Transformer Bay Protection.

The AFP range of blast vents have been specifically designed and tested to vent the excess pressure in a building that can arise when an electrical fault in a transformer gas or oil cooled compartment causes a discharge into the surrounding building.

We have been working very closely with UKPN in the UK to create the venting standards for all of the UK's major transformer installations. Our testing has not only provided UKPN with a 'live discharge' based study of the effects of a potential over-pressure from a transformer fault, but also helped reduce the amount of blast venting required.

Blast Simulation

There is no standard or testing protocol for blast venting in these exact circumstances and this is why AFP has built its Blast Simulator to mimic these types of extremely rapid pressure discharges and design our own testing standard for blast vents.

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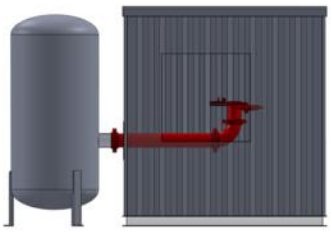
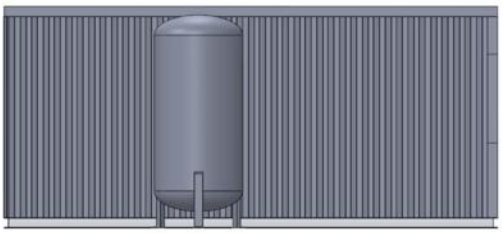
Transformer Bay Protection.
Blast Simulation

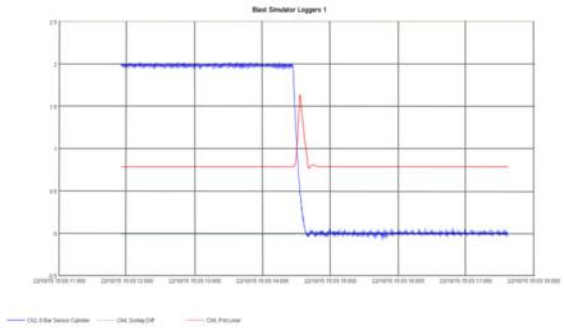
The AFP Blast Simulator consists of a 1.8m3 10 bar variable volume pressure cylinder that discharges into a 20ft steel container via 150mm diameter pipe with a bespoke instant blow off valve. The diameter of the blow off valve orifice can be sized to suit any rupture disk diameter or pressure relief valve and the volume of the pressure cylinder volume can be changed to suit the transformer oil or gas cooled compartment.



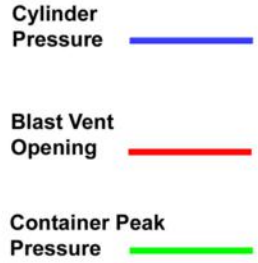


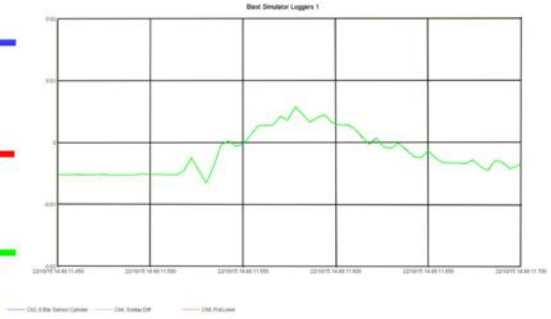
This produces an instant pressure discharge such as that produced by a transformer fault. Typically these type of discharges last for between 0.1 and 0.2 seconds.
When the correct sized AFP SHX UN Blast vents are installed, this results in the time to peak pressure, in the building, being suppressed to just 0.06 seconds which has the effect of massively reducing any potential overpressure that could result in structural damage.

By monitoring the pressure in the pressure cylinder, the test container and also the position of the blast vent blades at 20HZ, the relationship between the rate of gas volume increase in the test container, verses the rate at which the blast vent blades open, can be associated with the peak pressure in the container.



Discharge Time 0.1s





Peak Pressure 0.06s

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The data collected from the AFP live discharge tests can also be integrated into the results produced by certain software simulations.
Most of the simulations we have seen do not take into account the rate at which the blast vent opens, in the 0.01s increments needed to fully assess how the over pressure relates to the free vent area of the vents over time.
This now means that thanks to AFP blast testing, the theoretical simulations can finally be matched up to an expected discharge from the 'real world'.

SHX UN Blast Vents.

The SHX UN Pressure/Blast vents come in two forms for transformer building protection, standard and motorised (SHX UN MOT). The motorised being able to motor open for ventilation purposes.

(Please visit our website www.afpairtech.co.uk for all product details)

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SHX UN Blast Vents additional testing.

The SHX UN range has also been Gas Ignition explosion tested. Using a high speed camera they have been measured to full open in 11ms with no structural failures at non vented enclosure test pressures of up to 20 bar (oxygen/acetylene mix)

Certified fire tested to 4 hours for all sizes.

Environment testing of all of our external louver units, which have been proven to give superb external weather protection.

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