are for allowing people to enjoy themselves or help to solve problems concerning transport that would otherwise be heavy and difficult. Therefore, the basic concept is that their engines must be as perfect as possible, they must work well. The same philosophy has also been adopted for the karting field. Despite the fact that they started off adapting to the environment, but soon understanding that perhaps it wasn't the case...

During our chat with Helmut Voglsam, who has been responsible for marketing and karting for over 12 years, we were told that they have been able to cover all the phases that has brought them to today's success. In fact, remember that already in the 80s Rotax was indirectly present in the gear class, especially in the 125 Senior, thanks to SWM engines that were water-cooled, which Sezzi modified bringing the carburettor right next to the cylinder, along the same line as the rotary valve. A first contact with the karting world that brought Rotax to creating their first line of direct drive engines for the 100 cc class. First with a mild success, then gradually getting more and more competitive. And then we still remember today the time when the Austrian factory introduced fairing fins on the cylinder for channelling the cooling air better. Among the "plus" of these engines they

often said the excellent quality of the material, first and foremost the raw iron with which the barrel is made, result of years and years of experience just like the snow mobiles: resistance to devastating thermal stress like when you start an engine that has been in the freezing cold all night at 30° below zero, is what makes one define material as suitable...

MARKET AND FUN

But also Rotax (just like what happened with Yamaha) realised that the karting environment didn't have a good correspondence between work e results, the latter both from an image and commercial point. The market was too limited. And after a period when everything was at a stand still, we came through in 1997 with something that for others was really unthinkable: an engine with an electric start and centrifugal clutch, besides a balancing countershaft for a class of its own where they weren't looking to pure performance (not at all bad) and fun without any problems. Then again, already at first sight, despite the extra elements and being water-cooled, this engine derived from a previous project for the Aprilia (so made with components that already existed and had been tested too) and was therefore really simple and compact. For example, a small radiator (when you make an efficient system you don't need any bit surface space) mounted directly on the engine therefore mounting and assembly on karts are very





...A BIG SUCCESS
THAT DOESN'T
DROP AND THAT HAS
BROUGHT TO EXCEED
PRODUCTION OF 70,000
ROTAX MAX.



▲ 125 MAX



▲ 125 MINI MAX



▲ 125 JUNIOR MAX



▲ 125 MICRO MAX



▲ 125 MAX DD2

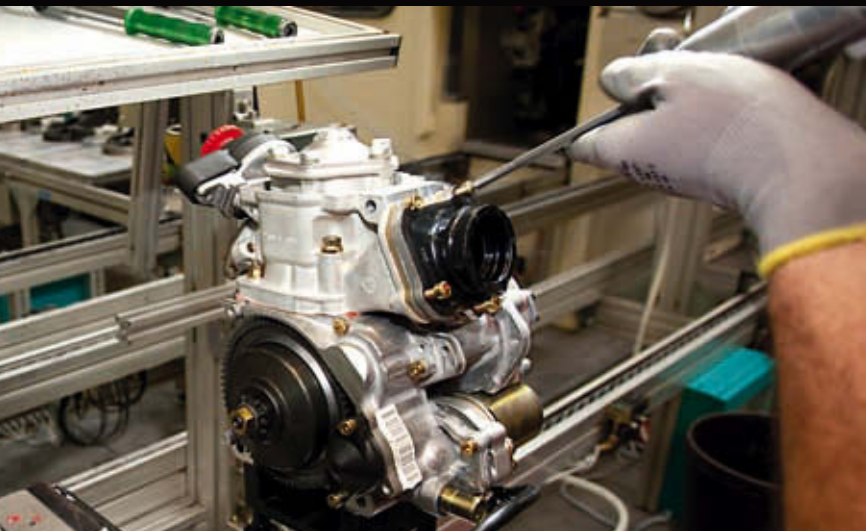
quick. Well, it is very nice engine even for those didn't race karts. This way, in 1999 an economic, full class was set up, a class that soon became popular, thanks to the idea that engines were the same and sealed for every driver (so no one could camper with them), and for which a spectacular international final was set up in exotic places that have also received CIK acknowledgement.

70,000 ENGINES and 1,000,000 TYRES

It is now more than ten years that things have been going on like this, with great success, more than 70,000 Rotax Max made. Also in the version Junior and Mini, which maintain 125 cm³ displacement and all the other basic characteristics but they are not so powerful. And then even defining a complete project like the kart RM1 with 2-stroke DD2 engine, into which they put several innovative ideas, among which what stand out is having done away with drive chain, "a blessing and a curse" of lots of kart drivers who had to check tension, often change ratio and above all often get themselves dirty (well like it dirties the whole kart in that area.)

In the end, that always with the aim of reducing costs for kart drivers, Rotax has also dealt with the

During the assembly of Rotax Max kart engine, the production of a specific production, parameters are checked continuously to see that norms are expected. In the end all the elements are assembled correctly and the engine is packed easy of shipment to final destination.



problem concerning tyres the real Achilles' heel for the cost of racing events. So we turned to the German manufacturer Heidenau for the definition of an exclusive range of tyres for karts: the Mojo. They are made in three variations of compound but always relatively hard, they have recently reached the aim of the millionth tyre made, always respecting the needs of amateur karters just as they have done for the engines. Because there is a reason if we now talk about something like 50 thousand karters who are still today using these Rotax Max around the world, 15 thousand of which are active in official races in 60 different countries.

ROTAX GRAND FINALS HALL OF FAME

YEAR	LOCALITY	MAX / SENIOR	JUNIOR	RM1 / DD2	MAX MASTERS	DD2 MASTERS
2000	Puerto Rico	Gavin Cronje	-----	-----	-----	-----
2001	Malaysia	Claudio P. Musso	-----	-----	-----	-----
2002	South Africa	Mark Cronje	-----	-----	-----	-----
2003	Egypt	Christiano Morgado	Omar Martin	-----	-----	-----
2004	Spain	-----	Benjamin Salvatore	Wesleigh Orr	-----	-----
2005	Malesia	Luuk Glansdorp	Kenneth Hildebrand	Wesleigh Orr	Satya Rasa	-----
2006	Portugal	Ricardo Romkema	Jorrit Pex	Ben George	Luc Sauriol	-----
2007	UAE	Benjy Russell	Kevin Korjus	Pier-Luc Ouellette	Colin Davis	Christophe Adams
2008	Italy	Ben Cooper	Facundo Chapur	Leeroy Poulter	Martin Pierce	Dennis Kroes
2009	Egypt	Luke Varley	Ukyo Sasahara	Caleb Williams	Christophe Adams	J. Perez Santander
2010	Italy	Caleb Williams	Martin Rump	Daniel Morad	-----	Scott Campbell
2011	UAE	Ben Cooper	Ukyo Sasahara	Pier-Luc Ouellette	-----	Christiano Morgado