**Case Study**

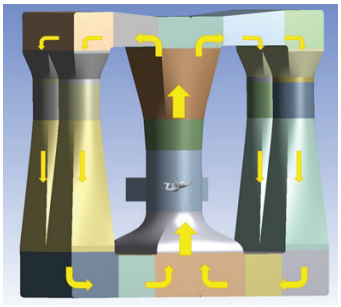
# ANSYS® + KeelWit

*"Using ANSYS Fluent software and Gompute HPC cloud resources, we reached the accuracy level our clients required for our turbulence and heat transfer calculations. Thus we have been able to implement real modifications on their equipment and thoroughly optimize our designs in a shorter period of time. These modifications, designed by KeelWit Technology, have shown an outstanding level of performance at our clients' premises."*

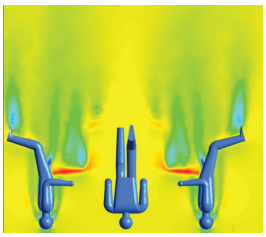
**José Maria Cancer**
*CEO/CFO and Partner*
*KeelWit Technology*

KeelWit Technology

# Cloud-based high-performance computing (HPC) with ANSYS Fluent shortens turnaround time of complex aerodynamic and thermal analyses while lowering total project investment



Vertical wind tunnels give amateurs and experts the thrills of skydiving without ever having to leave the ground. When KeelWit partnered with their clients to create a tunnel with the tallest wind chamber in Europe, they needed to analyze a complex aerodynamic environment and design an energy-efficient tunnel that delivered the best experience for their customers.



## Challenges

Vertical wind tunnels are large and complex, so creating physical prototypes for each design change is prohibitively expensive and time-consuming. With the many variables that need to be simulated, including air pressure, heat loss and wind velocity, computer simulation required large meshes and intensive computer calculations. For this purpose, KeelWit sought to scale out from their on-premises workstations to HPC resources in the cloud.

## Technology Used

ANSYS® Fluent
ANSYS® High-Performance Computing (HPC)
Gompute on Demand

## Engineering Solution

Because of a fluctuating project workload combined with the ability to run higher-fidelity simulations, KeelWit turned to cloud service provider Gompute, which provided a ready-to-use HPC software environment, including visualization, job submission and data management. While lowering the total project investment, KeelWit was able to analyze and optimize real designs that were implemented by their client to improve the performance of the system. They are now working to exploit the power of ANSYS Workbench and DesignXplorer to automate the workflow in the cloud and find even better designs in a shorter time for all its projects.

## Benefits

- Reduced total pressure drop (and therefore total energy consumption) to 60-70% of their competitors' designs.
- Performed simulations for over 50 different operating conditions, developing a design that was aerodynamically and thermally optimum for the whole operating envelope.
- Reduced development times by a factor of 4, enabling them to simulate many more scenarios and design details.
- With the power of the ANSYS and Gompute combination, performed mesh dependency studies, sensitivity analyses, optimization, transient and non-transient simulations (for example, to analyze the turbulence-induced vibrations on different components) and complex thermal analyses for the cooling system design and to minimize hot air recirculation.

## Company Description

Founded in 2011 and based in Madrid, KeelWit Technology is a Spanish Engineering company that designs, develops and implements projects with a deep technological approach. The company focuses on three main areas: Energy efficiency, CFD analyses and eco-friendly mobility solutions. Thanks to the wind tunnel project, they have become partners of EYDISA Wind Tunnels and built their first facility in Madrid.

*Thanks to Gompute for assistance in creating this case study.*



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