



CRP Motorsport Case study

MotoGP 2005: R250GP Motorbike "Link"

This brief text wants to illustrate part of the development done by CRP Technology in the world of race motorbikes exploiting the experience acquired in the **road race World Championship**.

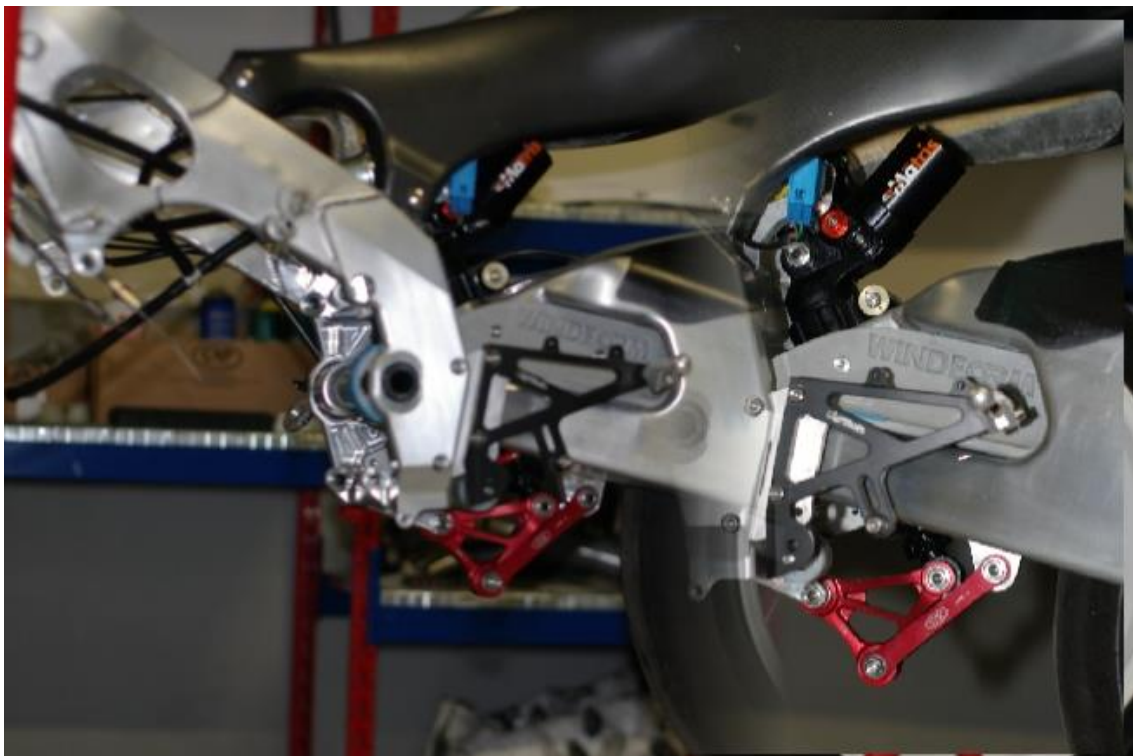
In 2005 in fact the **R250GP**, made by CRP Technology, has lined up on the starting grid of the World Championship with the colours of the famous **brand Fantic Motor** with the riders **Arnaud Vincent** (#21) and **Gabriele Ferro** (#20).

The project: R250GP Motorbike "Link"

What is it and what it is made for

What is usually called "**link**" is the **kinematic motion of the rear suspension of a motorbike**.

This element, made of more parts, connects the swing arm, the frame and the rear suspension together, guaranteeing the progression of the rear suspension. (see Pic.1)



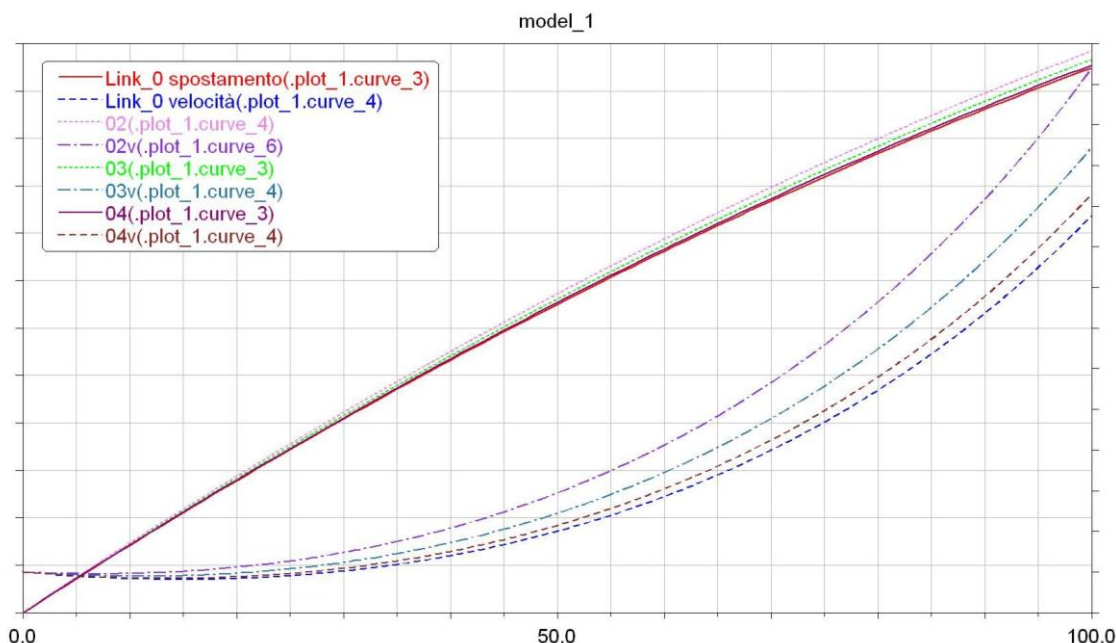
Picture 1 – In this figure it is possible to observe the link (made of red anodized aluminium) of the R250GP

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The job of this simple mechanism is to transform the range of the rear wheel in the range of the shock absorber, following a mathematic law defined by the geometry of the link. (see Pic.2).



Picture 2 - Link R250. In the graphic it is possible to see some examples of progression analyzed during the study for the better configuration for the R250GP.

A link of this type is composed of a triangle (see Pic.3a) that connects the frame to the shock absorber and a connecting rod that links the swing arm to the triangle (see Pic.3b)



Picture 3a/b – Link elements of the Yamaha TZ250 2005. Notice the cast triangle and the connecting rod divided into two drop-forged pieces. The elements are in aluminium.

The R250GP "link"

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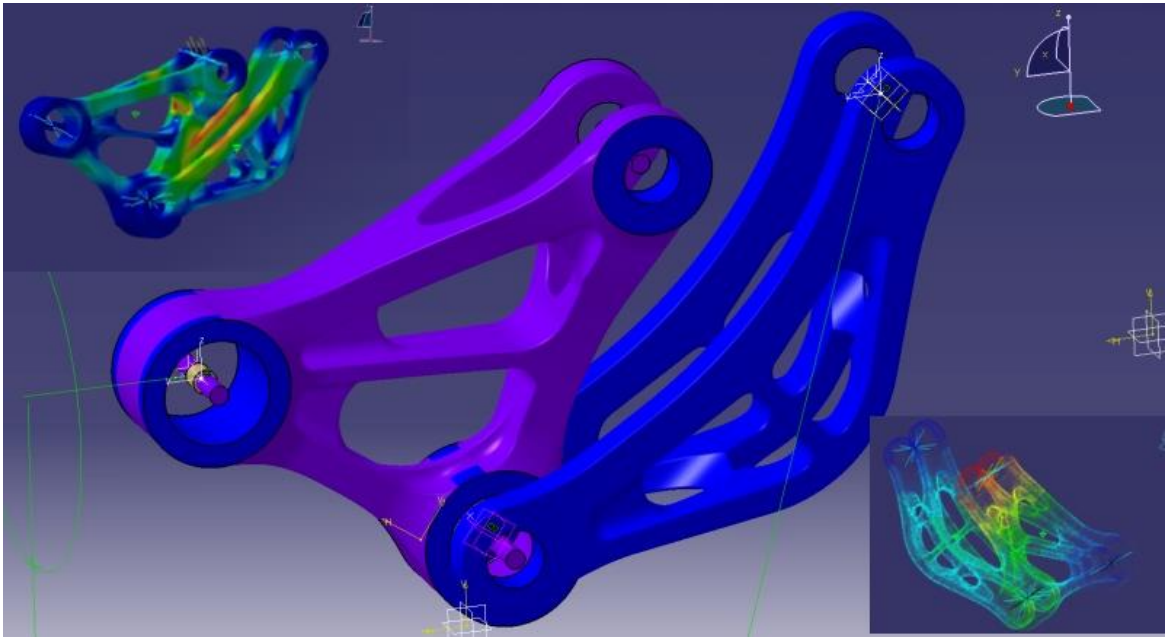


The **kinematic motion of the rear suspension** of the R250GP is made of 7075 aluminium alloy and the first version of the link can be seen in Pic. 4.



Picture 4 – R250GP link. The first version of the link called link0.

The first version was composed of a linear connecting rod that has been almost immediately replaced to undergo the changes of the trim. During the Irta test, the technicians realized they had to change the project motorbike trim to follow the necessities of the riders Arnaud Vincent and Gabriele Ferro. The connecting rod has been therefore modified in order to enable a higher margin of adjustment. (Pic. 5)



Picture 5 – New link e and the relative calculations of resistance and deformation.

During the season, refining progressively the set up, a new adjustment of the rear suspension's progression was necessary, obtained changing the points of the triangle. This last solution has resulted the best compromise for our set up.

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