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REFRIGERATION AIR CONDITIONING HEAT PUMPS

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# IOR Report: RACHP Skills, Training and Workforce

The IOR has launched a project to explore future skills and qualification needs within the sector. In autumn 2025, it carried out a survey of its members, receiving 54 responses. This report summarises the key findings and conclusions from that survey. The project will continue throughout 2026, incorporating more in-depth interviews with employers, colleges, and trainees, alongside the development of an action plan to address challenges related to apprenticeships and training provision.

## Executive Summary

The RACHP sector is entering a period of significant and systemic skills pressure. Insights gathered from IOR members through the October 2025 survey, ***The Future of Training – Right Skills for the Right Job*** highlight a workforce challenge that is both structural and urgent. Employers report shortages not only in the number of engineers available, but also in the depth of competence, practical readiness, and emerging technical capabilities required for a rapidly evolving industry.

An ageing workforce and a limited pipeline of new entrants have created a "missing middle" of engineers aged 25–40, weakening succession pathways and reducing the sector's resilience. At the same time, training provision remains inconsistent and fragmented across the UK, with many apprentices completing qualifications without the practical experience needed for safe and effective work. Emerging skills, particularly in natural refrigerants, controls, integration, and system design, are not developing at the pace required. Concerns also persist around professional behaviours, site readiness, and Health & Safety awareness.

This report brings together:

1. Detailed findings from IOR members and survey evidence
2. Analysis of workforce demographics, skills gaps, and training provision
3. Evaluation of apprenticeships, CPD, and career pathways
4. A comprehensive action plan with recommendations, outcomes, and responsibilities

Without strategic, coordinated intervention, these workforce shortages are expected to intensify over the next 2–5 years, with direct consequences for safety, innovation, decarbonisation progress, and the long-term sustainability of the RACHP sector.

# 1. Survey Overview and Context

Survey Conducted: October 2025
Respondents: 54 members of IOR

**Respondent Profile:**

- Employers of service, maintenance, installation, and design engineers
- Manufacturers and suppliers of equipment
- Consultants and system designers
- Training providers and further education colleges

**Purpose of the Survey:**

- Assess current and emerging skills gaps across the RACHP sector
- Evaluate the effectiveness and accessibility of apprenticeship pathways and CPD
- Identify priority improvements for members and the wider sector
- Provide a robust evidence base for workforce planning and strategic intervention

**Context:**
The survey reflects the collective experience of IOR members operating across the RACHP ecosystem, from frontline engineers to employers and training providers. This makes it a reliable source for understanding real-world skills needs and workforce pressures.

# 2. Workforce Pressure and Recruitment Challenges

**Survey Findings from Members:**

- 59% of employers report that recruitment into technical roles has become more difficult over the past three years.
- 73% of respondents anticipate that demand for engineers and technicians will increase in the next 2–3 years.
- Employers consistently reported that applicants often lack basic competence, and many require significant remedial training before being operationally effective.

**Implications:**

- Increased supervision and mentoring requirements for new hires
- Higher operational costs and longer time-to-productivity
- Reduced capacity to deliver projects on schedule
- Pressure on experienced engineers to maintain service standards

**Commentary:**
The shortage is not purely numerical; it is also a skills and competence gap. Employers emphasised that even when candidates are available, they may lack the confidence or practical skills to work safely and independently.

# 3. Ageing Workforce and Pipeline Risk

**Findings:**

- The RACHP workforce is heavily skewed toward engineers aged 45–60, representing a large proportion of the sector's most experienced staff.
- A "missing middle" exists insufficient numbers of engineers aged 25–40 to fill future senior roles.
- This gap is attributed to historical underinvestment in apprenticeships and career development pathways.

**Risks Identified by Members:**

- Loss of tacit knowledge and mentoring capacity as senior engineers retire
- Insufficient supervision and management skills for complex projects
- Reduced sector capability for innovation, design, and system optimisation

**Sector Impact:**
Without intervention, the retirement of experienced engineers will leave a significant skills vacuum, particularly in supervisory and advanced technical roles, making workforce planning urgent.

# 4. Skills Gaps Identified

**Survey evidence from IOR members highlighted the following critical gaps:**

## 4.1 Core Technical Competence

- Weak understanding of refrigeration fundamentals, including superheat, subcooling, and saturation
- Limited diagnostic and fault-finding capabilities
- Poor real-world commissioning and optimisation of systems

Observation: Many apprentices and early-career engineers require additional training before becoming operationally competent, increasing employer reliance on in-house training.

## 4.2 Advanced and Emerging Skills

- Natural refrigerants: $CO_2$, ammonia, and A2L gases
- Controls & intelligent systems: integration with building management systems, smart controls
- Design and application engineering: system sizing, efficiency optimisation, advanced installation practices

Impact: Lack of these skills is a major barrier to decarbonisation, innovation, and safe adoption of modern refrigerants.

## 4.3 Work Readiness and Professional Behaviours

- Limited practical confidence on site
- Inconsistent Health & Safety awareness
- Variable levels of professional attitude, focus, and accountability

Consequence: Employers report additional in-house supervision and remedial work to ensure engineers are site-ready, increasing cost and risk.

# 5. Apprenticeships and Qualification Pathways

## 5.1 Strengths Identified

- Employers are highly committed to apprenticeship programmes
- High completion rates where provision is stable and well-supported

## 5.2 Key Challenges

- Delivery is inconsistent across providers
- Geographic access to RACHP-specific training is limited
- Level 3 funding is insufficient relative to industry risk and complexity
- Many apprentices complete qualifications without full practical competence

## 5.3 Level 2 vs Level 3 Debate

- Level 2 can broaden entry opportunities but risks diluting standards if poorly implemented
- Level 3 is essential for competence in complex systems
- Consensus: Level 2 pathways should be:
    - Clearly scoped for maintenance/support roles
    - Linked to progression routes
    - Underpinned by recognised competence frameworks

# 6. Training Provision and Access

**Survey evidence shows:**

- 50% of members struggle to find suitable training providers
- Regional “training deserts” exist outside major urban centres
- Closure of specialist colleges has significantly reduced national training capacity

**Employer Response:**

- Many bypass formal apprenticeships and rely on short courses or in-house training, which can compromise long-term skill development

# 7. CPD and Skills Updating

**Current CPD Approaches Identified by Members:**

- In-house training delivered by employers
- Short courses provided externally
- Manufacturer-led training programmes
- Webinars, technical talks, and workshops

**Barriers:**

- Provision is fragmented and inconsistent
- Variable quality of courses and instructors
- Limited recognition or formal accreditation
- Difficulty linking CPD to career progression or membership recognition

# 8. Skills Shortages by Role

## 8.1 Service & Maintenance Engineers

- High vacancy levels
- Insufficient diagnostic and fault-finding skills
- Over-reliance on F-Gas certification as a proxy for competence

## 8.2 Installation Engineers

- Shortage of engineers competent in **modern refrigerants**
- Weak commissioning skills and system optimisation capability

## 8.3 Design & Applications Engineers

- Severe shortage and lack of structured pathways
- Heavy reliance on in-house mentoring and informal training
- Limited career development frameworks

# 9. Member Needs and Improvements

From the survey, IOR members highlighted these priority areas for improvement:

1. **Clear Skills & Career Pathways:**
    - Structured progression from entry-level to advanced roles
    - Alignment of qualifications, competencies, and real-world tasks
2. **Consistent, High-Quality Training:**
    - Benchmark standards for providers
    - Greater employer input into curriculum design
3. **Practical, Real-World Learning:**
    - Increased hands-on exposure to modern systems
    - Assessments aligned with on-site realities
4. **Accessible CPD:**
    - Centralised access to trusted CPD
    - Clear recognition and career progression mapping

# 10. Action Plan, Recommendations, and Outcomes

| Area | Actions | Expected Outcomes | Responsible Parties | IOR Role / Support Required |
|---|---|---|---|---|
| Workforce pipeline | Map retiring engineers; establish structured mentorship programmes | Retain tacit knowledge; support early-career development | IOR, Employers | **Lead:** Mentorship programme design and monitoring. **Support Needed:** Employers to provide mentors and facilitate engagement. |
| Apprenticeships | Reform Level 3; design employer-led Level 2 pathways | Improved competence; clear progression routes | IOR, Providers | **Lead:** Framework design, standards, and monitoring. **Support Needed:** Providers to deliver practical training; Employers to offer placements and feedback. |
| Training quality | Develop IOR-endorsed quality framework; accredit providers | Consistent high-quality training | IOR, Providers | **Lead:** Quality framework creation and accreditation. **Support Needed:** Providers to implement and deliver training aligned to framework. |
| CPD & Professional Recognition | Launch credit-based CPD framework; recognise in-house/manufacturer training | Clear career progression; professional standards | IOR | **Lead:** CPD framework, recognition system, mapping to career pathways. **Support Needed:** Employers/manufacturers to contribute CPD activities. |
| Advanced skills | Modular training for emerging tech: natural refrigerants, controls, integration | Workforce ready for decarbonisation and innovation | IOR, Providers, Employers | **Lead:** Training content design and endorsement. **Support Needed:** Providers to deliver modules; Employers to provide real-world case studies and access. |
| Recruitment & Promotion | Promote RACHP careers to schools, colleges, and early career audiences | Increase talent inflow; address missing middle | IOR, Employers | **Lead:** Outreach strategy and events. **Support Needed:** Employers to participate, provide case studies, and host site visits. |
| Regional training access | Map provision; establish regional hubs/mobile training units | Wider access; reduced training deserts | IOR, Providers | **Lead:** Strategy and coordination. **Support Needed:** Local authorities, employers, providers for facilities, resources, and delivery. |
| Design & Applications Roles | Structured pathways; accredited practical modules; CPD | Pipeline of competent design engineers | IOR, Providers, Employers | **Lead:** Pathway design, accreditation, and CPD mapping. **Support Needed:** Employers to provide mentoring, projects, and practical exposure. |
| National policy influence | Advocate for funding and skills policy reform | Long-term sector sustainability | IOR, Sector Bodies | **Lead:** Policy advocacy and representation. **Support Needed:** Sector bodies to support lobbying and provide data/evidence. |

# 11. Conclusion

The October 2025 survey of IOR members makes clear that the RACHP sector faces a deep and systemic skills challenge. Shortages in both workforce numbers and competence, combined with an ageing workforce and a missing middle tier of technicians, create pressing succession risks. At the same time, fragmented training provision and inconsistent CPD pathways limit the sector's ability to respond effectively. These pressures are intensified by emerging skills gaps that threaten progress on decarbonisation and innovation objectives.

The action plan outlined in this report provides a practical route forward. By taking coordinated steps to strengthen training pathways, enhance professional competence, and build a more resilient talent pipeline, the IOR and its partners can stabilise the workforce, raise standards, and support sustainable sector growth. Crucially, these actions will help ensure the RACHP community is equipped to meet the technical and environmental demands of the coming decade.

Grounded in robust evidence, this report offers a clear foundation for immediate, medium-term, and long-term strategic action, setting the direction for a more capable, confident, and future-ready sector.

Enquiries about getting involved in IOR education initiatives may be sent to the IOR Education Outreach Manager, Matt Harvey at matt@ior.org.uk.

Updates and publications from the Institute of Refrigeration, including those on education, are available at www.ior.org.uk.