

# TUNNEL VENTILATION



## THE PROBLEM

For many years, tunnel ventilation system design engineers have prepared specifications for fans and associated equipment that included the requirements of The National Fire Protection Association (NFPA) Standard 502 – *Standard for Road Tunnels, Bridges and Other Limited Access Highways* and Standard 130 – *Standard for Fixed Guideway Transit and Passenger Rail Systems*. The standards require equipment that must be capable of operating at elevated temperatures for extended periods of time during a fire emergency. Unfortunately, the fan industry did not have test facilities capable of demonstrating compliance with these specification requirements.

## THE SOLUTION

We recognized that claiming compliance to a design requirement is far short of demonstrating compliance. So Clarage built one of the largest and most versatile high temperature test facilities in the industry. Not only is our facility capable of testing all components of a fire life safety ventilation system (fans, dampers and sound attenuators) at the specified temperature, we can simulate actual fire emergency conditions! The facility is designed to model the “thermal shock” that will likely occur during an emergency. A by-pass loop is utilized to preheat air to the specified temperature and then, through a series of dampers, the preheated air is introduced into the test chamber to replicate actual fire conditions. In our view, there is no better method to demonstrate complete compliance to the standards. We also continue to modify and upgrade our facility to meet the industry requirements, increasing temperature (up to 400°C), fan size (up to 5m) or adding additional features, such as sprinkler simulation and deluge systems.



### TYPICAL APPLICATIONS

- > Road Tunnels
- > Underground Railways
- > Underground Stations



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