R22 phase-out

ASERCOM members have discussed the R22 phase-out in the past and have reviewed their assessment to integrate developments in the industry and in the legal base:

The regulation EU2037/2000 prohibits the use of both Virgin and Recycled HCFCs since 31st of December 2014 (complete ban in EU). The complete phase-out of HCFCs leads to these scenarios:

- No intervention in the system: operation of the cooling plant until end of life
- **Use of HCFCs in Maintenance or Service**: Prohibited
- **Retrofit**: an active adaptation of the plant to the new R22 substitute considering the F-Gas Regulation and consequently restrictions on GWP (global warming potential) refrigerants,, e.g. overhauling of the complete refrigeration system. **Important**: R22 cannot be recovered and it must be disposed as hazardous waste
- **New installation** by means of a refrigerant with a low impact to the environment, i.e., synthetic or natural like Ammonia, CO₂ or Hydrocarbons

Whereas commercial plants may work with a drop-in refrigerant, the choice of scenario for the large variety of industrial plants will lead to mainly individual solutions depending on various considerations:

- **Technical**: Complexity of the plant, type of compressor, type of evaporation, capacity, oil management, sealing and material properties, pressure levels and pressure drop, controls
- **Commercial**: Remaining life time, operational cost, installation cost, down time and availability of refrigerants
- **Safety and Environmental**: Safety standards, national regulations, toxicity and/or flammability, GWP, ODP, TEWI
- **Legislative**: PED category, approvals, documentation and phase-down/availability of refrigerants according to F-Gas regulation

Above mentioned factors are not complete, but just some of the main requirements.

A thorough and often complex analysis of the properties of the new refrigerant, with respect to the requirements of the plant, will be necessary to avoid unexpected problems, when drop-in or retrofit is considered. In this case, the contact to the compressor manufacturer is strongly recommended too.

**ASERCOM** is convinced that a new installation will be the preferable solution, to avoid efficiency, performance, serviceability and reliability issues.

These recommendations are addressed to professionals, industrial, commercial and domestic refrigeration system manufacturers / installers. They have been drafted on the basis of what **ASERCOM** believes to be the state of scientific and technical knowledge at the time of drafting, however, **ASERCOM** and its member companies cannot accept any responsibility for and, in particular, cannot assume any liability with respect to any measures - acts or omissions - taken on the basis of these recommendations.