Test fires for Flame Detectors

SENSE-WARE manufactures flame detectors for Industrial applications.
After installing a flame alarm system the design may be checked by means of a test fire but preferably one should in advance check the design in an actual situation. One should take changing circumstances into account and also, if necessary, seasonal influences.

Test fire with Heptane:

A. 33 x 33 cm (10 kW) approx. 650 ml Heptane
B. 50 x 50 cm (25 kW) approx. 1500 ml Heptane
C. 100 x 100 cm (100 kW) approx. 6000 ml Heptane

Laboratory:

It is almost impossible to simulate 100% laboratory-conditions at the site of the end-user (or in facility). If the purpose of the test is to observe the behavior of the fire relative to the behavior of a well-known test-fuel such as Heptane, then a description of the testing conditions is sufficient. By doing simulations of fires to be expected at the site of the end-user one can design a tailor made design of the flame detection system. The certificates (ATEX, FM) solely provide the legitimization of the design of the flame detector and the organization of the manufacturer of the flame detector.

In fact, preferably, one should test at the outdoor application of the end-user itself, because then the system is tested in the actual conditions. Weather influences can only partly be predicted. The manufacturer and his re-sellers, however, are able to provide a thorough advice about the possible spurious factors and how to deal with them.

Detection distance:

It is also possible to held a test on half of the detection distance with a quarter of the fire size. If a flame detector must be able to detect a fire of for example 100 x 100 cm Heptane on a detection distance of 60 meters one may, as an alternative, also test with a fire size of 50 x 50 cm at a distance of 30 meters. For more information see also the section "**square law**" on this web site The square law, however, is not infinitely valid.

Be aware:

the pan for the pan fire should be well positioned horizontally and should have a bottom clearance. The best solution is to reinforce the pan with help of ribs on the bottom of the pan, to avoid deformation of the pan, cause by the heat. For a design of the pan consult SENSE-WARE.

- after every test the pan for the test fire should be sufficiently cooled down to avoid boiling of the next batch of test fuel.
- extinguishing agents (for example CO_2) should be well vented after a test because the agent can significantly influence the results of a next test.
- at indoor applications, in between the tests, the room should be well vented to avoid accumulation of gases and fumes which can influence the results of the next tests.

Be aware of your one safety and that of others. Preferably a fire fighter should attend the fire tests and sufficient fire extinguishing devices should be available. In case of emergencies the victims should be quickly treated.