

Nordrach, January 2009

## **Safety Technology**

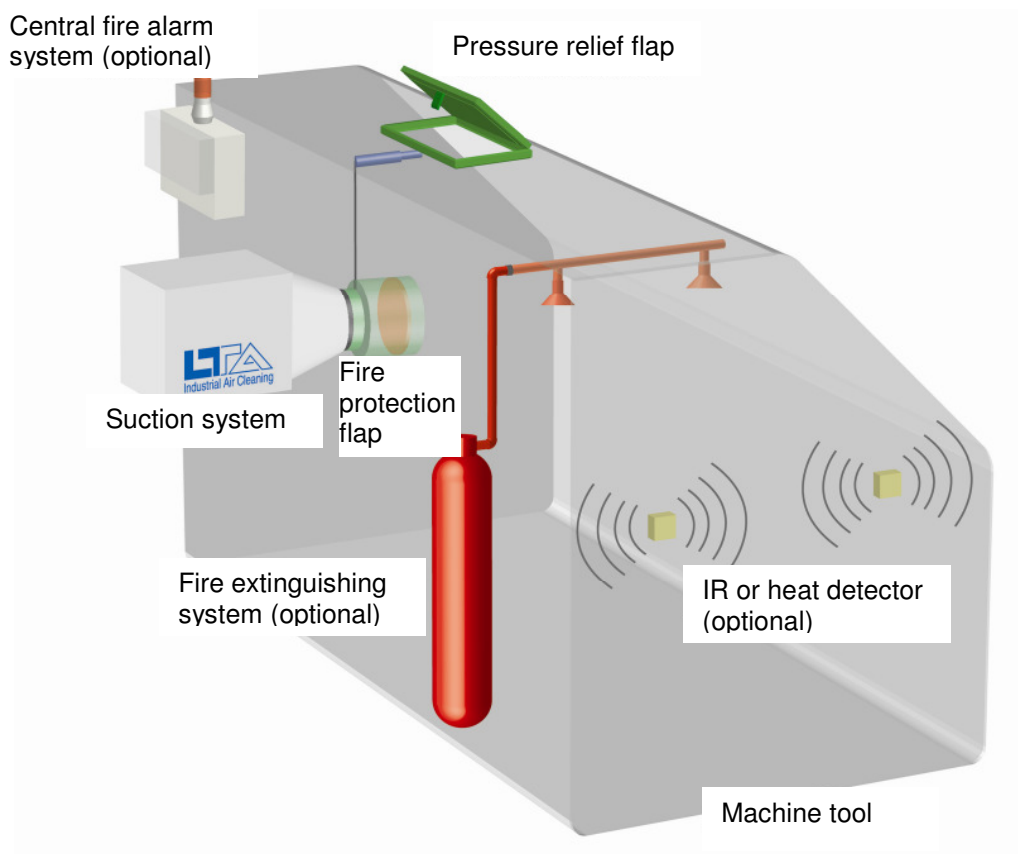
In the metal-working industry, large quantities of cooling lubricant are used especially in cutting processes. These cooling lubricants predominantly are non water-soluble oils having the characteristic to form explosive mixtures with air. Heating them up above their flashing point produces explosive vapor/air mixtures. This can be prevented by selecting cooling lubricants with a rather high flashing point. However, the formation of aerosols due to atomizing or spraying processes cannot be averted. Such aerosols are explosive even below the flashing point. When using oil/water emulsions (water-soluble cooling lubricants), a water contents of 80% is required to reliably exclude an ignition.

There are number of countermeasures increasing the safety when applying non water-soluble cooling lubricants in machine tools. Messrs. LTA Lufttechnik GmbH from Nordrach has developed a special fire and explosion protection system which was appraised by an independent institute (IBEXU). This system comprises a pressure relief flap, a trip unit and a fire protection flap.

The **LTA pressure relief flap** protects the machine housing against deformation which would result from the increased pressure generated by an explosion. If a predefined overpressure is detected in the machine, a pressure relief valve opens. This opens an orifice through which the overpressure may escape. After the escape of the overpressure, the pressure relief flap is automatically opened again. As opposed to other systems, this flap can be reused as often as required. The opening pressure may exactly be defined and also the flap position is easy to monitor.

The **LTA trip unit** forms the connecting link between pressure relief flap and fire relief flap or controls the function of the fire protection flap via other signals (e.g. fire detector, UV sensor etc.). The triggering is selective where factors like reaction time, operator friendliness, monitoring time and reliability must be taken into consideration.

The **LTA fire protection flap serves** to interrupt the connection between suction and machine in case of a fire or an explosion. This prevents the stoking of the fire due to the following sucked fresh air and the flames from jumping over to the suction system and the piping systems.



*The LTA safety system,  
successfully installed in more than 3,000 machines worldwide*