

A solution for the urban mobility: the year 2000 bicycle

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*"L'ingéniosité humaine a trouvé une solution **élégante, utilisable partout** où existent des routes ou même des simples sentiers : **la bicyclette**, engin **simple, léger et remarquablement économique**, grace auquel tout individu normal peut, sans plus de fatigue qu'à pied, franchir des distances quatre à cinq fois plus considérables à une vitesse triplée ou quadruplée, en transportant avec lui des charges appréciables.*

La mécanique a réussi là un des ses chefs-d'oeuvre, avec une simplicité de moyens qui lasse rêveur."

Ciclisme d'aujourd'hui, Paris 1941.

In a world dominated by electronics, mechanics still have a great deal to say, developing the only zero emission vehicle moving on the planet.



The human vision enables everybody to move far and fast using only a single source of power: the muscles. No other mean of transport can claim such an independet status. No need of fuel, plug, wind or sun.

When 50 years ago motorization began to develop, cycling lost its space forever and cyclists' presence on the road became soon annoying. The situation is now at a turning point as everybody feels that the impact of private transportation is becoming unsustainable, though we can't lose the freedom it gives us. With this bike we don't want to oppose an alternative to automobile, it would be clearly absurd. We want to reconquer the space that cars have inadequately occupied regarding the short distance moving. Cycling can be the answer to bring the Europeans back to their environment, whatever the city, town or countryside.

What industry can do to encourage this trend is to strengthen the two key attributes of the bicycle: efficiency and cost. Our prototype **Ti** tries to determine an essential performance level, re-thinking then all the parts from a mass production point of view. The strong link with a car manufacturer has revealed a different perspective on design, production and assembly of what we could call a popular bike. Its frame can represent this attempt, being moulded in one single operation that delivers a finished component, ready to be used. Tecopolymer construction necessitates a rude shape but delivers in exchange good strength in a remarkably low weight. The single size frame can then be adjusted by the stem and the seatpost.



An outstanding feature is that most of the mechanical functions, such as freewheel, coaster brake and possibly the gears, can be concentrated in a sealed shell located in the bottom bracket area, so that all the bike can be left neat and simple. The rear wheel for example can be detached without any operation on the drivetrain, thanks to the mono-arm structure, while not a single cable-housing combination is used.

Having no need of derailleurs a belt transmission has been chosen to keep the maintenance low and to keep the trousers clean. The hubs are designed to ease the mount-dismount operation of the wheels that strongly reduces the size of the bicycle for storage and transportation purposes. The wheels are identical, built each one with just two pieces, central disc and rim.

Ti uses only 5 sealed ball-bearings and can be completely serviced with a 5 mm allen key and a seeger wrench. The steering system also incorporates a block device, useful as anti-theft and parking stabilizer. Pedals, saddle and handlebars are market components, while it is possible the use of tubeless tires due to the particular wheel construction. A number of upgrades are considered to suit the different national regulations and the different clients, such as lights, fenders, racks and so on.

In this first version of **Ti** the **LESS IS MORE** concept is brought to its limits because this was the goal of the project. Minimum number of parts, minimum hassle and time to produce and assemble them.

Ti is a project of Antonio Ravarino, student of the Politecnico di Torino, with the help of Pininfarina.

