

# Real Alternatives for LIFE

## Refrigerant Emissions Alternatives and Leakage

– FREE blended learning for low GWP refrigerants

Multilingual programme will cover 14 + languages



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE



# Marco Buoni

VicePresident International Affairs

Air conditioning Refrigeration European Association AREA [www.area-eur.be](http://www.area-eur.be)

Secretary General Associazione dei Tecnici del Freddo - ATF

[www.associazioneATF.org](http://www.associazioneATF.org)

Technical Director Centro Studi Galileo - CSG [www.centrogalileo.it](http://www.centrogalileo.it)

Skype: marcobuoni

Email: [buoni@centrogalileo.it](mailto:buoni@centrogalileo.it)



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# Real Alternatives for LIFE

## Refrigerant Emissions Alternatives and Leakage – blended learning for low GWP refrigerants

**Second Phase of the Real Alternatives project started in 2014-16**

### Objectives

1. Increase knowledge amongst technicians in partner and stakeholder countries.
2. Address inconsistencies in skills across the whole of the EU
3. Overcome equipment operator and distributor concerns over safety, reliability, containment, efficiency and standards restrictions
4. Support implementation of F Gas Regs and transition to low GWP alternatives
  - Project start date 15th June 2017
  - Project end date 14th June 2020



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# Essential information about REAL Alternatives 4 LIFE

- Project co-ordinator - IOR (UK)
- Management Team – includes original REAL Alternatives project (2016)
- Stakeholders group of seven new organisations
- 13 languages for the final outputs
- 9 Modules (8 existing ones revised plus 1 new)
- Train the Trainer resources, Licences and Certification
- Study visits (4 in training centres eg Belgium, Germany, UK, Poland, Italy)
- Train the Trainer events (5 in stakeholder locations – 20 people at each)
- Project presence at conferences, trade shows and exhibition, international governmental meetings, policy makers
- Generating regular articles/newsletters/social media
- Together we have the potential to reach 228,0000 employers, 26,000 RACHP installation businesses and 100 suppliers across Europe and internationally



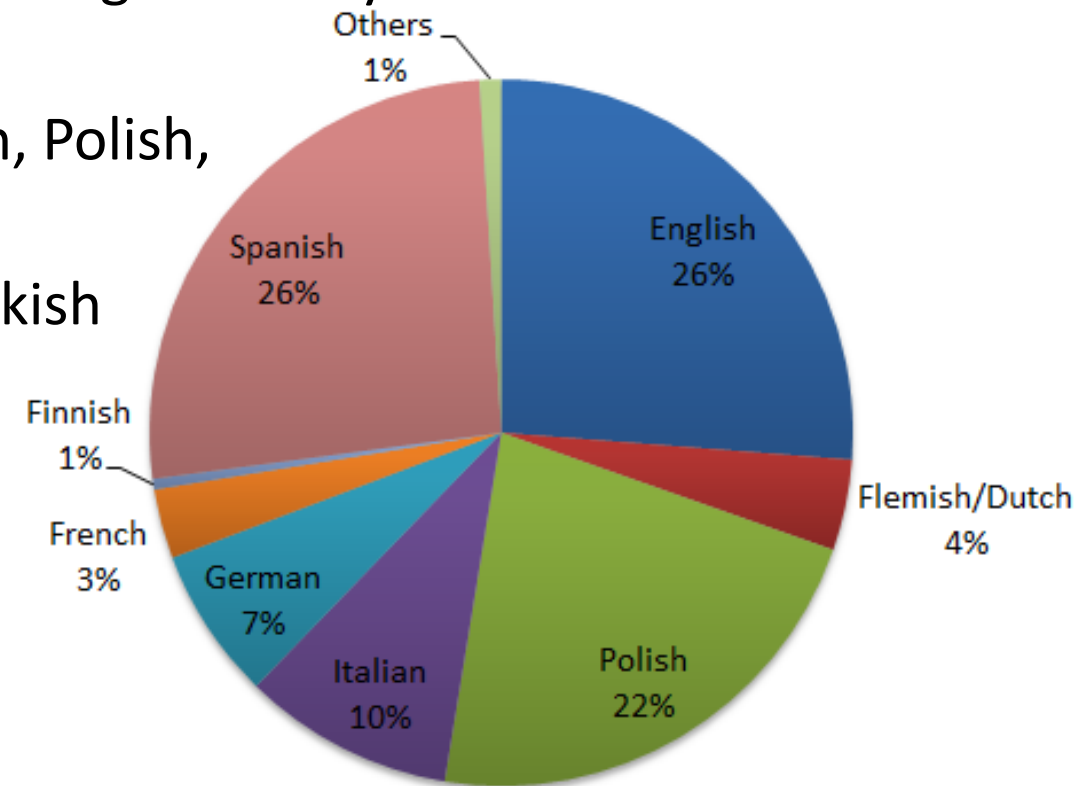
With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# Learners (the numbers)

- Around 5000 persons (mainly contractors) are using it already
- Already available in the following languages:  
English, Dutch, Finnish, French, German, Italian, Polish, Russian, Spanish,
- Soon in Croatian, Czech, Rumanian, Slovak, Turkish
- We had expression of interest for translation by Estonia, Portugal but still no final agreement, we're open to new ones.



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# Project Management team and consortium

## 8 independent institutes, associations and organisations

Associazione Tecnici del Freddo, Italy



Institute of Refrigeration, UK



London South Bank University, UK



Foundation for the Protection of the Ozone Layer, Poland



European Association for Refrigeration, Air Conditioning and Heat Pumps (AREA)



Limburg Catholic University College, Belgium



Informationszentrum für Kälte- Klima- und Energietechnik, Germany



With the co-operation of the International Institute of Refrigeration



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE  
REAL Alternatives for LIFE – 1<sup>st</sup> Project Meeting – 20-21 June 2017



## Project activity will include additional stakeholders representing extra languages



Turkish RAC industry association



Croatian RACHP association



National Confederation of installers, Spain



Romanian General Association of Refrigeration



Slovakian RAC technical group



Czech RAC technical group



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE



# Project stages

1. Survey on training awareness and needs in your countries – Sept/Oct 17

2. Prepare new material on risk and safety for flammables – Sept 17

3. Review existing learning modules in line with market needs findings – July/Sept 17

4. Raise awareness of the project with press releases, articles, talks

# OUTCOMES

Report on EU training needs

Updated e-learning modules and booklets

Training the trainers programme: standard lessons plans, practical tests, trainer training events, certification for trainers and technicians



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE





**5. Translate all materials Apr/Dec2018  
and launch in Europe**

Launch elearning and training  
programmes by end of 2018

**6. Run Study days at existing training facilities  
Sept/Dec 2018**

Promote the programme and  
certification across Europe,  
encouraging attendance at courses

**7. Run Train the Trainer events in  
stakeholder countries March/June 2019**

**8. Promote take up within EU through extensive  
communications and extend outside of EU in 2020**

Add more EU and non EU  
partners before and after the  
end of the project



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# Materials to support the delivery of training courses

Available from June 2018

- Course content– theory and practical
- Theory assessments (multiple choice test papers)
- Practical assessments
- Certification of individual learners
- Requirements of training facilities to delivery REAL Alternatives courses
- Competence of trainers – experience and knowledge
- Practical equipment requirements for training centers
- Test equipment specifications (design of test rigs)
- Video demonstrations



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



# REAL Alternative Learning Modules

9 booklets to download for free as study aids and e-learning

Programme Modules now available at [www.realalternatives.eu](http://www.realalternatives.eu)

1	Introduction to Alternative Refrigerants - safety, efficiency, reliability and good practice
2	Safety and Risk Management
3	System design using alternative refrigerants
4	Containment and leak detection of alternative refrigerants
5	Maintenance and repair of alternative refrigerant systems
6	Retrofitting with low GWP refrigerants
7	Checklist of legal obligations when working with alternative refrigerants
8	Measuring the financial and environmental impact of leakage
9	Tools and guidance for conducting site surveys



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE





# Introduction to Alternative Refrigerants

## Contents

- 1-Introduction
- 2-R744 (carbon dioxide, CO<sub>2</sub>)
- 3-R717 (ammonia, NH<sub>3</sub>)
- 4-R32 (HFC)
- 5-R1234ze and R1234yf (HFO)
- 6-R290, R1270 and R600a
- 7-Safety
- 8-Restrictions on use
- 9-Performance and operating conditions
- 10-Environmental impact
- 11-Availability
- 12-Leakage issues
- 13-Relevant standards and legislation

Refrigerant	General (A2L)	Low GWP	High A2L heat transfer	Flammable	Non-toxic	Refrigerant
R744	Green	Green	Green	Green	Green	Green
R32	Red	Red	Red	Red	Green	Red
R1234ze	Green	Green	Green	Green	Green	Green
R1234yf	Green	Green	Green	Green	Green	Green
R290	Red	Red	Red	Red	Green	Red
R1270	Red	Red	Red	Red	Green	Red
R600a	Red	Red	Red	Red	Green	Red

# Elearning and booklets

The screenshot shows a user interface for an e-learning module. At the top, there's a navigation bar with icons for home, info, and navigation. Below that, a progress bar shows '100%' completion. A sidebar on the left lists the module's contents, including 'Introduction', 'Refrigerants', and 'Safety', with checkboxes indicating completion status. The main content area is titled 'Introduction to Module 1' and contains text explaining the module's purpose and aim, along with a list of characteristics for alternative refrigerants and a section on standards.

Alternatives for LIFE



# LET'S MOVE TO ALTERNATIVE REFRIGERANTS TOGETHER!

## (options to cooperate with Real Alternatives)

	Option 1 Global Partner	Option 2 National Lead Partner	Option 3 Training Partner	Option 4 Assessing Partner	Option 5 Sponsor Partner	Option 6 Free User
WHO	Institutions, Associations, Government representatives	Training Centres, Associations, Certifying Bodies, Institutions	Companies, Training Centres, Associations, Institutions	Training Centres, Associations, Certifying Bodies, Institutions	Businesses in the HVAC/R&HP sector	Training Centres, Associations, Certifying Bodies, Institutions, Companies
WHAT	Translate the training into national language* and be official representative for your Country	Be the official REAL Alternatives© representative for your Country	Licence trainers to deliver theoretical & practical training in your Country	Can carry out Assessments and issue Certificates to technicians***	Have your Company's logo displayed on websites and newsletters	Disseminate Real Alternatives© free online material and e-learning platform within your network
WHY	Spread knowledge globally, improve consistency of training standards and support training in your Country	Become REAL Alternatives reference point for your Country**, help to implement national legislation, standards, etc.	To ensure consistent standard of technician training using REAL Alternatives© programme materials	Use ready-made REAL Alternatives© assessment and certification standards	Connect with thousands of businesses worldwide and show your active participation	Share the innovative and free online platform of Real Alternatives© to enrich the culture and knowledge on new alternatives
HOW LONG	unlimited	unlimited	3 years	3 years	3 year	unlimited

\*Already available languages: English, Italian, French, German, Polish, Spanish, Finnish, Dutch; under development languages: Russian, Portuguese, Czech, Slovakian, Romanian, Croatian, Turkish

\*\*Possible only when training material is already available in the official language of your Country

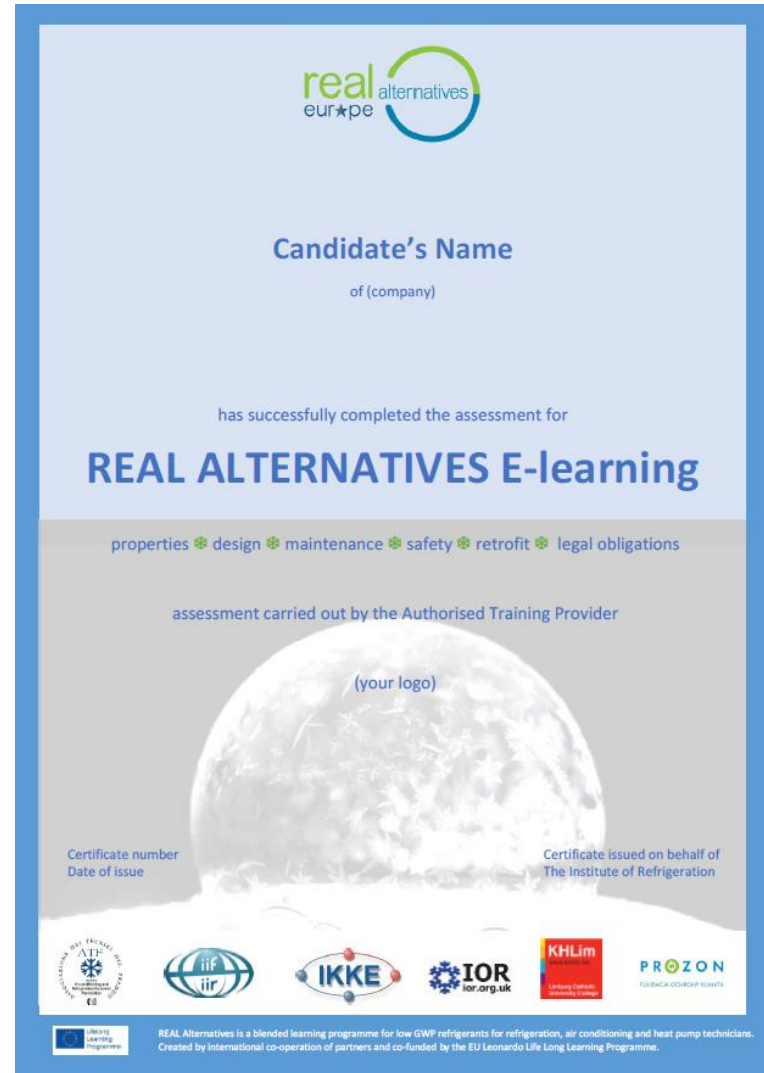
\*\*\* Certificate fee: 30€



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE

# Training and Certification on Alternative Refrigerants by independent bodies



Modules on the different Alternative and Natural Refrigerants through the Real Alternatives Certification

- Carbon dioxide
- Ammonia
- Hydrocarbon
- HFO and mixtures

Addressing safety, efficiency, reliability and containment aspects of service and maintenance.

- Higher system pressures
- Flammability
- Toxicity

And the tools to handle those refrigerants



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE



## Cooperation with UNEP

### Refrigerant Driving License (RDL)

- Initiated by UNEP and AHRI
- Participation of ASHRAE, JRAIA, AREA, EPEE, ABRAVA, UNIDO and GRME
- Currently at Stage-I Assessment, Pilot phase starts end of 2016

### Streamlining Training for RSS

- Joint approach for assessing global training programs for RSS
- Includes participation of IAs and RAC associations
- First Stakeholders workshop in April 2016
- Target is to have global Roadmap for RSS training

### Specialized Training Program for Future Alternatives

- Cooperation with AREA
- Benefiting of REAL program
- Specialized training packages on future alternative refrigerants
- Programs offered to training institutes in A5 countries

### Universal Training Kit for Alternative Refrigerants

- Venue requirements, Tests, Syllabus, Powerpoint presentation, several modules based on Real Alternatives project, UNEP, AREA experience and material



With contribution of  
the LIFE programme  
of the European Union

REAL Alternatives for LIFE



Thank you!

[www.realalternatives4life.eu](http://www.realalternatives4life.eu)



**REAL Alternatives**  
@REAL\_AIts\_EU

European project to develop blended learning resources for alternative refrigerants covering carbon dioxide, hydrocarbon, ammonia and HFOs

**Marco Buoni**

Skype: marcobuoni

Email: [buoni@centrogalileo.it](mailto:buoni@centrogalileo.it)



The header shows the 'real alternatives eur★pe' logo, the title 'REAL Alternatives', and the subtitle 'BLENDED LEARNING FOR ALTERNATIVE REFRIGERANTS'. Navigation links include HOME, ABOUT REAL ALTERNATIVES, REGISTER FOR DOWNLOADS, REGISTER FOR NEWS, and CONTACT US. A language dropdown menu is set to 'English (UK)'.

- E-LEARNING
- E-LIBRARY
- FREE GUIDES
- CPD
- DUTCH
- FRENCH
- GERMAN
- ITALIAN
- POLISH
- CROATIAN
- CZECH
- FINNISH
- PORTUGUESE
- ROMANIAN
- SLOVAKIAN
- SPANISH
- TURKISH

A graphic featuring a yellow and blue globe with a silhouette of a person's head and shoulders. A speech bubble contains the text: 'Multilingual programme will cover 14+ languages'.

**EVENTS**  
HEAR ABOUT REAL ALTERNATIVES AT ATMOSPHERE EUROPE2017, BERLIN  
MORE EVENTS

**NEWS**  
EXPANSION OF REAL ALTERNATIVES ACROSS EUROPE  
MORE NEWS

A tweet from @REAL\_AIts\_EU retweeted by REAL Alternatives. The tweet text reads: 'hydrocarbons21.com @hydrocarbons21 .@centrogalileo received a #Chinese delegation of 18 professors for a #training course on #ecofriendly refrigerants hydrocarbons21.com/articles/7773/...'. It includes a photo of a group of people.

A grid of six circular icons: 1. e-learning (laptop), 2. assessments (document with checkmarks), 3. training courses (person at a screen), 4. trainer training (person with others), 5. certification (document with checkmark), 6. alternative refrigerants (globe with hand).



With contribution of the LIFE programme of the European Union

REAL Alternatives for LIFE

