The RAC industry phase new challenges

ODS phase out is just a start

Energy efficiency is the future challenge

Side event on servicing sector during the OEWG in Bangkok 2013

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The industry must change

- New refrigerants require new and more competencies
  - ODS – out
  - HFC – phase down: new skills required -technical
  - HFO – under introduction: new skills required - technical
  - HC – increase: new skills required – tech. safety flammability
  - NH3 – increase: more need the skills – tech. safety toxicity
  - CO2 – increase: new skills required – tech. high pressure

- Energy efficiency is the main challenge after ODS
  - RAC industry lack competence on operating efficiency
  - Equipment owners lack awareness and long term perspective
Challenging for industry to change in developing and emerging economies

- Large informal sector compete on price
  - How to invest in training and tools
- Short term focus on investment ROI
  - Equipment owners want to buy cheap operating cost secondary priority
- Often unclear policies-regulations – more urgent issues
  - Refrigerants
  - Energy prices and supply
  - Requirement on competence/capabilities
Energy efficiency does not come easy

- Few systems operate at rated conditions and performance
- Equipment owner judge cooling on temperature not kWh

- Regulations to support change is considered a pre-requisite in latest International Energy Agency status report June 2013.
- Performance inspections of AC systems required by the energy performance of buildings directive (EPBD)
- Competence must be built – structures for training and certification from ODS phase out are needed for the future
Huge variation in COP even in new plants

Source: Master Thesis by John Arul Mike Prakash, KTH Stockholm 2006
EU - Energy Performance in Building Directive (EPBD)

All office and apartment buildings in Europe should have an evaluation of energy performance. Performance inspections are required for all AC-systems with more than 12 kW capacity.

The inspection is to include:
“an assessment of the air conditioning efficiency and the sizing compared to the cooling requirements of the building”.

Advice is also to be provided to the users on “possible improvement or replacement of the air-conditioning system and on alternative solutions”.
HCFC phase out relation to energy efficiency

- Do not optimise “junk”
  - Check performance before retrofit
  - Fix problems in connection with retrofit

- Optimise systems in connection with retrofit
  - There is often a 20-30% improvement through low cost measures = ensure system operate as well as possible

- Integrate energy optimisation as a step in training, certification and regulatory framework
Optimisation start with measurements

Traditional methods are not in proportion to high cost

β Fixed monitoring system, or
β Portable field measurement system
   - 20 minutes to connect

More than 1000 analysing systems in operation
Case – monitoring system

Six Carrefour supermarkets Italy:
Reduction of electricity 23% = savings of 318 k€/year
Visualise energy optimisation

Feedback on optimisation Italian "hyper market"
Global Industry need tools and training to optimise

ClimaCheck the tool for the refrigeration expert