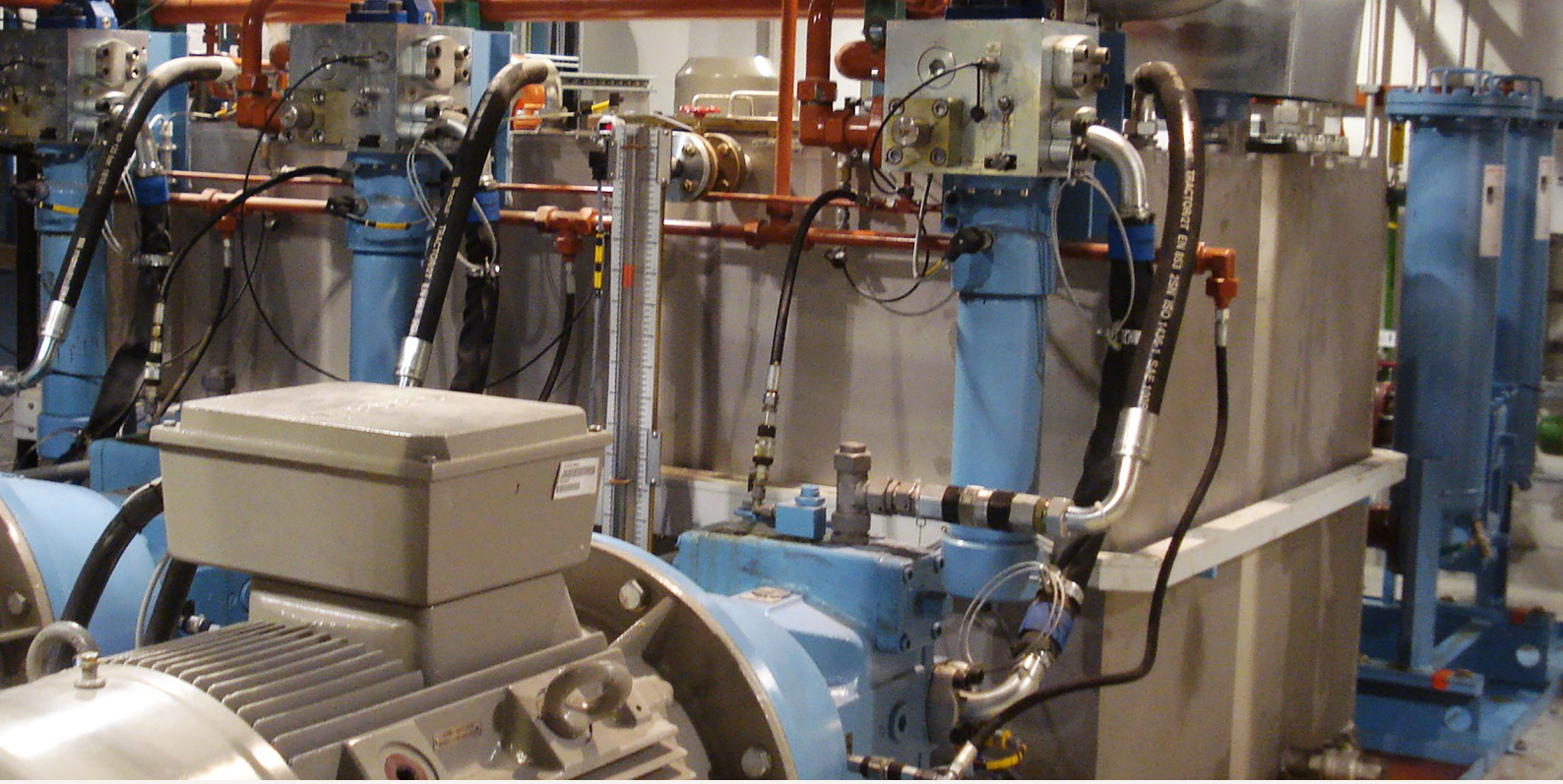

Hydraulic oils

What is the hazard?

Hydraulic oils are, despite their high flash points, a potential risk for a disastrous fire. If oil leaks from the hydraulic system under high pressure an oil mist will be produced. The mist can easily ignite, and flames from the resulting fire can spread over a significant distance.

How to reduce the risk

- Replace the mineral oil with a **non-combustible, water-based** fluid whenever feasible. When purchasing a new system, choose one which uses such a fluid or consider using **electric or pneumatic drives**, instead of hydraulic ones.
- Keep in mind that ignition point of mist type leakage from pinhole is much lower than ignition point of oil itself.
- Install a sufficient number of **emergency stop buttons**. The buttons need to be installed in locations in which they are easily and safely accessible in the event of a fire.
- Oil system should be divided in several blocks if it makes shutdown process safer and easier.

- Install **block and bleed** valves to the hydraulic systems, which are equipped with pressure accumulators. In the event of a fire, the operator can stop the oil flow from the accumulators to the fire instantly by pushing the emergency stop button.
- Provide **automatic sprinkler** protection for hydraulic pump rooms and other parts of the hydraulic system. Deluge systems are recommended. The use of foam would further improve the effectiveness.
- In less critical locations, an option is to stop the pumps automatically if the pump temperature exceeds a specific threshold or the fluid level of the tank drops. In addition, the areas should be provided with **automatic fire alarm systems** – combined with reliable fire compartmentation, good initial fire-fighting capabilities and the rapid response of the fire-fighting forces, preferably in less than 10 minutes.
- Install hydraulic pipes and hoses in **safe places,** screened off from potential ignition sources such as hot surfaces. Provide all of the exposed high-pressure hoses with pyro-jackets, which prevent oil from spraying around if the hose itself breaks.
- Use **steel pipes** whenever possible and hoses only when flexibility is required, not because they are easy to install. Under humid and corrosive conditions, stainless steel is recommended.
- Rubber hose condition and age should be followed and hoses to be changed in good time before ageing of rubber.
- **Control possible leaks** by inspecting the equipment regularly. The containment basin should be cleaned frequently, and suitable non-combustible absorbent material provided.
- Keep hydraulic cylinders and hoses pressurised only when needed.
- Keep the pump room and all the areas around the hydraulic hoses clear of litter and combustibles.

12/2020