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News

- Innovation and Industry

3 questions to Julien Trost, powertrain and vehicle engineer, digital ambassador at IFPEN.

Today, virtual reality has numerous applications, from research to industry. Julien Trost explains the benefits to his field of using this technology.

How is IFPEN exploiting the opportunities offered by virtual reality?

Julien Trost: Thanks to virtual reality (VR), we can communicate in an innovative way with our partners and the general public about our new technologies. For what purpose? To go further in a demonstration than it is possible with a model or slide presentation, using a different approach that gives a complete and detailed view of a concept, in which the audience can thus "immerse" itself.

We are making increasing use of VR to provide a better understanding of emerging technological evolutions for increasingly complex systems, from the start of the research process right through to the final presentation of the

innovation.

For example, we used virtual reality for the [EU-Live European research projec](#)t, aimed at developing the urban vehicle of the future, in which IFPEN was responsible for developing the vehicle's high-efficiency transmission. The objective was to present the specific operation of this gear box using animations that would be impossible to imagine on a physical object. It was easy to represent the energy flows, facilitating the understanding of the transmission's overall operation. From a commercial point of view, virtual reality enables us to highlight our expertise and demonstrate the advantages of our services and products, particularly in the context of scientific and technical conferences. It is also the approach we are adopting for the presentation of the [Clip riser](#), a fast connector technology for risers licensed by IFPEN for offshore drilling. Virtual reality helps the target audience gain a more concrete grasp of how easy it is to use the solution during the inspection and maintenance phases.

What are the benefits associated with the use of this technology?

J. T.: There are several advantages associated with the approach adopted by IFPEN for the use of virtual reality. Firstly, it is an economic and agile approach since we make direct use of the 3D files produced at the design stage to develop the experiment. It only takes a few days to create the latter while a 3D printed model can require several weeks.

What's more, this approach fits squarely with our design process since the creation of experiments proceeds directly from our CAD (Computer Assisted Design) software to the [Sphère](#)software developed by our partner Speedernet. It allows the work of designers to be showcased.

VR is also used for the purposes of internal communication (teams and project managers), external communication (partners, customers, prospective customers), or for employee training or even improving laboratory ergonomics. All with a small team, limited budgets and in a short time-frame!

What applications might emerge in the longer term?

J. T.: With the development of virtual reality, we intend to go further still in the coming years, particularly thanks to the deployment of haptic devices. This technology conveys the sensation of touch, which should lead to increasingly sophisticated applications of virtual reality, notably for the purposes of learning and practicing technical skills, and acquiring practical know-how. So we could, for example, envisage a more intensive use of virtual reality for vocational training.

It should be noted that [IFP School](#), IFPEN's graduate training institute, develops training content hinged around virtual reality. For example, the school proposes an augmented reality Mobil'i'book aimed at consolidating and extending learning.

As this technology evolves, the scope of possibilities is set to keep expanding, and virtual reality should find increasingly advanced applications in the fields of research and industry.

Virtual reality is a technology that simulates the physical presence of a user within a virtual environment with which the former can interact. The technology has applications in the field of entertainment (cinema, video games), as well as in the industrial sector. Virtual reality should not be confused with augmented reality, in which virtual elements are integrated within a real environment.

Virtual reality supporting research
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