



## Blended learning – remote training and then in the workshop 40-30

To support manufacturing & research

### NDT Leak Testing Method Level 2 – Theory- Preparation for the COFREND LT exam

Ref. BL412 48 hours, including 24 hours of virtual classes

The program for this course is validated by COFREND according to standard ISO 9712: 2012.

#### COURSE OBJECTIVES

Mastery of leak testing techniques  
Drafting of instructions in compliance with specifications.  
Interpretation of control results and decision.

#### CANDIDATES

Experienced technicians and maintenance engineers, users of vacuum technologies.  
It's mandatory to follow the course *BL413 – Leak testing method 2 – Practice* for being allowed to take the examination

#### PREREQUISITES

Knowledge of the behavior of gases and an understanding of vacuum systems.  
Possibility to refresh the required basics in mathematics and physics by e-learning  
Contact us to evaluate your level and needs

#### INNOVATIVE TEACHING RESOURCES

VIRTUAL CLASSES with the trainer are every morning for 4 hours and please plan every afternoon for personal work: e-learning platform, exercises, quizzes or writing of operating procedures;

Interviews with a trainer to assess personal needs 5 days before the beginning of the training course.

#### MAIN TRAINER

Michel THIAM: PhD in Physics (Strong Experience in Surface Physics and Surface Chemistry under UHV Conditions), from 40-30 Engineering Department; certified COFREND NDT Using level 2.

#### DATES

From Friday, June 4 to Friday, June 11, 2021.  
Sessions open from 3 registrants and limited to 5 participants.

#### PRICE PER PERSON

1920 € ex.VAT

#### PROGRAM

##### COURSES

###### 1. Physics

- pressure
- flow rates
- conductance
- mean free path

###### 2. Technology

- pumps
- manometers
- mass spectrometers
- platinum diode
- electron capture detector

###### 3. Methodology

- bubble test
- pressure change test
- acoustic ultrasonic leak testing
- halogen: Forane, SF6, R134A
- ammonia leak testing
- vacuum helium checking, sniffing, global helium testing

##### PRACTICAL EXERCISES

###### 1. Helium method

- global
- spray
- sniffing
- bombing

###### 2. Hydrogen method

- direct sniffing and sniffing with accumulation

###### 3. Ammonia method

###### 4. Bubble method

- under vacuum
- under pressure

###### 5. Pressure variation method

- under vacuum
- under pressure

##### CONTROLLED EXERCISES

- Collecting results and writing reports
- Drafting operating procedures
- MCQ test



## Blended learning – remote training and then in the workshop 40-30

To support manufacturing & research

### NDT Leak Testing Method Level 2 Practice- Preparation for the COFREND LT exam

Ref. BL413 60 hours (7,5 days)

The program for this course is validated by COFREND according to standard ISO 9712.

#### COURSE OBJECTIVES

Knowledge of all leak testing techniques.  
Implementation of the appliances  
Perfecting the methods used

#### CANDIDATES

Experienced technicians and maintenance engineers,  
users of vacuum technologies.

#### PREREQUISITES

To have followed the *NDT Leak Testing Method Level 2 – Theory* distance learning course (ref.BL412)

#### INNOVATIVE TEACHING RESOURCES

Lectures and «hands-on» exercises.  
Custom training manual.  
Prior interview with the trainees possible in order to quantify their needs.  
Mock exam.  
Training centers integrated with 40-30 workshops.  
Theory assessment and practical tests to measure individual proficiency by the end of the training period.  
Maximum 6 persons per group.

#### MAIN TRAINER

Michel THIAM: PhD in Physics (Strong Experience in Surface Physics and Surface Chemistry under UHV Conditions), from 40-30 Engineering Department; certified COFREND NDT Using level 2.

#### DATE & LOCATION

From June 23 to July 2, 2021 - Grenoble(38), France  
Sessions open from 3 registrants and limited to 6 participants.

#### PRICE PER PERSON Lunches included

3580 € ex.VAT

We need 3 registrations to open a session.

Can be also held in your premises for a specific training

#### PROGRAM

##### GENERAL

- Principles of leak checking
- Parts to control, cleanliness, drying

##### TECHNOLOGY

- Removable junctions
- Different types of O-rings: cleaning, visual checking
- Flanges: surface state, visual checking, cleaning and adjustment.

##### PRACTICAL EXERCISES

###### 1. Helium method

- Global
- Spray
- Sniffing
- Bombing

###### 2. Hydrogen method

- Direct sniffing and sniffing with accumulation

###### 3. Ammonia method

###### 4. Bubble method

- Under vacuum
- Under pressure

###### 5. Pressure variation method

- Under vacuum
- Under pressure

##### CONTROLLED EXERCISES

- Collecting results and writing reports
- Drafting operating procedures
- MCQ test