



**THE ZITRON NETWORK – A GLOBAL NETWORK OF LOCAL EXPERTS**

Our international outreach has led us to establish a stable presence beyond our borders.

We have our own branches in places as far apart and remote as India, Australia, the Netherlands, Turkey, Chile and China. We operate in these countries directly and maintain the same capacity and quality in our products, as well as an efficient and real-time service through our 40 exclusive distributors worldwide.

For more information, please contact our headquarters.



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## TUNNEL VENTILATION SYSTEMS

It will therefore come as no surprise, that we have been awarded some of the most important ventilation system projects for tunnels, metros and hydroelectric power plants around the world. Worthy of special mention in this area are tunnel projects such as those in Guadarrama in Madrid, the Gotardo in Switzerland, the Rennsteig in Germany, the fitting-out of over 100 Metro stations in the Madrid metro network and the tunnel of Calle 30 in Madrid, the longest urban tunnel in the world.

With respect to the hydroelectric sector, Zitrón has designed and commissioned ventilation systems in numerous power stations throughout the world, providing different solutions for the building of tunnels and caves.



## MARINE DIVISION

We design our ventilation systems according to your air flow needs. With our CFD calculation software we can compare different solutions for one same project (number of fans, size, location) in order to achieve the most efficient ventilation solution.

We can also design our impellers for your specific application or performance requirement, like 100% reversibility. We have a long tradition in coping with the most complex ventilation systems.



## MINING

Underground mining deserves particular attention as far as Zitrón is concerned, given that it is where we first started out. One of our most important projects dealt with the manufacturing of main fans for the HUNOSA coalmines (Asturias, Spain), which were specially designed explosion-proof fans for main and auxiliary ventilation in accordance with the latest regulations.

## SERVICES

Zitrón is a global services network dedicated exclusively to axial ventilation systems for all types of tunnels, mines, ships and oil platforms.

With an advanced ventilation circuit optimization system(CFD), Zitrón is a world reference in this type of designs.

Our MTBF is the lowest in this specific sector.

Our subsidiaries in four continents ensure a personalized service in real time.

## PROJECTS

Over its fifty-year history, Zitrón has developed ventilation projects in five continents.

Ventilation systems for complex road tunnels, high-speed railway tunnels exceeding 25 km in length and over 40 Metros in four continents endorse its experience and expertise in the design, implementation and commissioning thereof.

Over 1.000 ships of all types have ventilation systems designed by Zitrón and endorsed by the most prestigious quality organisations in the world (LLOYD'S, BUREAU VERITAS, ....)

Our vast experience in optimizing ventilation circuits through a validated CFD program makes us leaders in the support of the overall design of ventilation systems.



M-30  
(Madrid-Spain)  
Year  
2007  
Length  
56 Km  
Total Quantity  
993  
Total Power  
60.000 Kw  
Owner  
Calle 30



Kyljlahti Copper Mine  
(Kyljlahti, Finland)  
Year  
2011  
Total Quantity  
2  
Total Power  
1.700 Kw  
Cliente / Owner  
Altona Mining Limited  
Modelo / Model  
ZVnV 1-26-800/6 + ZVN 1-30-900/6



Pajingo Mine  
(Queensland, Australia)  
Year  
2012  
Total Quantity  
1  
Total Power  
630 Kw  
Owner  
Evolution Mining  
Model  
ZVN 1-30-630/6



Nada (Livestock Carrier)  
(Lebanon)  
Year  
2010  
Total Quantity  
79  
Total Power  
34,5-42,6 Kw  
Owner  
Rassem Shipping  
Model  
V1MP



The legend in ventilation systems



## THE WAY WE ARE

Located in Gijón (Asturias, Spain) and with a worldwide presence and sphere of operation, Zitrón has managed to position itself as one of the leading European capital goods manufacturers for underground mining and public work activities.

Over fifty years' experience, a high degree of technological competence, allied to an in-depth knowledge of the sector in which we move and highly qualified staff, are the foundations on which Zitrón has built its commercial success.

With the aim of contributing to innovative solutions and endowing our projects with added value, we at Zitrón mainly focus our activity on those areas in which we can be proud and have in-depth operational Know-How, such as the manufacturing of fans, winches, drills and shovels, centring our activity on the manufacturing of ventilation equipment.



## A GLOBAL TEAM

Over 250 people work for Zitrón around the world, 120 of which work at our head office in Spain.

Worthy of special mention is the fact that the average length of time that a particular individual remains with our company is in the order of 15 years, during which they manage to acquire great expertise in the design engineering, installation, commissioning and the maintenance of our equipment.

At Zitrón, we are highly conscious of the fact that our team is the most valuable resource we possess. By virtue of their dedication, effort and professional attitude towards their work, they have turned Zitrón not only into a point of reference in its sector, but also one of the most appreciated.



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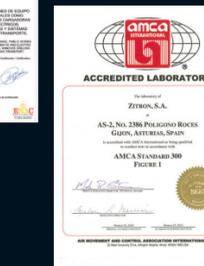
Albert Poolman  
Controller Zitrón  
Neederland B.V.



## QUALITY AND EXPERIENCE

Another of our strengths is our technological competence. We possess the most up-to-date and advanced resources for both the analysis and design of ventilation systems (simulations, loading technique checks, the analysis of complex mine circuits and the software needed to design and simulate fires in tunnels).

Our R+D is essential to the future growth of Zitrón. We anticipate the needs of a constantly changing and progressive technological market by carrying out innovative projects that we put to the test on our test bench, and then further test on site, where the ventilation system is to be installed. In this way, we guarantee the perfect functioning of our equipment.



The third foundational principle of our company is that of quality, which apart from representing a major commitment, has also served as our greatest endorsement in the international market. Zitrón holds ISO 9001:2000.

This certificate represent the highest requirements in the sector as regards design matters. Furthermore, Zitrón is the holder of test certificates from independent laboratories and entities such as CTICM, BUREAU VERITAS, AENOR, AMCA, among others.

## TEST BENCH

The ZITRÓN Test Bench is the biggest in the world of its type to be found in the market. It has been certified by the AMCA and is capable of reproducing any real tunnel equivalent resistance, thus enabling the testing of all types of axial-flow fans.

Some of the most outstanding features of the Test Bench are:

- It is made of concrete and has 600 mm-thick walls. The total Bench volume is 5.145 m<sup>3</sup>
- 7 Settling means layers or levels with various meshes in order to achieve a stable flow.
- 30 Nozzles with 16 intakes on each static pressure side in order to facilitate the measuring of the differential pressure.
- Setting chambers with air vent area of some 52.5 m<sup>2</sup>.
- Automatic determination of the stalling area.
- Self-levelling, fan positioning platform.

The foregoing equipment enables us to ensure a measurement accuracy of over 99%.

