With contribution of the LIFE programme of the European Union

REAL alternatives 4 LIFE

blended learning for alternative refrigerants

SUMMARY

REAL Alternatives 4 LIFE is a project whose aim is to produce new learning materials and practical training programmes for Refrigeration Air conditioning and Heat Pump (RACHP) technicians with the ambitious scope to extend awareness of the use of alternative refrigerants with low Global Warming Potential (GWP) across Europe.

The phase down of Fluorinated Gases under the EU F-Gas Regulation is driving the increased use of alternative low GWP refrigerants. The awareness of the environmental benefits of changing to low GWP refrigerants is increasing and the demand for cooling services continues to grow. Low GWP alternative refrigerants offer a solution to the issue of harmful direct emissions that contribute to climate change, but they bring with them new technical difficulties requiring a higher level of competence amongst technicians to ensure safe handling and operation.

This project was therefore aimed at upskilling and training technicians to use alternative refrigerants in a safe, efficient and reliable manner. It also produced training resources that can be replicated throughout the EU and beyond through the training and licensing of training providers who can deliver practical courses based on these materials, ensuring long term sustainability and replicability of the project results. The content of the learning material focuses on the following alternative refrigerants: Flammables (Hydrocarbon, HFO/A2L, R32), Carbon Dioxide and Ammonia.

The project is of strategic relevance to member countries of the EU as it addresses critical policy areas of climate protection, fight against global warming, and effective implementation of EU environmental regulation.

THE PROJECT AND THE PARTNERS

REAL Alternatives 4 LIFE is a large and multinational project with eight beneficiary partners and seven designated stakeholder organisations representing 13 different countries. The project was first coordinated by the Institute of Refrigeration (UK) until 30th October 2019 and then until 31st of June 2020 by the International Institute of Refrigeration (France) together with the beneficiary partners. The project duration was three years - June 2017 to June 2020 - and it was funded by the European Commission LIFE Programme under Climate Change Governance and Information.

PARTNERS BENEFICIARIES

Co-funded by

DESIGNATED STAKEHOLDERS

Croatian Refrigeration Air conditioning and Heat Pumps Association

Czech Association for Cooling and Air conditioning Technology

Portuguese Association for Cooling and Air conditioning

Romanian General Association of Refrigeration

Slovak Association for Cooling and Air conditioning

Spanish National Confederation of Installers and Maintenance

Turkish Association of Refrigeration Industry and Businessmen

During the course of the project six additional stakeholders joined the project as National Lead organisations for their country, extending its impact so that by the end of the project period the scope of the programme had grown to 19 countries and 17 languages. It is expected that more countries will join in the future after the LIFE funding period ends.

ADDITIONAL NATIONAL LEAD ORGANISATIONS

Armenia: Fund Shirakatsy Lyceum

Cyprus: University of Nicosia

Estonia: EKUK – Estonian Environmental Research Centre

Greece: HUFGAS Hellas Union F-Gas

Netherlands: AERES TECH Refrigeration Expertise Centre

New Zealand: Refrigerant License New Zealand

THE CLIMATE ISSUE
PROJECT BACKGROUND & LEGISLATION

REAL Alternatives 4 LIFE targets climate problems related to the Stationary Refrigeration Air conditioning and Heat Pump (RACHP) Sector, which includes an estimated 228,000 individual technicians and 26,000 businesses in the EU. The environmental footprint of the sector is responsible for approximately 17% of energy use worldwide[1]. The RACHP sector provides essential cooling underpinning almost every businesses and industrial activity in the EU (for example air conditioning of buildings, refrigerated transport, food manufacturing and storage, distribution and retail, many industrial manufacturing processes, public transport air conditioning, climate control of data centres and electronics, medical facilities, pharmaceutical production etc). The demand for cooling services is growing.

"While investment and resourcing of the transition to lower GWP refrigerants is now taking place, the challenge remains for operators and technicians to adapt to their use."

The F-Gas Regulation sets out a programme to phase down the availability of high GWP refrigerants by 2030 to 79% of the 2015 baseline in order to reduce the level of greenhouse gas emissions from the sector and encourage the industry to move towards more climate-friendly technologies. In addition, it introduces measures to prevent emissions of F-Gases through leakage including regular leak checks, recording of servicing activity, recovery of refrigerant at end of the equipment life. In certain cases, there are even bans on the use of higher GWP refrigerants in new equipment and for servicing.

The European Commission has estimated that there are over 34 million individual pieces of equipment/systems in the EU that will need to be replaced as the result of bans on certain applications under the F-Gas Regulations.

The problems addressing this climate issue are stated in Recital 4 of the EU F-Gas Regulation (517/2014): "more can be done to reduce emissions of fluorinated greenhouse gases in the Union, in particular by avoiding the use of such gases where there are safe and energy efficient alternative technologies with no impact or a lower impact on the climate." Moreover, approximately 70 million tonnes of CO2 equivalent of the projected F-Gas emissions in 2030, at an average cost of less than 20 € per tonne of CO2 equivalent could be avoided by the successful implementation of the F-Gas Regulations and a move to low GWP refrigerants.[2]

At the time that the project began the sector still relied heavily on traditional high GWP refrigerant gases. While investment and resourcing of the transition to lower GWP refrigerants is now taking place, the challenge remains for operators and technicians to adapt to their use. The increased use of alternative low GWP refrigerants is beginning to contribute to the reduction of CO2 emissions. However, Ammonia, Carbon Dioxide and Flammables (Hydrocarbon, HFO blends and R32) present safety issues, such as flammability, high pressure, toxicity, that require a higher level of competency to be handled safely - necessitating retraining of the existing workforce. At the outset of this project it was noted that there were inequal levels of skills and training across European countries. The project aimed to address these skills gaps and inconsistencies to ensure a safe and smooth market transition to low GWP refrigerants across Europe.

Whilst the REAL Alternatives 4 LIFE project was conceived to improve the availability of a skilled workforce across the whole of the EU and its neighbouring countries, It also has proven that there is potential for the project outputs o be adopted outside of the EU to promote EU leadership on climate issues globally.

1. According to 2015 Information Note by IIF/IIR (International Institute of Refrigeration) - an independent intergovernmental scientific body.

2. COM (2011) 581 Report from the Commission on application, effects & adequacy of F-Gas Regulation.

OBJECTIVES

Objective 1

To increase knowledge levels of the workforce of 228,000 technicians on the safe use of low GWP alternative refrigerants Carbon Dioxide, Ammonia and Flammables (Hydrocarbons, R32 and HFO blends).

Objective 2

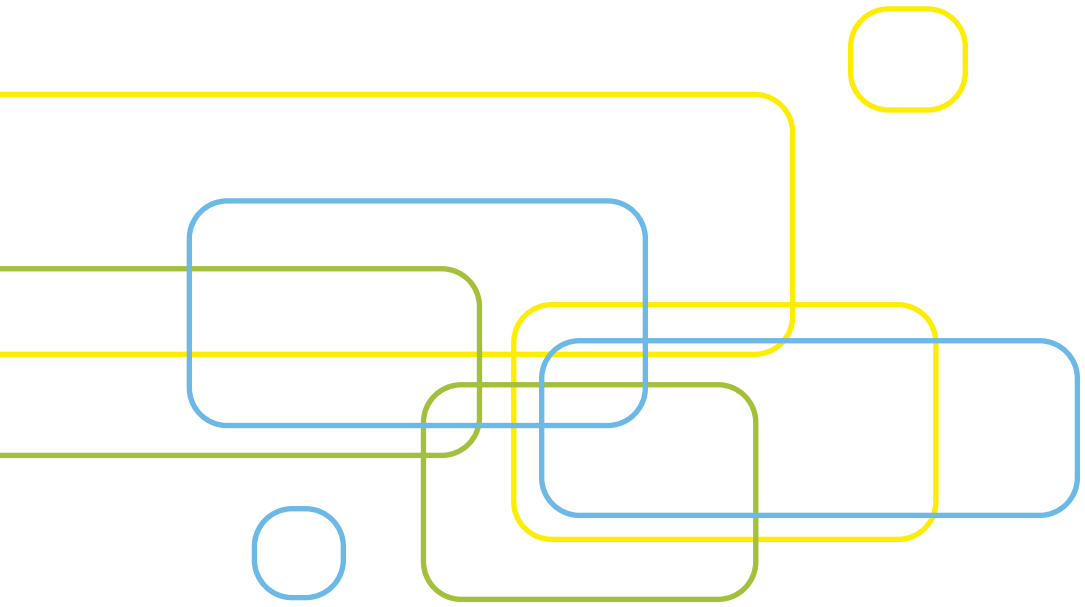
To address inconsistencies in the skills levels across the EU in handling low GWP alternative refrigerants by providing training materials developed with input from a wide range of technical experts within 13 EU countries, to identify and share best practice knowledge across member states.

Objective 3

To overcome equipment user and distributor concerns over safety, reliability, containment, efficiency and standards compliance in low GWP refrigerant use by providing shared best practice experience, case studies of success and by carrying out a comprehensive awareness raising campaign across the EU.

Objective 4

To support effective implementation of EU F-Gas Regulation requirement for information to be made available by Member States to operatives on low GWP alternative refrigerant technologies to support carbon emissions reduction Climate Change Policy and LIFE Climate actions in Governance and Information and Climate Change Mitigation.



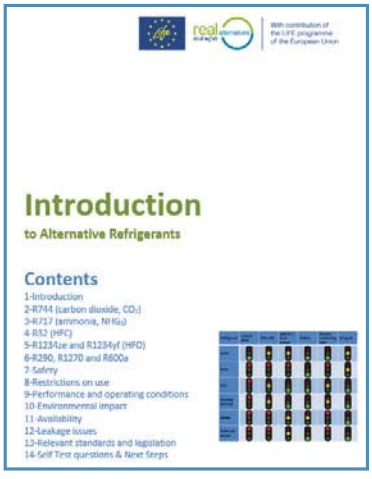
ACHIEVEMENTS AND RESULTS

ACHIEVEMENT 1 / SCOPE

REAL Alternatives 4 LIFE is currently available in 17 languages, across 15 European Countries, and in an additional 4 countries outside of the EU.

ACHIEVEMENT 2 / LEARNING MATERIALS

Nine e-learning modules and training booklets in 17 languages were developed and are freely available:



1. Introduction to Alternative Refrigerants
2. Safety and Risk Management
3. Design Differences for Alternatives Refrigerant Systems
4. Containment and Leak Detection for Alternative Refrigerants
5. Guidance on the Maintenance and Repair for Alternative Refrigerant Systems
6. Retrofitting with Alternative Refrigerants
7. Checklist of Legal Obligations for Alternative Refrigerants
8. Financial, Environmental, Safety, Reliability and Costs of Leakage
9. Site Surveys & Advice Tools for Reducing Leakage of Refrigerant

ACHIEVEMENT 3 / TRAINING PACKAGE

A package of resources is available for use by National Leads and Official Training Providers in 17 languages incorporating:

- Lesson Plans
- Practical and Theory Assessments
- Assessment Guidance and Marking Schemes
- Trainer Competency Requirements
- Training Equipment Specifications
- Standard Introductory PowerPoint Presentation
- Certificate

ACHIEVEMENT 4 / PROJECT WEBSITE

An active project website is available in 17 languages at www.realalternatives4life.eu which hosts all of the project downloads, information about training programmes, partners, registration for the e-learning. It provides project news and events updates and an option to sign up to the project newsletter.

ACHIEVEMENT 5 / TRAIN THE TRAINER PROGRAMME

- A train the trainer programme that improved training provision in the designated stakeholder countries was carried out including:
- Four study days for trainers in 2018 held a centres of training excellence in Poland, Italy, Belgium and Germany
- Seven train the trainer events held in stakeholders' countries leading to the Certification of 70 Real Alternatives 4 LIFE trainers in Croatia, Turkey, Slovakia, Czech Republic, Portugal, Spain and Romania.
- A network of training providers across Europe has been created, with communications shared via a private Linked-in Group and exclusive training provider resources area within the REAL Alternatives e-learning site.

Flammables Study Day at IKKE, Germany

Flammables Study Day in ATF, Italy

Train the Trainer event HURKT in Croatia

SUMMARY OF ACHIEVEMENTS IN NUMBERS

6 additional National Leads
have been licenced as a result of outreach activity, thus exceeding the planned impact of the project stakeholders

Over 500 **certificates for technicians** issued

Over 200 **certificates for teachers** issued

5 new Training Providers
have been licenced

A **network of more than 200 trainers**
who are offering theory and practical training programmes, assessments and certification of technicians

7 Train the Trainer
events held across Europe

Nearly 5000 people have registered to the Real Alternatives e-learning programme for independent study

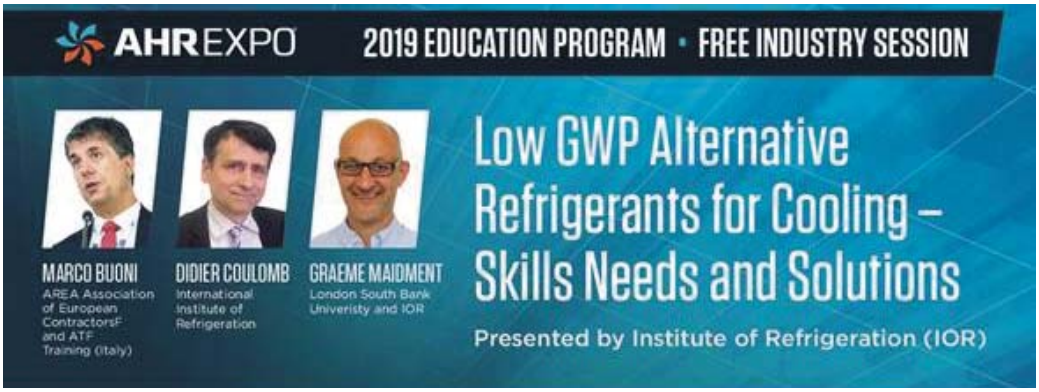
In conclusion the project has had a significant impact on the market in terms of skills levels of technicians, availability of trainers and awareness levels in the market to support the increased use low GWP refrigerants.

PROMOTION AND DISSEMINATION

The Project has been promoted through:

- Presentations in ten conferences international conferences including the IIR International Congress of Refrigeration, ASHRAE Winter meetings and global gatherings of world leaders such as MOP31.

- Participation in 10 workshops in the EU and globally
- More than 30 meetings with policymakers such as European Commission DG Clima, UNEP Ozone Action, National Environment Ministries and training authorities,
- 30 presentations to conferences, exhibitions and trade fairs across the EU
- Wide use of social network: twitter, facebook, linkedin
- Hundreds of articles published in newsletters, magazines and journals;
- 12 Press Releases issued by the project



- An awareness raising campaign carried out across the EU via consortium team mailings, membership lists and websites

This activity has achieved an increased awareness of the availability of consistent training within Europe and increased market confidence to use low GWP refrigerants. It has also stimulated demand amongst other countries to adopt REAL Alternatives E-learning and practical training nationally.

LONG-TERM ENVIRONMENTAL BENEFITS AND SOCIO-ECONOMIC IMPACTS

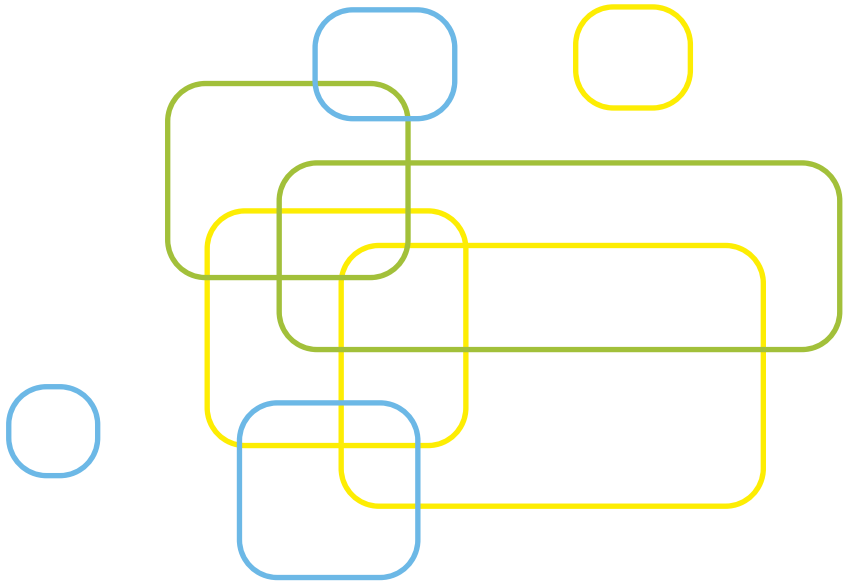
REAL Alternatives 4 LIFE has had a positive impact in the following areas:

ENVIRONMENT

- Support for effective implementation of EU F-Gas Regulation
- Increased use of low GWP alternative refrigerants - benefitting the environment and the fight against global warming
- Prevention of refrigerant leakage and reduction of energy use

SOCIO-ECONOMIC

- Improved skills of the existing workforce and enhanced employability of technicians
- Improved capacity of the vocational training network
- Creation of a safer working environment for technicians and site owners
- Raised awareness of the need to shift to low GWP refrigerants in purchasing decisions
- The impact of the Programme in these areas has been evaluated and monitored through surveys of programme users and analysis of market behaviours.



CONCLUSION

The aim of this project was to support European policy on climate change related to refrigeration and air condition use, by encouraging the successful transition to low GWP refrigerants through awareness raising, improved training capacity and increased knowledge and skills of technicians.

The project has achieved this through the provision of high-quality high-profile e-learning and practical training programmes (blended learning) that is beginning to build momentum in Europe. The transition to low GWP refrigerant technologies is now happening rapidly.

The RACHP sector is seeing growth in demand for low GWP alternatives and these types of refrigerants can be expected to become mainstream in the future. This will have a positive impact on reduced higher GWP F- Gas refrigerant emissions as the market moves to low GWP technologies.

"The RACHP sector is seeing growth in demand for low GWP alternatives and these types of refrigerants can be expected to become mainstream in the future."

Thanks to our successful awareness raising activities employers are now more aware of the need to use good quality, practical training to address safety, reliability and efficiency concerns, and they are becoming increasingly aware of its availability. REAL Alternatives blended learning is meeting this need in terms of the use of independent study materials, e-learning and downloadable guides.

The capacity of technical trainers has been increased significantly. As the number of Licenced Training Providers increases in the future, so the number of Certified Technicians will increase more rapidly over the next 3-5 years.

The project has created a strong network of training experts, achieving a common standard for training across member countries, and ensuring future replicability.

We expect the global impact of this training material to extend rapidly beyond Europe in the next few years, and are currently in negotiation with a wide range of both developing and developed countries to adapt the material for their use, and to arrange train the trainer sessions for their technical teachers. This shows the EU leading the way in tacking climate change.

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With contribution of
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www.realalternatives.eu
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