



CASE STUDY /

## **Moving to a Cloud Environment Cost-Effectively Increases the Speed and Scale of Ansys Fluent Simulations at Zitron**

“For years, Zitron has relied on Ansys Fluent CFD software as an important design tool for in-tunnel ventilation systems, because of its wide range of physical models and its advanced turbulence simulation capabilities. A number of features of the Ansys solutions suite — including the Ansys HPC Pack — have improved speed and scalability, reducing our solution times by several orders of magnitude. Recently, we collaborated with Ansys and Compute to begin running our simulations in a managed-hosting cloud environment, which has enabled us to decrease our typical simulation processing time from one month to several days — at a lower cost of ownership than investing in internal HPC capabilities. This partnership is just one more way Ansys and Compute add value to our engineering efforts.”

**Ana Belén Amado**  
Mining Engineer / Zitron

Zitron is a world leader in designing ventilation systems for underground mining tunnels, metros and power plants. At hundreds of sites around the world, Zitron’s designs help to protect human health and safety, addressing such critical issues as air quality, thermal management and fire containment.

## / Company Description

Based in Gijón, Asturias, Spain, Zitron is a world leader in constructing systems and equipment for underground mining and public works projects. In addition to ventilation systems, Zitron designs and manufactures trucks, winches and shovels. Founded in 1963, the company has developed state-of-the-art ventilation solutions for underground transportation systems and mines around the globe, including more than 100 stations in the Madrid metro network — one of the most advanced public transportation systems in the world.

## / Business Challenges

Engineering simulation allows the Zitron team to evaluate multiple ventilation system designs and validate their reliable performance under both normal and emergency conditions. However, global engineering trends have created a demand for tunnels that are longer than ever before, causing very large simulation sizes. Using its internal hardware resources, Zitron was unable to keep pace with customer demands — with a typical full-tunnel simulation taking a month to process.

## / Technology Used

- Ansys® Fluent™
- Ansys HPC Pack™
- Compute on Demand

## / Engineering Solution

- Apply Ansys Fluent to simulate flow patterns, pressure drops and fires in tunnels, in order to optimize air quality, prevent fire growth and minimize smoke propagation.
- Run Ansys Fluent in a “ready-to-go,” extremely robust hosted environment — an improvement from employing eight processing cores internally to using a flexible 128-core dedicated cluster privately managed by HPC experts at Compute.

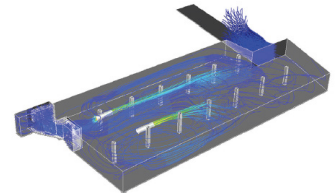
Use one Ansys HPC Pack internally and two hosted by Compute to create a flexible configuration that can be tailored to changing simulation needs.

## / Benefits

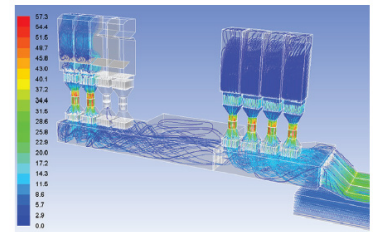
The new hosted solution resulted in a significant increase in computing capacity and simulation speed, at a lower cost of ownership than building an internal cluster.

The new capacity was launched much faster than securing internal hardware resources.

- The productivity of Zitron engineers has improved, because they can remotely access a best-in-class HPC environment for CAE — including visualization, job submission and data management.
- Customer responsiveness and satisfaction have increased because of faster project turnaround.
- Ansys works directly with Compute to resolve any support cases, minimizing the involvement of Zitron’s engineering team components.



Velocity path lines in a parking garage.



Velocity path lines in a coastal tunnel (Singapore).

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