

newsTRAC

NEWSLETTER FOR TECHNICIANS IN REFRIGERATION AND AIRCONDITIONING (RAC) SECTOR

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Inside...

Foreword

Why Training is Crucial for Refrigeration and Air-conditioning (RAC) Service Technicians: A sectoral overview

Occupational safety for RAC technicians by Prof R.S Agarwal

Certification, livelihood enhancement and social security for air-conditioning service technicians by Apurupa Gorthi, Shikha Bhasin, Vaibhav Chaturvedi, CEEW

Mudra loans availability and eligibility for RAC technicians by Mr Saleem Ahmed, ESSCI

Key Takeaways for RAC Technicians

Editorial Team:

Prof. R. S. Agarwal, Retd. Prof., IIT Delhi

Mr Karan Mangotra,
Associate Director, TERI

Mr C. J. Mathew, RASSS

Ms Smitya Vichare, GIZ-Proklima

Mr Shaofeng Hu, UNEP

Dr. Amit Love, Joint Director, Ozone Cell, MoEF&CC



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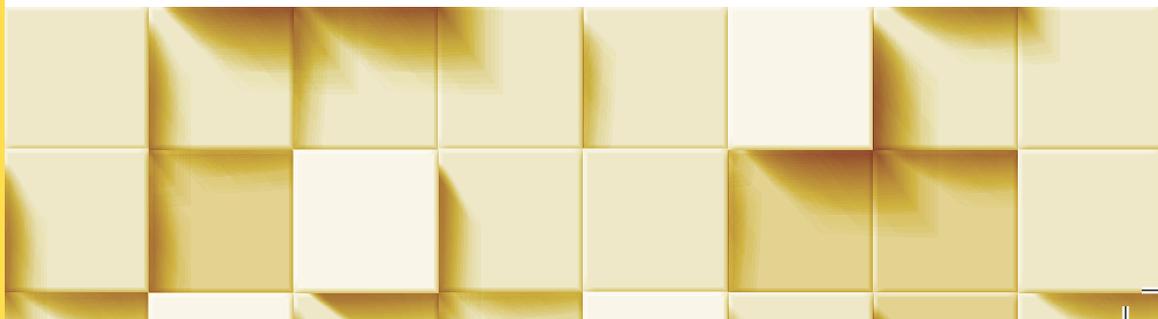
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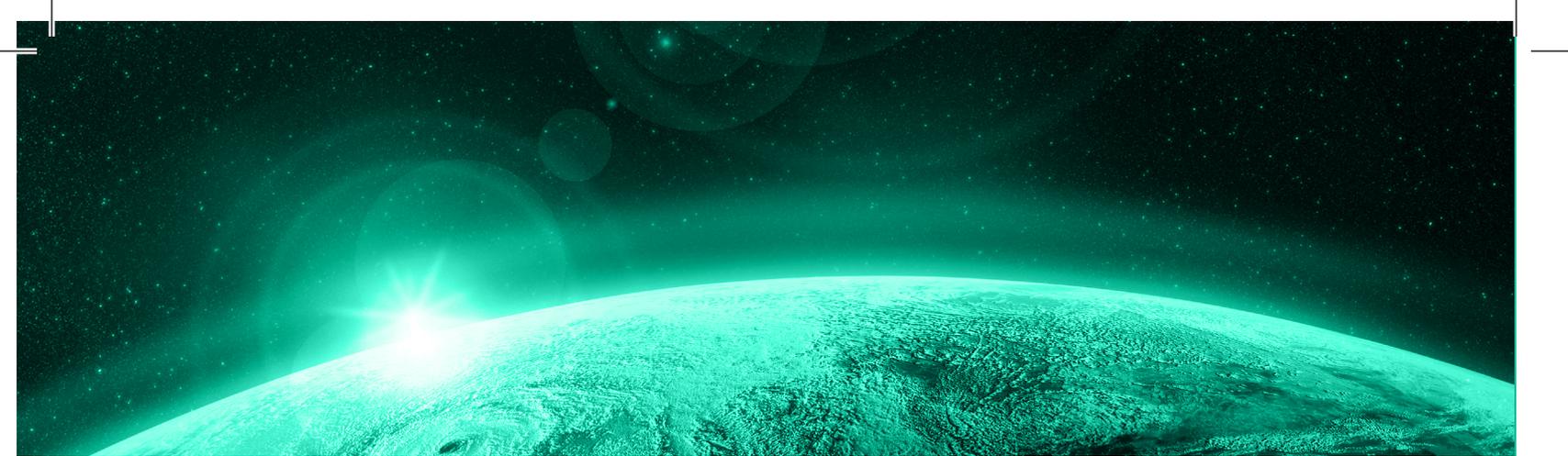
Nature Protects if She is Protected



THE ENERGY AND RESOURCES INSTITUTE
Creating Innovative Solutions for a Sustainable Future

SPECIAL ISSUE SOCIAL SECURITY, ACCESS TO FINANCE AND OCCUPATIONAL SAFETY OF SERVICING TECHNICIANS





Foreword

Dear Reader,

Upskilling and certification of Refrigeration and Air-conditioning (RAC) service technicians is a focus area of the Government both under the HCFC Phaseout Management Plan (HPMP) Stage II and the Skill India Mission – Pradhan Mantri Kaushal Vikas Yojana (PMKVY).

Recently, India became one of first countries in the world to launch a comprehensive Cooling Action plan which has a long term vision to address the cooling requirement across sectors. There is a separate section in the Indian Cooling Action plan (ICAP) on the RAC servicing Sector. It is widely acknowledged that RAC service sector is largely informal in the country. The India Cooling Action Plan provides Short, medium and long term recommendations for inter alia the skilling and certification of Refrigeration and Air-conditioning service technicians.

Skilling and certification of RAC service technicians has twin benefits of livelihood enhancement of service technicians and environmental protection. In addition it also allows to move the sector towards formalization. The ICAP also inter alia covers issues like social security measures such as accident insurance, occupational safety and having better job opportunities as guide posts towards formalization of the sector.

The skilling and certification of RAC service technicians being implemented through the Pradhan Mantri Kaushal Vikas Yojana as part of the Recognition of Prior Learning category III under the Memorandum of Understanding between the Ministry of Environment, Forest and Climate Change and Ministry of Skill Development and Entrepreneurship, Government of India is underway. Already around 20000 technicians have been trained under the programme in the first phase. The certified technicians under the programme get an accident insurance of Rs 2 lakh for a period of 3 years and access to MUDRA loan.

This special issue of newsTRAC specifically focusses on the issues of occupational safety, social security and access to finance of the RAC service technicians. I congratulate The Energy and Resources Institute, GIZ, the United Nations Environment Programme and the contributing authors for bringing together this special issue on an important topic.

My best wishes to all NewsTRAC readers.

Geeta Menon
Joint Secretary
Ministry of Environment, Forest & Climate Change

WHY TRAINING IS CRUCIAL FOR REFRIGERATION AND AIR-CONDITIONING (RAC) SERVICE TECHNICIANS: A SECTORAL OVERVIEW

Good service practices (GSP) by refrigeration and air conditioning (RAC) technicians are vital for reducing refrigerant leakages, conservation of refrigerant by recovery & reuse and minimising the indirect emissions related to power generation, by maintaining the rated energy efficiency of RAC equipment. Use of GSP will be important for safe handling and servicing of equipment with alternative refrigerants, like isobutene (R-600a), propane (R-290), R-32, R-717, R-744,, etc. that are mostly either flammable or toxic. It is estimated that there are about 2,00,000 service technicians in the country, most of whom are in the informal sector. With the increase in the RAC equipment stock, the number of service technicians in India will also increase. According to the Hydrochlorofluorocarbons Phase Out Management Plan (HPMP) Stage II roadmap, the servicing sector in country accounts for more than 40% of the total refrigerants consumption. It is estimated that proper installation, maintenance and servicing of the equipment not only curtail up to 50% of the annual refrigerant consumption but maintain the rated performance over its lifetime and reduce carbon foot print.

In the changing scenario, a service technician needs to handle a variety of refrigerants such as R-22, R-32, R-290, R-410A, etc. unlike earlier he was using a few refrigerants. It is becoming a necessity to acquire thorough knowledge and hands on practice on alternative refrigerants. Training on good servicing practices and alternative refrigerants is not only essential for safe handling but also enhances skills of technicians. Certification of trained technicians leads to better employability, income, and recognition

Skilling RAC technicians is imperative to ensuring good service practices in the field. Training of RAC service technicians has been a continuous activity as part of the ozone-depleting substances (ODS) phase-out programmes being implemented under the Montreal Protocol framework. Separately, trainings for service technicians are organised by industry associations and air conditioning equipment manufacturers. A robust training and certification system not only will secure environment benefits but also enhances livelihoods of RAC service technicians. The Ministry of Skill Development and Entrepreneurship of the Government of India is working towards developing of a robust skill ecosystem in the country. The ministry oversees and administers skilling and vocational

training. The National Skill Qualification Framework under the ministry provides certification of skills through the National Skill Development Corporation, which implements the certification programme through Thematic Sector Skill Councils. Of these thematic councils, the Electronic Sector Skill Council of India (ESSCI) caters to the RAC servicing sector. The Ministry of Environment, Forest and Climate Change (MoEF&CC) has signed a memorandum of understanding with the Ministry of Skill Development and Entrepreneurship to skill and certify 1,00,000 service technicians under the Pradhan Mantri Kaushal Vikas Yojana – Skill India Mission.

Current Scenario

Good service practices are vital for the reduction of refrigerant consumption and maintenance of rated energy efficiency of in-use equipment. It is, therefore, important to understand the current level of adherence to good service practices in the field, and the factors that can improve them.

A recent survey of service technicians revealed that one practice that was followed across all sectors was that of leak testing. Apart from this, no other good service practice was followed by most technicians. Calibrated charging was followed by less than 60% of the surveyed technicians. Less than half of the technicians followed flushing without refrigerant, and even fewer followed recovery of refrigerant. It is important to note here that the impact of proper installation, maintenance, and servicing for maintaining the energy efficiency of equipment is considerable over the working lifetime, while the impact on additional cost is minimal.

A range of reasons including high cost of the recovery equipment, time consuming process, and lack of reclamation facilities in the cities generally hinder service technicians from recovering the remaining refrigerant from leaking residential air conditioners / units. A service technician can greatly help the environment by recovering and reusing the refrigerant, wherever possible, while also reducing refrigerant consumption. If high efficiency equipment is not serviced and maintained properly, it will operate below its potential efficiency. The role of servicing technicians as well as customers is crucial to ensure proper maintenance and servicing of RAC equipment.

Importance of Training

It is estimated that every year around 12,000 service personnel are trained by Industrial Training Institutes (ITIs). The duration of this course is two years and minimum eligibility is completing 10th standard. Polytechnic institutes provide a three-year

diploma programme, though most of these programmes are in mechanical engineering with RAC as an elective course. Most of the diploma holders are employed in supervisory positions in manufacturing industry and service personnel teams. Largely, service personnel entering the RAC sector do not go through a formal vocational training. They learn on the job under the supervision of senior service personnel.

In today's dynamic scenario where advanced RAC equipment and new refrigerants are entering the market, refresher courses and updated fresher diploma programmes have become the need of the hour. In summary, regardless of the beginner training programmes available, a large number of technicians currently operating in the market require refresher trainings.

The most important benefit of certification is standardisation of training – as it establishes a minimum level of skill and provides assurance to customers and employers regarding the technicians' skills. In many countries, such certification for technicians is not only considered important, but has been

made mandatory. Given the large impact of refrigerants on the environment and the increasing use of flammable refrigerants, such certification may be necessary in the long run.

Training Landscape

There are various channels for training of RAC technicians in India. Trainings are available for beginners as well as experienced technicians in the form of short-duration refresher courses and recognition of prior learning programmes. The training channels open to technicians are:

1. Private companies that train their technicians
2. Industry and associations {such as Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE); and Refrigeration & Air-conditioning Servicing Sector Society (RASSS)}
3. Ministry of Skill Development and Entrepreneurship (ITIs, Polytechnics, National Skill Development Corporation – Electronic Sector Skill Council of India)
4. Other agencies (multilateral agencies like GIZ, implementing the HPMP project)

The previous issues of NewsTRAC have covered various trainings available in India in detail. You can access them by downloading the NewsTRAC app on your smartphone.

OCCUPATIONAL SAFETY FOR REFRIGERATION & AIR CONDITIONING SERVICE TECHNICIANS

By Prof. Radhey S. Agarwal

The refrigeration and air conditioning (RAC) industry including the service sector have been undergoing a transition for the past three decades. Environmental considerations such as depletion of stratospheric ozone and global warming leading to average global temperature rise are causes of great concerns to the whole world. This has been driving the multiple changeovers of the refrigerants used in RAC equipment for the past three decades under the Montreal Protocol on Substances that Deplete the Ozone Layer.

There is a rapidly growing demand for cooling in India. It is estimated that the aggregated cooling requirement would grow about 8 times and the space cooling (residential and commercial buildings) will grow about 11 times by 2037-38. Due to the rapid increase in air-conditioners, the use of refrigerants and the market for service technicians have also been increasing rapidly.

Most of the commonly used refrigerants including HCFC and HFC have been non-flammable, non-toxic and with moderate operating pressures but usually with higher Global Warming Potentials (GWPs). Owing to the growing environmental concerns over the increased use of such high-GWP chemicals, the Parties to the Montreal Protocol decided to accelerate the phase-out of HCFCs and phase-down of HFCs respectively.

The recent developments on refrigerants indicate that there will be considerable uptake of non-ODS, lower GWP refrigerants like R-32, hydrocarbons (R-290), ammonia, carbon dioxide, hydrofluoroolefenes (HFOs), the unsaturated HFCs, and blends of HFCs and HFOs.

Most of these refrigerants, unfortunately, are either flammable or toxic or both. Some of these refrigerants have very high operating pressures. Therefore, there are challenges for the service personnel to handle such several refrigerants during servicing of RAC equipment. Thus, occupational safety for the RAC service technicians is of utmost importance. The RAC service technicians must adopt the following measures to ensure the safety of the users and themselves.

1. Safety in Refrigerant Handling

The main safety concerns associated with the refrigerants are physical hazards, toxic hazards and flammability.



Physical hazards are due to exposures to refrigerants at very low temperatures, which can cause frostbite. Likewise, prolonged contact,

splashing into eyes or release of pressurized refrigerants from the system can cause harm to the personnel.



Toxicity refers to the capacity to cause harm to a living organism. Substances with high risk even with short exposure are considered as highly toxic. Commonly used refrigerants are non-toxic. Refrigerants like R-123, ammonia are toxic and their exposure is to be limited as per the recommendations for each of the refrigerants.



Flammability indicates the ease of flame propagation in the mixture of flammable fluids and air (oxygen). This issue is mainly concerned with the flammable refrigerants like Hydrocarbons e.g. R-290, R-600a etc, and HFCs like R-32 and R-152a.

1.1 General Safety Considerations:

- Contact with liquid refrigerant will cause a freeze burn, which should be treated by bathing the area with cold water.
- Personal Protective Equipment (PPE) viz. safety glasses, protective shoes, gloves, safety belt and clothing which cover the body should be worn when handling refrigerant.
- First aid box should be kept in the servicing area
- Refrigerants displace air and can cause suffocation. If affected, a person should be removed to an uncontaminated area and kept warm and still. Artificial respiration and medical attention may be necessary.
- Most of the commonly used refrigerants like R-22, R-32, R-134a, R-290, R-410A, R-600a, etc., are non-toxic. However, the exposure to these refrigerants should be minimised.

1.2 Safety during servicing

- During work, the technician must protect himself from any injuries. Put up posters mentioning safety rules and guidelines at the workplace as safety reminders.
- Smoking must be prohibited during servicing.
- The charging area must be well ventilated.
- The charging equipment must be safe especially in case of flammable refrigerants.
- Refrigerant venting to the environment should be avoided.
- Gas detector and fire extinguisher should be kept in the servicing area.
- Ensure the appliance is disconnected from the mains electric supply before carrying out any work on it.

- The electrical wires/cables in an air-conditioning unit must be grounded.
- Power tools and extension cords normally have three prongs connected to the electrical wires. These prongs should never be cut or removed, leaving the electrical wire naked. Take care while opening the system as the pressure inside the system is generally higher than atmospheric pressure
- Always use a two-stage pressure regulator (up to 50 bar) when using nitrogen
- Do not operate room AC while filled with nitrogen.

1.3 Refrigerant Cylinders – Safe handling, transport and storage:

Currently a number of refrigerants like, HCFCs, HFCs, blends of HFCs and HFOs, and HCs are handled by the service technicians. It is necessary to clearly label them to show the type of refrigerant. It is advised to adopt the following general guidelines for all the refrigerants.

- Do not expose cylinder to a temperature more than 450 C. If the cylinder needs to be heated to remove the refrigerant, do this by putting it into a container of water not hotter than 45°C.
- Do not modify or repair cylinders or their valves.
- Do not refill cylinders unless they are specifically designed for recovered refrigerant.
- The refrigerant cylinders and appliances should be kept in vertical position and wherever possible, should be transported in open vehicles.
- Ensure there is no ignition source(s) within 3 m of the cylinders
- It is best to store these gases in a secure, locked compound protected from weather and direct sun
- The cylinders should not be stored next to windows
- The cylinder valves should be closed and capped
- Flammable gas alarm should be fitted next to the cylinders at low level
- Cylinders should preferably be stored on the ground floor and never in basements.

1.4 Decanting of Refrigerant

Decanting of refrigerant must be avoided as far as possible, if necessary, one must follow the Government cylinder regulations. It is also advised to adopt the following general safety precautions.

- Avoid decanting, if it is necessary, do it in a well-ventilated area
Weigh the cylinder being filled and ensure that the cylinder is not filled more than 80% of the rated capacity by volume. Use a transfer hose as short as possible to minimize refrigerant loss.
- Evacuate the hose to remove the air, if any.

$$\text{Maximum allowable gross cylinder weight} = (0.8 \times WC \times SG) + TW.$$

Where : WC - water capacity of the cylinder; SG-specific gravity of the specific refrigerant recovered at 25°C; TW – tare weight of the recovery cylinder

1.5 Additional Safety Requirements for Flammable Refrigerants:

In case of flammable refrigerants additional precautions like proper ventilation around servicing areas must be ensured. Do not work in basement. Gas detectors and fire extinguishers must be installed as per the requirements.

RAC Servicing technicians should examine the installation/maintenance site before installation/maintenance in accordance with the safety requirements for R-290. The safety checklist should include the following:

- No ignition or heat source within 2 meter of installation/maintenance of the unit.
- Shut off the power supply to the RAC unit while servicing.
- No smoking.
- No entry of people other than servicing technicians in the installation/ maintenance site.
- Ensure adequate ventilation; keep windows and doors open.
- Ensure fire extinguisher equipment is available at the site.
- Mobile phones must be switched off while servicing R-290 Room AC.

Summary: Do's and Don'ts Checklist

Do's	Work in a naturally well-ventilated area, outdoors or use a forced / induced ventilation system.
	Wear proper safety gloves, goggles, and clothing that covers exposed skin while handling refrigerants.
	Keep the cylinders away from sources of heat and direct sun.
	Store only a minimum number of hydrocarbon cylinders indoors.
	Work with skilled partners.
	Have a list of emergency contacts readily available.
	Always have a dry powder fire extinguisher
Don'ts	Do not smoke, drink or eat while in the work area.
	Do not store cylinders in basements and other enclosed rooms.
	Do not keep flammable refrigerant in an area that has naked flames, gas cookers, gas water heaters, gas/wood-fire room or space heaters or direct Sun.
	Do not allow any ignition source within 3 metres of the cylinder.
	Do not let flammable refrigerants accumulate.
	Do not place cylinders lying on their side.
	Do not work alone. At least two persons per site

CERTIFICATION, LIVELIHOOD ENHANCEMENT AND SOCIAL SECURITY FOR AIR-CONDITIONING SERVICE TECHNICIANS

By Apurupa Gorthi, Shikha Bhasin, Vaibhav Chaturvedi¹

The increase in Refrigeration and Air-conditioning (RAC) equipment will lead to increased demand of the servicing for the equipment., thus leading to increase in the need for number of servicing technicians. Over the years, with the introduction of new alternative refrigerants in the RAC equipment, the servicing activity has become a specialised function, necessitating need for trained personnel. . The current estimate for the number of technicians employed in the residential air-conditioning (RAC) sector alone is two lakh (Ozone Cell 2017). With growing demand for cooling in India, the requirement for skilled service technicians is expected to grow substantially. While tens of thousands of service technicians have participated in training programmes, the sector remains largely informal in nature.

The service sector training programmes implemented under the Hydrochlorofluorocarbon (HCFC) Phase-out Management Plan (HPMP) had the primary aim to up-skill technicians on good service practices (GSPs) including safe handling of various refrigerant gases, and the safest and most efficient ways to reduce the use of refrigerants through recovery/ recycling/reuse of refrigerants, and efficiency of serviced appliance/equipment. Non-adherence of GSPs is problematic; it leads to venting of refrigerant gases or a leaking RAC unit, thereby leading to overconsumption of refrigerant gases as well as increased direct² and indirect³ greenhouse emissions from cooling equipment. Another detriment of mis-handling refrigerant gas is the associated occupational hazard it poses, noted to cause severe damage to the appliance and personnel in its vicinity. Given the rapid growth expected in the service sector in the coming decade, there is an urgent need to up-skill service technicians, especially as more variations of refrigerants become commonplace in the Indian RAC market. However, so long as the service sector remains informal, it is nearly impossible to monitor the level of skilling, trainings, and qualifications that technicians have, as well as gauge the level of GSPs that are implemented in every service.

In order to understand the scope of these challenges, a study by researchers at the Council on Energy, Environment and Water (CEEW) reported positive impact of training on

technicians. (Sridhar and Chaturvedi 2017). Thus, it becomes a development and environment imperative to train technicians, and ensure some level of accountable qualification through a nationally-ascertained standard of certification. Given the new range of refrigerants, and the likelihood of more variants (some of which may be flammable and have higher pressures) entering the in RAC market., Qualified trainings are paramount to ensure safety and wellbeing. Keeping this end as a goal for the service sector at large, is equally important to focus on the social security aspect of technicians, in order to truly overcome the obstacle of an informal service sector and accord these technicians at least a minimum level of protection and insurance within their jobs.

State of the sector: social security and formalisation

Formalisation of the service sector is an essential transformation required for improving the livelihoods of service sector professionals with an added benefit of emission reduction. To better understand the importance of this issue, a deep dive into the perceptions of service technicians on safety and social security is warranted. A survey on the country's service sector conducted by researchers at CEEW, found that most service technicians are unaware of the occupational hazard in their line of work (Sridhar and Chaturvedi 2017). For those of them that are aware, apathy stems largely from the additional cost of adherence to safe practices, both, in time and money. Next, as per the ICAP, awareness on the purpose served by insurance schemes or the different types of insurance that are available is largely lacking (Ozone Cell 2019). Focus group discussions conducted by CEEW researchers further found that service technicians aware of insurance schemes perceived them as additional expenses. Finally, looping back to the core problem, the informal nature of the service sector, diminishes the possibility for workplaces offering any form of social security benefit and the unstructured pay deters individuals from investing in these.

In order to encourage large enrolment under the Skill India Mission, the government provides various incentives including

¹ All listed authors are researchers at the Council on Energy, Environment and Water (CEEW)

² Refrigerant emissions from RAC units with leaking joints and from venting refrigerant gases during service

³ Carbon emissions from electricity use

a stipend of Rs 500 per candidate and an accident insurance on receiving the certification. The accident insurance is valid for three years since the date of receiving the certificate. It offers up to Rs 2 lakh insurance cover for accidents that occur at workplace. Considering that one lakh RAC service sector technicians are to be certified as per the memorandum of understanding between the Ministry of Environment, Forest and Climate Change and Ministry of Skill Development and Entrepreneurship, the coverage of accident insurance is set to increase in the next few years.

The criticality of such schemes in improving the state of the sector cannot be emphasised enough, especially since the reach of government programmes are typically greater and can aid in reaching the critical mass to accelerate transformation in the desired direction. Occupational safety and health at workplaces are recognised as important drivers of productivity for businesses and industries by the Government of India. As a part of this, country-wide insurance schemes such as Ayushman Bharat⁴ and the Employee's State Insurance (ESI) card⁵ target occupations like service sector technicians from formal and informal work environments, covering general well-being, workplace injuries, accidents and deaths.

Way forward

The government has recognised provisioning insurance as key to livelihood enhancement, with the objective of not only motivating service technicians to enrol for training and certification, but also support their professional growth (ICAP, 2019). Transitioning from government backed insurance schemes to group insurance provided by employers will follow a trajectory similar to that of a largely informal sector transforming into formal sector – voluntary at first; mandatory after; and finally, prevalent. We recommend the following to achieve this:

Certification schemes should be voluntary at first, incentivised through insurance

Certification scheme needs to be voluntary offering insurance as an incentive, at first. This is imperative due to the large number of technicians belonging to informal sector enterprises that may not be resilient to shocks. Once the critical mass is reached both certification and insurance schemes should be made compulsory. For this to be realised, workplaces will have to be mandated to provide benefits to employees including accident insurance. At this stage, it would be possible to provide a group insurance. However, unless service technicians are integrated into formal enterprises, group insurance schemes

may not be possible; and the starting point for this would be an incentivised certification scheme.

Certification to be seen as a way to spur livelihood benefits

Incentives and benefits are an integral part of the up-skilling and formalisation of the service sector. Insurance schemes alone may be insufficient to motivate service technicians towards earning certification, therefore, incentives such as stipends, financing options for setting up businesses, subsidised tools upon certification etc may be necessary. As mentioned before, service technicians certified under Skill India Mission's 'Recognition of Prior Learning (RPL)' scheme, receive a reward of INR 500 and a three-year subscription to an accident insurance. An assessment of the RPL will be necessary to determine if the incentives are sufficient motivators for service technicians.

A national database including all RAC service technicians

The ICAP recommends creation of a national database for RAC service technicians. A database like this will be essential to take stock of skill levels, state of certification and social security benefits availed by service technicians. The RPL already employs an online platform, 'DigiLocker', for registration and certification purposes. The platform currently serves to generate the RPL certificate along with the accident insurance policy number for each candidate, for easy access to both. However, the efficacy of this digital platform is yet to be seen.

Awareness programmes need to be implemented at scale

As in the case of any transition, additional interventions in the form of awareness drives will be necessary to achieve the desired outcome. While awareness-based interventions need to be accorded on the demand side for industry and customers with equal gusto, awareness on importance of insurance should be incorporated in all types of training for technicians. For example, RPL training programme includes brief overview on the different types of insurance. However, this should be further enhanced by linking the importance of accident insurance and workplace safety. Future training programmes should emphasise on social security benefits service technicians could avail, their importance and necessity, as well as means to apply for these. Finally, information on the various government schemes should be made available to service technicians.

4 With over 3 lakh beneficiaries admitted and an annual coverage of up to INR 5 Lakh, the Ayushman Bharat (Pradhan Mantri Jan Arogya Yojna - PMJAY) is among the most comprehensive healthcare schemes in India (Dong et al. 2019). Personnel that are repair workers, mechanics or electricians are eligible to apply for the scheme (FP staff 2019). This scheme includes over "1300 health packages covering surgery, medical, and day care treatments including medicines, diagnostics, and transport." (FP staff 2019) Enrolment to this scheme is completely digitised, requiring the applicant apply using the PMJAY portal (FP staff 2019). The scheme also covers family members of the applicant (FP staff 2019).

5 The ESI card is managed by the Employee State Insurance Corporation under the Ministry of Labour and Employment (Government of India). This scheme is available to shops (among other category of enterprises) with more than 10 employees (20 employees in some states) with a maximum monthly salary of INR 21000. The scheme provides complete social security benefit including sickness, medical, maternity, workplace accidents, and old-age care to beneficiaries. The employer contribution is 4 per cent of the monthly salary payable and employee contribution is 1 per cent (ESIC 2019).

As the country continues on its journey of growth and development, here is a space that allows us to prosper across our key development trinitities: jobs, sustainability, and growth (Ghosh 2019).

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MUDRA LOAN ELIGIBILITY AND AVAILABILITY FOR RAC SERVICE TECHNICIANS

By Saleem Ahmed, Electronics Sector Skill Council of India

The availability of skilled and certified manpower is the current need across sectors including the Refrigeration and air conditioning (RAC) servicing sector. The demand for RAC Servicing personnel is increasing to cater to the servicing requirements for the growing RAC equipment. Recognising the need, and also considering that a significant amount of the refrigerant production is consumed for servicing the equipment, the Montreal Protocol on Substances that Deplete the Ozone Layer has built in the component of servicing sector in the HCFC Phase out Management Plans (HPMPs). The alternative refrigerants to be used while phasing out the refrigerants that have Ozone Depleting Potential (ODP) have issues like flammability and toxicity concerns. As a result, skill training for technicians is of paramount importance, not only for improving employment opportunities, but also in educating them about safety requirement, energy efficiency and refrigerant leak minimisation.

The ESCCI and the Ministry of Environment, Forest and Climate Change, have initiated a joint project for upskilling and certifying 100,000 RAC service technicians under the Skill India Mission – Pradhan Mantri Kaushal Vikas Yojana (PMKVY) of Ministry of Skill Development and Entrepreneurship (MSDE). The objective of the project is to enhance the livelihood opportunities of the RAC service technicians working in the informal sector through upskilling and certification, leading towards positive environmental impacts by the way of reduction leakage of refrigerants and increase in the energy efficiency in the operation of RAC equipment.

In close cooperation with the industry and considering the requirements servicing in the RAC sector, and keeping in view the National Skill Qualification Framework (NSQF), qualification packs for have been developed, as part of the project, which include the following:

QP NAME	QP Number	NSQF level
Field Technician - AC	ELE/Q3102	4
Field Technician – Refrigerator	ELE/Q3103	4
Field Engineer –RACW	ELE/Q3105	5
Functional Tester - RAC	ELE/Q3601	4
Safety Tester - RACWO	ELE/Q3605	3
Performance Tester -RACWO	ELE/Q3606	4
HVAC Technician	ELE/Q3112	4

Eligibility and availability of MUDRA loans for RAC technicians

The MoEF&CC -ESCCI project will result in the development of a large trained manpower resulting in need for promoting employment opportunities. Considering that RAC servicing is mainly seasonal in nature, the technicians may like to opt for either wage employment – to be associated with a manufacturer or dealer- or self employment. Self-employment would need investment for tools and equipment required for servicing.

To cater to the initial investment and operational financial requirements of the Micro, Small and Medium Enterprises, the Government of India has a scheme called the Micro Units Development and Refinance Agency Ltd. [MUDRA].

The Pradhan Mantri MUDRA Yojana (PMMY) scheme was launched by the Hon'ble Prime Minister on April 8, 2015 for providing loans up to Rs 10 lakh to the non-corporate, non-farm small/micro enterprises. These loans are classified as MUDRA loans under PMMY. These loans are given by commercial banks, regional rural banks, small finance banks, microfinance institutions and non-banking financial companies. The borrower can approach any of the lending institutions mentioned above or can apply online for the loan.

Under the aegis of the PMMY, MUDRA has created three products namely 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth / development and funding needs of the beneficiary micro unit / entrepreneur and also provides a reference point for the next phase of graduation / growth.

Shishu	Kishore	Tarun
Covers loans up to Rs 50,000	Covers loans above Rs 50,000 and up to Rs 5 lakh	Covers loans above Rs 5 lakh and up to Rs 10 lakh

MUDRA provides refinance support to Banks / micro finance institutions (MFIs) / non-banking financial institutions (NBFCs) for lending to micro units with loan requirement up to Rs 10 lakh. MUDRA also provides refinance support to micro businesses. The other products are for development support to the sector. The bouquet of offerings under MUDRA is depicted below. The offerings are being targeted across the spectrum of beneficiary segments.

Mudra loan is extended for a variety of purposes which result in income generation and employment creation.

The loans are extended mainly for:

- Business loan for vendors, traders, shopkeepers and other service sector activities, which may include the RAC industry.

- Working capital loan through MUDRA cards for running expenses
- Equipment finance for micro units for capital equipment.

The RAC servicing technicians trained under the NSQF can also be considered for the MUDRA scheme, for which the NSQF certificate could be treated as a collateral for the loan.

OPPORTUNITIES FOR TRAINING

RAC service technicians can explore various channels for training in India, such as:

A

Ministry of Skill Development and Entrepreneurship (ITIs, Polytechnics, National Skill Development Corporation – Electronic Sector Skill Council of India)

B

Multilateral agencies like GIZ implementing HPMP project

C

Industry and associations (such as Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE); and Refrigeration & Air-conditioning Servicing Sector Society (RASSS))

Benefits of Training and Certification

- Increased business
- Better employment opportunities
- Recognition of quality service
- Customer satisfaction
- Better personal safety
- Environment protection
 - » Reduced refrigerant leakage
 - » Continued energy efficient operation of serviced air conditioner

In Order to Encourage Certification of Technicians Under The Skill India Mission the following is Provided to Certified Technicians

- A stipend of Rs 500 per candidate for undergoing training
- Accident insurance of Rs 2 lakh for 3 Years



Ministry of Environment,
Forest & Climate Change
Government of India

For further information
**Ozone Cell, Ministry of Environment,
Forest and Climate Change**
Government of India
Core-4B, 2nd Floor, India Habitat Centre,
Lodhi Road, New Delhi-110 003
Tel: 011-24642176; **Fax:** 011-24642175
Email: pmucfc-mef@nic.in,
Website: www.ozonecell.com



THE ENERGY AND RESOURCES INSTITUTE
Creating Innovative Solutions for a Sustainable Future

For further information
Karan Mangotra
TERI, Darbari Seth Block, IHC
Lodhi Road, New Delhi-110 003
Tel: 011-24682100; **Fax:** 011-41504900
Email: karan.mangotra@teri.res.in
Website: www.teriin.org