

Jet Fire Testing

Applus+ has specialist open-field facilities to conduct real-scale simulations of open fires and gas explosions. We conduct, amongst others, jet fire tests according to ISO 22899-1.



The storage and transport of hydrocarbons and other chemical products in plants, tanks, pipes and vessels call for extremely strict fire-protection measures. As these inflammable products are stored under pressure, any leak could result in a virulent fire with a high rate of flame spread. For this reason, **passive fire-protection products aimed at the oil and gas or marine industry** must pass specific tests that simulate the extreme conditions they would face in the event of a fire.

Applus+ has specialist open-field facilities in which real-scale simulations of open fires, gas explosions or spillages of inflammable liquids (chemical risks) can be carried out. This testing ground, located just a few kilometres from the [Applus+ fire laboratories in Barcelona](#) (Spain). Our fire laboratories (LGAI Technological Center S.A.) are ISO/IEC 17025 accredited by ENAC/ILAC (nº 9/LE895).

We are currently completing the Lloyds Register (LR) accreditation for our Jet Fire testing laboratory. Lloyds Register certification is a benchmark in fire-safety standards for the oil, gas and marine industries. With this accreditation, jet-fire tests performed at our facilities verify products meet LR certification requirements.

Our training ground is prepared to conduct highly specialised fire tests:

Jet Fire Tests (ISO 22899-1) for Passive Fire Protection Materials

One of the principal open-field tests that Applus+ conducts is the Jet Fire Test (ISO 22899-1). This test involves **assessing the flame resistance of passive fire-protection**

products to be used on structural elements, tanks, pipes, valves, etc. During this test, the sample is submitted to a continuous jet fire.

The Jet Fire Test simulates the type of fire caused by a leak in a tank, pipe or other equipment in which flammable fuel is being stored or transported under pressure. During the course of the test, temperatures can exceed 1200°C and radiation can reach levels of 250Kw/m².

At the moment, very few laboratories in the world are capable of performing the Jet Fire Test. This test has been specifically designed for a highly specialist sector and is intended for use on partitions and elements installed in vessels, chemical plants, fuel tanks and oil or gas platforms.

Jet Fire and Hydrocarbon Curve Tests (EN 13381-4 and EN 13381-8)

The Jet Fire Standard was developed to be combined with [in-furnace hydrocarbon curve tests](#) (EN 13381-4 and 8) in order to assess passive fire-protection systems to be applied on structural elements.

Such a combined assessment is required for these materials since tests performed in furnaces do not accurately represent the realities of a fire caused by hydrocarbon-based liquids or gases. This is because the effects of thermal radiation, turbulence and the forces of erosion, among other things, cannot be reproduced realistically in a furnace. Applus+ has the capacity required to undertake the analytical methodology set out in ISO 22899-2 to achieve both results. In this way, we can successfully determine the thickness of protective material required for the Jet Fire testing of profiles of differing masses and sizes.

Jet Fire Tests for Other Elements

ISO 22899 also outlines the types of tests required on products and systems that are aimed at protecting a variety of a facility's constituent parts. As well as describing the assessment of structural elements, the standard outlines **the testing methodology to be used on panels and their respective protective materials, pipes and penetration seals**. This enables the methodology to be adapted to the specific requirements of particular products.