

Cool naturally – but safely!

eurammon experts show what is important in refrigeration systems.

Regulations for constructing and operating a refrigeration system are stipulated by law – as well as the question of how to dispose of different refrigerants. But it is precisely the variety of regulations at European, national and regional level that often makes it difficult for operators to keep essential aspects in mind: Who is responsible for refrigerating systems and what regular checks are required for their reliable operation? eurammon members Raymond Burri, Director at Walter Wettstein AG, and Rainer Brinkmann, Technical Support Industrial Refrigeration at Johnson Controls, explain what operators need to consider in terms of plant safety.

1) There is still a great deal of uncertainty when it comes to user responsibility. Exactly who is the operator by law and when does his responsibility for system operation begin?

Rainer Brinkmann: Basically, the owner is the operator. Many people often don't know that there are different legal aspects involved with regard to the point in time of initial commissioning. While the system manufacturer is still responsible for initial commissioning during the installation phase of the project, the user already bears sole responsibility for commissioning during the trial-run phase following hand-over or after the transfer of risk. Once the system has been handed over, the operator is also responsible for hazard assessment pursuant to § 3 of the Industrial Safety Regulation; this may include measures for operational safety.

2) Mr Burri, whom should operators turn to for the maintenance and servicing of refrigeration systems?

Raymond Burri: The system manufacturer is responsible for execution planning and realisation, as he has to confirm the conformity of the system. Even after this stage, it is also advisable to use the same system manufacturer for statutory servicing and maintenance tasks – not just because he knows the system best but also because every intervention can affect the system's conformity. If the operator outsources maintenance and servicing work to a third party during the guarantee period, he also risks losing the guarantee and even the conformity of the system. The same also applies later on if the system is modified without taking this into account in the hazard analysis or if non-original parts are fitted.

3) What does the law say in your country and what do operators have to bear in mind?

Raymond Burri: In Switzerland, the Chemicals Risk Reduction Regulation (ChemRRV) says which refrigerants are to be used for which application and refrigeration capacity. As far as natural refrigerants are concerned, a system logbook has to be kept constantly up to date for systems with a filling of more than 3 kg. In addition, preventive maintenance measures are to be conducted at least every twelve months and also recorded in the system logbook. This includes a leak test as well as checking the alarm devices, mechanical ventilation, detectors and personal safety gear. An annual inspection of the safety devices is also compulsory.

Rainer Brinkmann: In Germany, the user is obliged by law to obtain official approval for certain refrigeration systems. This also entails fulfilling regulations for installation, commissioning and periodic inspection. However, the legislation is rather complicated: together with EU Directives and national laws for construction and quality, specific state

regulations also apply to operating the systems which are often not known to many companies.

4) What are the central regulations in Germany that every operator ought to know?

Rainer Brinkmann: It depends on several factors, such as system type or which refrigerant is being used. For example, systems using refrigerants that need special safety precautions often go through preliminary approval with subsequent regular monitoring, maintenance and inspection. However, Germany does have central laws and regulations that every user ought to know, such as the Federal Pollution Control Act (BImSchG), the Industrial Safety Regulation and the Technical Regulations for Operational Safety (TRBS).

5) Mr Brinkmann, can you give a few concrete operator-relevant examples of these regulations?

Rainer Brinkmann: The BImSchG for example is important for operators of systems subject to approval with an ammonia charge of more than 3,000 kg. It states that the responsible approval authority can stipulate periodic safety inspections by an expert for these systems. Second example: the Industrial Safety Regulation is important not just for users of systems subject to mandatory inspection. This regulation stipulates that the user has to proceed with a hazard assessment that serves to protect this employees. Here consideration has to be given to staff qualifications and to the residual risks presented by systems, installations, machines and substances together with their reciprocal effects. Furthermore, the operator has to stipulate protective measures for certain risky areas. In terms of occupational safety, the user has to heed the Industrial Safety Regulation and the Technical Regulations for Operational Safety (TRBS) as well as the Occupational Safety Act and the Ordinance on Hazardous Substances. Compliance is also necessary with the accident prevention regulations of the professional associations (BGR) which indicate measures for fulfilling indispensable protection objectives. For example, BGR 500 chapter 2.35 "Operating refrigeration systems and heat pumps" prescribes regular safety training sessions for the employees.

6) Can users pass the responsibility on to third parties, and who is liable in the event of any damage?

Raymond Burri: Both in Switzerland and in Germany, it is common practice for users to instruct third parties to undertake regular maintenance of the system. As a rule, the third party will be the system manufacturer. If it should transpire that instructed maintenance work has not been performed correctly despite issuing a fully comprehensive order, the operator can take recourse against the instructed company. Nevertheless, the operator remains liable by law and this also includes bearing the consequences in the event of damage.

7) In other words, operators always depend on the professional expertise of the manufacturer. Mr Burri, how would you describe the role of the system manufacturer in this context?

Raymond Burri: Every refrigeration system manufacturer should provide advice about necessary approvals and safe operation of the refrigeration system, especially for future operators. The support we provide for systems that we have designed and installed usually extends across the whole service life. As a result, we are familiar with every system and can draw early attention to pending maintenance measures. We also offer our customers regular training courses to keep them informed about refrigeration technology and operator obligations.

8) Mr Brinkmann, do you think that operators are adequately informed about their obligations?

Rainer Brinkmann: There are great differences here. While it is often difficult for small companies to keep up to date on a broad scale, large companies will have specialist departments that deal with the whole issue of user responsibility. For small companies in particular, it is vital to keep well informed. Assistance can be provided here by the professional associations; information is also available in special literature produced by the refrigeration system manufacturers, drawing attention to the operator's statutory obligations.

9. What exactly do you understand by exemplary safety management?

Raymond Burri: Generally, Swiss legislation offers a good basis for exemplary safety management – from regulations and inspection obligations through to regular leak testing. Operators working with natural refrigerants have to take additional safety management measures. In Switzerland, it is obligatory for users of larger NH₃ systems with a charge of more than 2,000 kg to keep an operation plan available for the emergency services which includes simplified drawings of the buildings together with piping and instrumentation diagrams which show all safety-relevant manual stop valves and components.

Rainer Brinkmann: Safety management is an on-going process under the control of the business Managing Director or a safety officer, and all employees must be involved. Firstly, the operator has to produce hazard assessments which are then used to stipulate safety measures of all kinds. These include any necessary inspections, checks and regular safety instruction sessions for the employees. The effectiveness of these measures has to be checked continuously during on-going operation; any necessary corrections must be implemented and, above all, comprehensibly documented.

About eurammon

eurammon is a joint European initiative of companies, institutions and individuals who advocate an increased use of natural refrigerants. As a knowledge pool for the use of natural refrigerants in refrigeration engineering, the initiative sees as its mandate the creation of a platform for information sharing and the promotion of public awareness and acceptance of natural refrigerants. The objective is to promote the use of natural refrigerants in the interest of a healthy environment, and thereby encourage a sustainable approach in refrigeration engineering. eurammon provides comprehensive information about all aspects of natural refrigerants to experts, politicians and the public at large. It serves as a qualified contact for anyone interested in the subject. Users and designers of refrigeration projects can turn to eurammon for specific project experience and extensive information, as well as for advice on all matters of planning, licensing and operating refrigeration plants. The initiative was set up in 1996 and is open to European companies and institutions with a vested interest in natural refrigerants, as well as to individuals e.g. scientists and researchers.
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