Not only do we pay close attention to the engineering and production of our products, we also provide our customers with complete service and special customer care. For this purpose we spend countless hours designing and producing complete, exhaustively-detailed publications: the instruction manual and set-up book, and our Internet web site. All the artwork and design is accomplished in our special in-house graphic studio; we control and direct everything from shooting photos, writing texts, creating graphics, to getting the final layout ready to print.

Instruction manual: Read through this step-by-step full-color manual, complete with detailed explanations of all assembly steps. We have prepared this instruction manual directly from the Pro/Engineer 3D screen exports. We have added text to clearly describe everything you need to know to build your T1 correctly and easily.

By getting an XRAY kit, you don't just get a car, you also gain access to a complete information source -- the XRAY SET-UP BOOK. We want people to enjoy figuring out how to set up the car, not become stressed by it. This full-color publication is 32 pages long, and includes over 120 photos that describe very simply and professionally all the features of the T1. For example, basic setup, how to adjust for various conditions,and clear explanations of what every adjustment means and how they effect your car's racing performance are all contained in the publication. The SET-UP BOOK is a "must-read" for everybody, novice or advanced drivers alike.

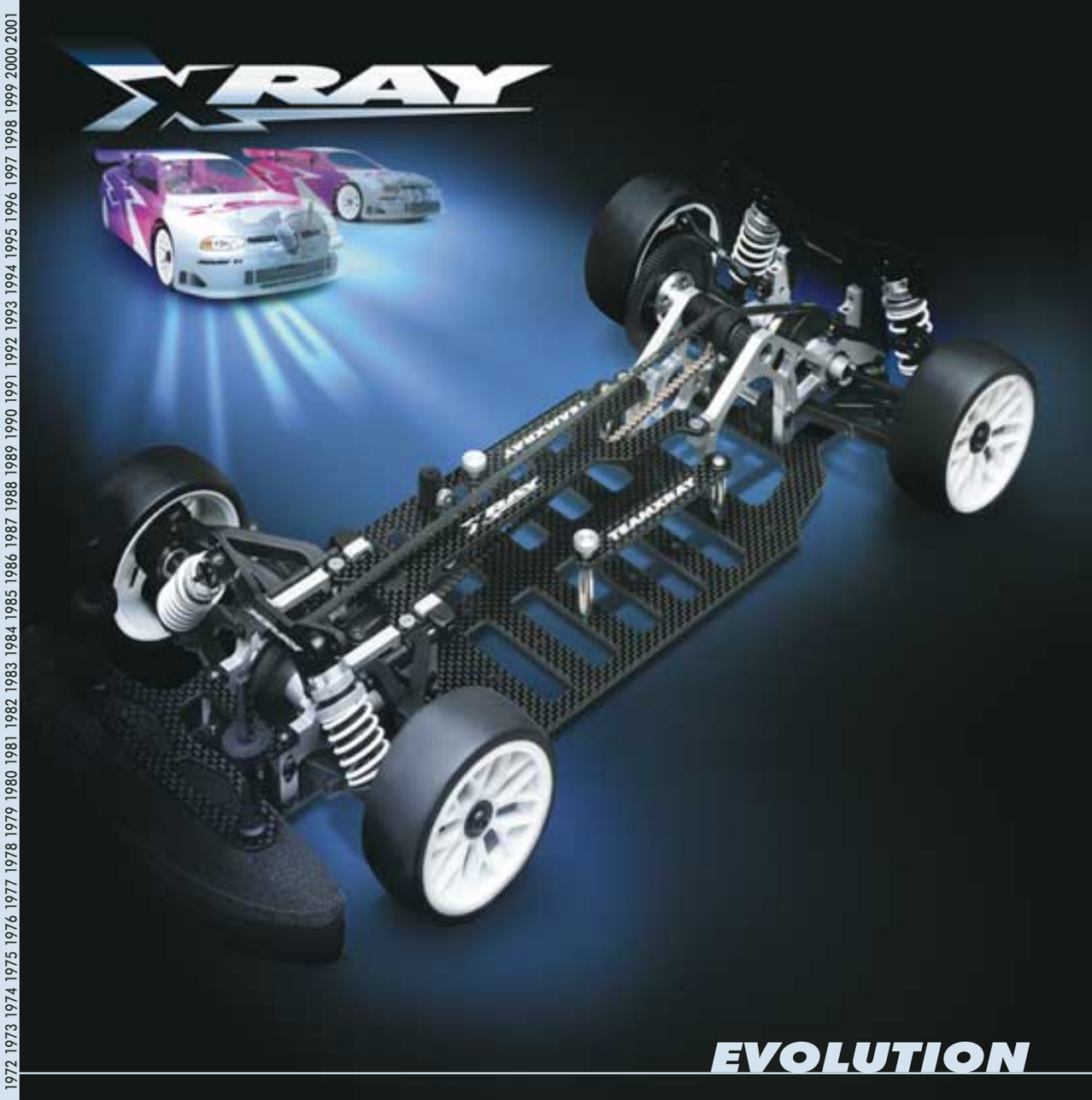
By purchasing this luxury electric touring car, you deserve to be treated as a VIP. Therefore, by purchasing your XRAY T1 kit, you will receive a special Certificate of Authenticity with your VIPcard. This not only confirms your demand for a high-quality product, but you are assured to receive many benefits from being a member of TEAM XRAY.

We do not only offer you highest quality products and graphic materials connected with XRAY products, but also bring you the latest from IT technologies. We are proud to present to you our special "customer care" web site www.teamxray.com; the ultimate site for all XRAY customers and owners of XRAY products. Use your VIPcard to register and personalize your account on X-NET, the private value-added extranet for XRAY TEAM DRIVERS and TEAM MEMBERS only.

All these services are designed, developed, and provided exclusively by XRAY to make you the most satisfied customer with this advanced racecar.

This is what we call "professional, direct customer care".

1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001



XRAY MODEL RACING CARS was established in the year 2000 by Dipl. Eng. Hudy Juraj. Even though the company is brand new, the founder has had long and successful experiences in designing RC model racing cars.

A brief history of Dipl. Eng. Hudy Juraj and his contribution to the RC world:

1972/74

1972/74 - first self-designed and manufactured slotcars. Juraj became Multi-Champion of Middle and Eastern Europe in slotcar racing. These slotcars were No. 1 at that time and were winning all the races.

1977 - Juraj produces hand-made chassis plates from 4mm thick duraluminum. The car in the picture, called SHADOW, uses this kind of chassis.

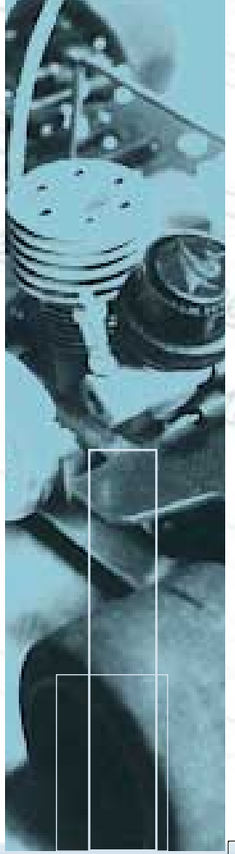
1977

1979 - Juraj designed a new nitro car with the motor in a horizontal position. The car featured solid rear suspension and a front suspension using simple dampening.

1979

1981 - a new nitro car featured solid suspension, a central differential, adjustable width and caster, and simple dampening. The first bodies were produced using a vacuum machine and special ABS material. From this year onwards, 10-15 cars were hand-made each year.

1981



1984/85 - one of the world's first 4WD nitro cars was introduced, using driveshafts and a front one-way differential.

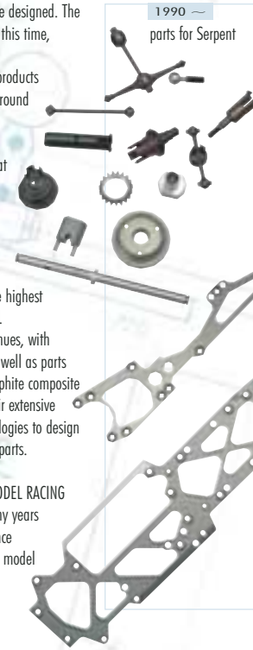
1984/85

1988/89 - the first off-road car is designed and manufactured. An improved nitro car also appeared, based on the successful 1987 design, and also featured ultra lightweight materials. These cars featured a purely technical design that distinguished them from "toy" cars. There were no unnecessary parts, and everything was strategically placed for best weight distribution and performance.

1988/89

1989 - After the fall of communism in Eastern Europe, Juraj establishes his first company, named SPECIAL, which was later renamed to HUDY. Juraj moves manufacturing from his own flat/workshop to a garage 60m². The first machines are bought and real production begins. The company focuses on designing accessories and tools for slotcars. The first comm lathes and slotcar tire truers are designed. The HUDY company has 60 employees at this time, over 2000m² production factory, and manufactures the highest quality RC products that are sent to over 30 distributors around the world.

1990 ~



parts for Serpent

1990 - Juraj introduces his products at SERPENT headquarters in Holland, and HUDY company becomes the manufacturer of special transmission parts using special spring steel. To this day, HUDY uses their top secret, self-developed formula to produce the highest quality parts from special spring steel. The co-operation with SERPENT continues, with HUDY producing spring steel parts as well as parts from duraluminum (chassis), and graphite composite materials. HUDY continues to use their extensive experience and self-developed technologies to design and manufacture the highest-quality parts.

2000 - Juraj establishes the XRAY MODEL RACING CARS company, which focuses its many years of design and manufacturing experience to produce high-tech, high-quality RC model racing cars. The first project, named "T1", is designed and introduced.

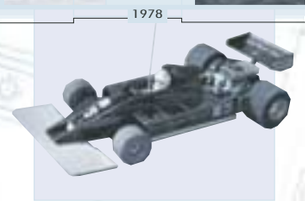
2001 - XRAY products are represented and distributed in over 30 countries around the world, supported by professional services and a factory team. TEAM XRAY is established, made up of dozens of top professional RC drivers around the world who look forward to get maximum results during their race seasons.

2001 ~

1975

1975 - the first RC cars were designed and produced; the focus was on nitro and electric cars. All of the cars were handmade in small series in a workshop 9m². At the same time, the first handmade bodies were produced from laminate and epoxy material.

1978



1978 - a new RC car was designed with the motor in a vertical position. The car featured solid suspension and a flexible chassis.

1980

1980 - a newly-designed nitro car featured a differential in the wheel. The front of the chassis was made from fibreglass, and the rear from duraluminum.

1982

1982 - a new nitro car featured independent suspension, rear differential, and direct drive through gears between motor and rear transmission. A front central shock is used, and a wing is attached directly to the rear suspension.

1983

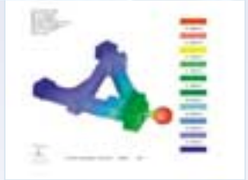
1983 - a new nitro car was produced, based on the successful 1982 design. New centrally-mounted front shocks and an anti-roll bar were introduced, and a Serpent fueltank was used. This ultra-stiff chassis design was the most professional, and achieved the greatest racing performance at the time.

1986/87

1986/87 - a new nitro car featured an automatic 2-speed transmission, and fully-enclosed front and rear transmissions to provide dust protection. This car was great for dusty racing conditions.

TIME LINE

Our top 3D CAD designer guru working at a special workstation. All of Juraj's ideas were put into leading-edge 3D contruction software, the result of which was the first virtual prototype. From the first prototype design, we tweaked various parameters to create totally different virtual prototypes.



Software analysis of the stress characteristics of plastic parts. The 3D construction software also enables us to check the design of the parts and how they absorb different impacts.

Software analysis of drivetrain performance, and looking for the best drive ratios. We tested several different drivetrain design layouts, and some with different rotating masses. Because the layshaft is the only part placed above the center-of-gravity, it has to be hollow to be as light as possible, and when combined with the press-fit adaptor, it must be vibration-free.

Externally adjustable ball differential with special Labryrinth Dust Covers. The focus was to get maximum transmission of rotating moment with minimal weight. The differential is designed to require minimal service, due to the protection afforded by the Labyrinth Dust Covers. After the prototype differential was made, we tested many different washers and trust bearings to achieve maximum performance and long life.

Software analysis of arm movements. We spent a lot of time to find the optimal chassis-roll points. The final design uses the optimal chassis-roll point on the adjustable ball. The main intent while designing the arms was not only to make them crash-resistant, but also to have them as long as possible, and to locate the arc-moment as close to the car's centerline as possible to achieve maximum stability.

The final prototype design accomplished in 3D virtual reality. The chassis design was exposed to many virtual tests after which production on the first prototypes started.

The reason that Dipl. Eng. Juraj Hudy decided to start producing model racing cars again after such a long absence, is his intention to set a higher quality standard in the RC model car market. Based on long and very successful experiences with designing and producing his own RC nitro and electric cars, and also on his experiences with producing special parts for SERPENT cars, Juraj decided to start to produce his own model cars again.
XRAY's first project was to create the ultimate, true racecar for the highly-competitive electric touring car class.

The design of the chassis was started early 1999. The design was made from the ground up in virtual reality using special 3D construction and analysis software. For a long time, many different designs were developed in the computer, and tests of these cars were done in virtual reality. The smart software enables us to check the durability of the parts by virtual crashes, and enables us to check the flexibility of the chassis by inflicting virtual impacts to the chassis. All plastic parts were tested for stress and impact characteristics. The software checks the optimal positioning of all parts on the chassis to achieve the lowest center-of-gravity and best weight distribution on the car.

The design of the chassis was accomplished in the middle of 1999, and several differently designed prototypes were chosen for production. All of the prototype parts were completely produced in-house using CNC milling machines that were connected directly to the computer using the 3D software. First to be manufactured were the chassis, which used graphite material and duraluminum bulkheads. All the future plastic parts were milled from nylon composites. Most of the nylon parts were made on CNC milling machines.

At the end of 1999, the first prototypes were complete. Real world tests began on asphalt and carpet tracks. While testing the prototypes, minor details were corrected and several parts were changed. The focus was on testing all of the adjustment possibilities and how they effected the car, and if there were any need to provide more adjustment possibilities. After the minor details were rectified, the parts were again produced and changed on prototypes and long-term tests began.

After several months of testing, the final chassis design was chosen. To make sure that the final design was really the best choice, a new prototype was again made from ground up. The prototype was not run in secret, but in official races. The ensuing victories confirmed that the design and performance of the car were the best.

Production of the first prototype parts on CNC machines. The machines are connected and operated by the computers through the company's intranet.

The first prototype. Note the middle upper deck; it was in a vertical position with an adjustable belt tensioner. This prototype was put through many rigorous tests, where the focus was on the suspension design and how it affected race performance.

Real prototype tests on carpet and asphalt trackes. The focus was on racing performance, car response, and results of setup changes. After the tests were completed successfully, the production of moulds could start.

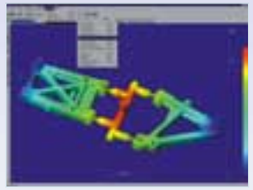
The key design features that drove the development of the T1 were:

- reduced dimensions of rotating components
- minimized rotational resistance for all components
- maximized drive train performance
- dramatically reduced chance of breakage of transmission components (therefore the design without using belt-tensioner)
- lowest possible weight of all non-dampened components
- lowest possible center-of-gravity
- longest possible suspension arms, positioned as close to centerline of chassis as possible in order to achieve the highest stability
- maximized number of adjustment possibilities to adapt the car to any condition
- increased chassis stiffness to protect again the effects of crashes
- design of the chassis in the way that it does not change the set-up and driving characteristics after a crash (no need to trim the car)
- very easy and fast service
- pure high-tech design
- best racing performance in different racing conditions
- the best quality materials used for production

FIRST PROTOTYPE FOR TESTING

FINAL SELECTED PROTOTYPE

FINAL PRODUCTION XRAY T1



Software analysis of injecting the plastic material into the mould. The software checks when and where the material meets, and if it creates any air bubbles inside the plastic part. Air bubbles in the parts would cause the part to break easily.
Our engineering experiences eliminated all possible flaws in the moulds, making our moulds the highest possible quality and of the perfect engineering concept.

Before producing the moulds, we had to produce all the electrodes. All electrodes were produced in-house to ensure maximum quality. The photo shows an already-used electrode of an arm.

Creating a mould. We use the highest-quality Swiss CNC moulding machine.

A production mould for arms.

The first half of the arm mould is completed. All parts of the arm that are hollowed need to be inserted into the mould with pneumatic-operated pins.

A complete arm mould. It takes approximately 150-400 hours to produce one mould. For the complete T1 there were 20 moulds produced.

In May 2000, the production of the first moulds began. All moulds were produced in-house, and the injected parts were rigorously tested. If a part coming out of the mould was not perfect, the mould was modified. All moulds were designed in the Pro/Engineer 3D software, which enables us to make the best mould designs with respect to the injection process. The software simulates the injection of the material into the moulds, and shows the weak points of the mould; the result of which can be a part that can be very easily broken, something that is not acceptable to us. Using our extensive engineering experience, we design the moulds such that the injected material flows perfectly into the mould and eliminates any potential weak points in the finished part.

Our plastics engineering experience ensures that all of the moulded parts have a perfect fit. All of our plastics' flow, shrinkage, and deformation characteristics are taken into account when designing parts that won't require any hand fitting. For example, the arms have holes that line up perfectly and assemble with the best precision. You can slide the pivot pin through both holes without modifying the arm, or making the holes larger. We are proud that we are one of the very few companies that pays attention to such small details that make perfect parts.

NYLON PARTS | INJECTED PLASTIC PARTS

These images show the differences between the prototypes produced from nylon (left), and the final production parts from the finished moulds (right). Take note of the differences between the prototype and final production of the rear upright; the upright was dramatically compressed to have minimized rotating parts (wheelaxles and ball-bearings) as well as to have minimum weight of the plastic part itself.

Rear Upright

Front Lower Arm

Rear Lower Arm

As the production parts were being made, the prototypes' parts were replaced on the test chassis. This involved assembling and disassembling the car hundreds of times.

HUDY company, renowned for producing the highest quality RC products and manufacturing special parts for SERPENT model racecars, was contracted to produce all of the transmission parts from special spring steel. HUDY uses its own proprietary manufacturing techniques to produce the highest quality parts from special spring steel. This material allows to produce lightweight parts without compromising their strength. This allowed to make the tiniest drive shafts in the world, which the T1 features.

At the end of 2000, all of the parts were completed and the car went through numerous road tests using the parts that are included in the standard kits. Initial quick laps confirmed our expectations, and we were happy that the car was quick straight off. Every single change in the setup was immediately reflected in a change of a driving characteristic. This fulfilled our main intention - to produce a professional racecar that you can adjust for any condition.

SPECIAL PARTS USED ON T1

The transmission is very important to get maximum performance out of the car. We couldn't compromise by using cheap material, or an inferior design. HUDY company, a renowned manufacturer of special spring steel parts for SERPENT model cars, was contracted to produce all the transmission parts from their special spring steel.

FINAL XRAY T1 READY TO RUN

The first injecting of plastic parts. We use the most modern German injection machine with integrated computer system. We use the highest quality materials for all plastic parts and all parts are controlled after they are released from the injection process.

The very first moulding process in action. The first arms were injected, and the first production would start.

A perfect design. After the parts cool and shrink, the holes in the arms line up so you can slide pivot pins through them without any modifications. This is "real engineering".

The first "final" plastic parts are exchanged on the prototypes and the parts are checked for proper fit and function. Juraj assembled and disassembled the prototypes hundreds of times while testing different prototypes, and exchanging the prototype parts for final production parts.

The final production car was extensively tested to ensure that everything fit perfectly. Our main intension was realized; the T1 could be adjusted for any condition. You can very easily adjust the T1 without disassembly or exchanging parts.

The production is finished, and the the kits are ready to be delivered!