CONSULTING: SOLVING EFESO SYSTEM TO MEASURE BIOMECHANICS

THE ERGONOMICS CHALLENGE

First it was the turn of the Alfa Mito at the Fiat plant in Mirafiori, and then it was Lamborghini's Aventador (*photo*) at the Sant'Agata plant in Bolognese, and now something innovative lies under the bonnet of the new Panda in the plant in Pomigliano d'Arco. What do these cars have in common?

They are all assembled on production lines which, from the very beginning, take into account the biomechanical loads: in the design phase of the cars the posture, weight-lifting-related strain on muscles and repetitive movements are calculated, and on the basis the results solutions are found in order to facilitate and reduce physical movements.

This approach significantly reduces the actual working time, the risk of musculoskeletal stress (as acknowledged in 2008 Safety Consolidation Act) and the recovery time needed.

"In other words, we measure the upstream work process where it impacts biomechanical issues, to allow designers to simplify the assembly phase and lighten loads" explains **Gabriele Caragnano**, Solving Efeso Vice President who patented the Ergo-UAS System. Conceived in cooperation with the Darmstadt Technical University (IAD) and the Faculty of Medicine of the Turin University, this advanced system is based on the international ISO and CEN standards regulating biomechanics.

Up to now, only few companies have seized the opportunity to reduce their costs by 40% and increase productivity by working on ergonomics, a science studying the interaction between people, their work place and environment.

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And a new approach always implies a new professional role: it is the ErgoMethodist, a person who is at the same time an industrial engineer, designing the work method, and an ergonomist, ensuring a safe and comfortable working environment. “With this approach we concentrate on the upstream-side of the production chain where 80% of interventions are effective. But we are still alone in deploying this kind of integrated working method”, Caragnano added.
In most cases, changes are implemented when working cycles have already been organised and moulds arranged, and therefore with a marginal impact on productivity (for example, with organisational solutions and rearrangement of the workplace). “Even the Japanese and German people at this moment work like this, but they have turned their attention to our model now”.

Apart from the automotive sector Swedish company Tetra Pak has decided to benefit from this new approach by involving its suppliers of food packaging machines in the manufacturing process. At the present time, four medium-sized Italian businesses, one Austrian and one Swedish company are applying the new ergonomics principles in their working cycles, with an important positive impact on Tetra Pak’s final assembly phase (less time waste and movements).

Ergonomic principles have become a must also for Bosch, Whirlpool and Tecniplast, a leading company that provides integrated solutions with a €1 million turnover. Located near Varese, Tecniplast is now entering the Chinese market with a biomedical product at an extremely competitive price (-30% to competitors,) also thanks to the ergonomic approach.

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