



Maintenance Training

To support manufacturing & research

OPERATORS // TECHNICIANS // ENGINEERS

- Maintenance cost reduction
- Improving equipment reliability
- Improved uptime
- FMEA
- Skills development



Trainingby4030.com



4D-3D
SOLUTIONS
PROVIDER

What is essential is invisible to the eye.

Saint-Exupéry
06/29/1900 - 07/31/1944

When it comes to equipment,
what you see is only the tip of the ice-berg



RF GENERATORS
PUMPING SYSTEMS
POWER SUPPLIES
REMOTE PLASMA SOURCE
LEAK DETECTORS
CHILLERS

PROCESS CHAMBERS
ELECTRONIC AND ROBOTIC
MASS FLOW CONTROLLERS
VACUUM ELEMENTS
MANOMETERS
VALVES

Professional, concise training for your team

Table of contents

Preface	4	Industrial Radio Frequency	16
40-30 Training Centres	6	RF principles and techniques	
Methodology & Reliability of Equipment	7	Methodology for RF diagnosis on etching and deposition equipment	
Maintenance methodology on complex equipment: troubleshooting		RF with technical applications HPCVD Rack (ETO / ASTeX type)	
Troubleshooting on vacuum pumping systems		RF-Plasma interaction	
Technology	8	Procedures Management System AMPS® (Advanced Management Procedures System)	17
Vacuum physics and technology: level 1		Technical procedures writing for know-how capitalization	
Vacuum physics and technology: level 2		Technical procedures writing, creation and management using AMPS®: level 1 and 2	
Vacuum for particle accelerators: introductory course		Specific Maintenance	18
Vacuum for particle accelerators: intermediate level		Complete maintenance for rotary vane pumps	
Cleanrooms engineering design		RF technology and sub-assembly repair	
Helium leak detection		Cleanroom maintenance	
Residual gas analysis and mass spectrometry		Full maintenance of roots blowers	
Mass Flow Controllers (MFC): fundamentals, techniques and applications		Safety	20
Ultrasonic cleaning		Chemical risks	
Use of wet/dry blasting machine		Awareness of risks	
Applied English for vacuum technology		Safety measures in maintenance operations on thin films deposition chambers	
Best use of vacuum systems		Electrical certification (electricians & non-professional electricians in low and high voltage)	
Gas pumping system		Non Destructive Testing (NDT) Helium Leak Testing	22
Optimal Use of Equipment	12	Training level 1, 2 and 3 (NDT qualified personnel according to standard ISO 9712-EN 473)	
Use of helium leak detectors (HLD)		Training Evaluation	24
Use of residual gas analysers (RGA)		Virtual classrooms courses	25
Vacuum instruments and calibration		Contacts	26
Clean concept: behaviour in cleanrooms			
Troubleshooting	13		
Helium leak detectors (HLD)			
First level maintenance on vacuum systems			
Turbomolecular pumps: principles and first level maintenance			
Cryogenic pumps: principles and vacuum head maintenance			
Chillers: troubleshooting and preventive maintenance			
Troubleshooting on complex instrument: focusing on electrical components			
AstiPure™ pumps (Saint Gobain): principles and maintenance			

Preface

We have trained engineers and technical staff coming from more than 35 technologically oriented companies. Among them, we could find small and medium sized enterprises, governmental research centres and foreign companies.

We have been able to tailor training programs suited to their specificities and expectations.

As a matter of fact, following a customer survey, up to 94% of trainees are very satisfied with our trainings.

We have doubled the number of attendees, over the last two years.

This success is a consequence of our quality approach. It starts with a detailed analysis of the manager's and attendee's needs and finally ends with 3 evaluation levels of our training courses.

This year, to keep responding to your training needs, to break new ground and set up new partnerships with the industry representatives, with other fellow training companies, with networks for experts and professionals, and public services.

The fields of maintenance, vacuum technology, ultra-cleanliness and electronics offer good prospects to maintain and develop production.

It relies on us, the duty to professionalize these fields.

Laurence Freulon,
Training Business Unit Manager

References since 1998





Testimonies

Empower your procedures
www.ampsby4030.com



“ This interesting training will allow us to save time during troubleshooting

▪ Jean-Pierre LETACONNOUX, ST CROLLES

Talking about the training lecture 'Chillers: troubleshooting and preventive maintenance'

Training carried out by Aurélie GRIET

“ The trainers master their subject and share their knowledge

▪ Stéphane CHENEVAL, DELPHARM

Talking about the training lecture 'Complete maintenance for rotary vane pumps',

Training carried out by Marianne NEMOZ and Jacky COMPERE.

“ The trainer has an excellent command of his area of expertise

▪ Carlos BARRETO, WITZENMANN

'Talking about the training lecture 'Helium leak detectors (HLD)'

Training carried out by Cédric COMBE

“ Excellent training session: the trainer has excellent technical skills

▪ Cédric FILIPPINI, AIRBUS

Talking about the training lecture 'First level maintenance on vacuum systems'

Training carried out by Marianne NEMOZ

“ Tough but very interesting training session! This new acquired knowledge is quickly implementable at work. The effectiveness of this training session was based on one hand, on the trainer's ability to transform a difficult topic into a clear subject. On the other hand, theory and practical work on the P5000 were on an equal basis.

▪ Frédéric FASOLA, CEA LETI

Talking about the training lecture 'Methodology for RF diagnosis on etch & deposition equipment'

Training carried out by Manuel LEBE.

40-30 Training Centres



“Training professionals
in high technology
environments

“Training at either
your premises or at
one of 40-30 facilities

40-30 Benelux

Wingepark 16/A
3110 Rotselaar
Belgium
▪ T +32 (0)16 53 71 30
▪ F +32 (0)16 53 71 32

40-30 France

29, rue de la Tuilerie
38176 Seyssinet-Pariset, France
▪ T +33 (0)4 76 84 40 28
▪ F +33 (0)4 76 96 00 13

40-30 Singapore

211 Woodlands Ave 9
#05-89 Woodlands Spectrum II
Singapore 738960
▪ T +65 6356 4030
▪ F +65 6356 4431

40-30 UK

Unit 13, Brunel Centre
Newton Road, Manor Royal
Crawley, West Sussex RH10 9TU
▪ T +44 (0) 1293 850920

40-30 Ibérica

Edificio Madrid Feria
C/ Tomás Redondo 2, Nave 4-2
28033 Madrid - España
▪ T +34 91 001 40 30 (Madrid)
▪ T +34 93 001 40 30 (Barcelona)
▪ T +351 217 574 331 (Lisboa)

STPRI (Tunisia)

ECOPARK, Technopole Borj Cedria
INNOTECH, BP 174
1164 Hammam-chatt
▪ T +216 52 540 418
▪ F +216 79 325 100

Maintenance methodology on complex equipment: troubleshooting

MS131 35 hours

Attendees

Maintenance staff.

Training objectives and targeted skills

The general objective of this training is to understand the failure modes of complex equipment (plasma) and to get familiar with troubleshooting methodology.

- Understand the evolution of failure rates caused by time spent on equipment
- Diagnose symptoms of deterioration
- Diagnose faulty sub-assemblies
- Apply a troubleshooting methodology on the whole equipment and the sub-assemblies

+ *Transfer 40-30's expertise including 25 years of experience in maintenance and repair in vacuum technology, electronics, RF and tools allowing measurement control related to these technologies.*

+ *5 instructors, specialists in their field, take part in this training.*

+ *The content is adaptable depending on the skill level and experience of the participants. The length can also be adapted to the aimed function and skills.*

+ *The training includes know-how and explicit knowledge transfer (hand-turn, methods...).*

Program

1. Failure rates measurement
2. Diagnosis methodology
3. Equipment functionality
4. Robot maintenance
5. Plasma theory
6. Gas handling
7. MFC
8. Vacuum technology
9. RF functionality

60% of hands-on training

- Elaborate a diagnosis, list the solutions and test to fix the wafer transfer.
- Last day of training: real troubleshooting on different parts studied during the training.

The hands-on training will be performed on semiconductor / nanotechnology 40-30 equipment. Equipment used to perform different process steps: deposition, plasma etching / RIE, cleaning, characterization, SEM, for various brands.

i.e. Applied Materials, Lam Research, Semitool, Jeol, Tegal, Gasonix...

i

80% of repair are resolved quickly by your maintenance staff due to the fact that they are familiar with the history of the equipment. However, problems occur when new faults are introduced.

Troubleshooting on vacuum pumping systems

MS714 21 hours

Attendees

Operators, technicians and engineers working on coating, etching, ionic implantation, thermal treatment equipment.

Training objectives and targeted skills

- To understand the fundamental concepts of vacuum physics
- To gain insight into pressure measure and leak detection techniques (Helium methodology)
- To provide a reliable Helium Leak Detection and good interpretation of results
- To get a better understanding of the applications and processes involving vacuum technology
- Assuring the exploitation and maintenance of the vacuum parts of an equipment

+ *ATTENTION txt différent que version Fr*

This training will allow you to understand vacuum, how to reach and measure it. The length and content of the course can easily be adjusted to your needs and expectations: leak detectors, pumps, vacuum production, outgassing.

Vacuum physics and technology: level 1 (introductory)

MS111 21 hours

Attendees

Operators, technicians and engineers working on coating, etching, ionic implantation, thermal treatment equipment.

Training objectives and targeted skills

- To understand the fundamental concepts of vacuum physics
- To gain insight into pressure measure and leak detection techniques (Helium methodology)
- To get a better understanding of the applications and processes involving vacuum technology

+ *This training will allow you to understand vacuum, how to reach and measure it. The length and content of the course can easily be adjusted to your needs and expectations: leak detectors, pumps, vacuum production, outgassing.*

Vacuum physics and technology: level 2 (advanced)

MS111-2 21 hours

Attendees

Operators, technicians and engineers working on coating, etching, ionic implantation, thermal treatment equipment.

Training objectives and targeted skills

- Practising the use of measurement techniques for pressure and leak detection (Helium methodology)
- Calculating a leak value
- Calculating the parameters of a vacuum system (pumping speed, conductance, diameters and lengths of canalization, pump-down time)

+ *This training will allow you to deepen your knowledge of vacuum physics and of its technological applications. In order to understand vacuum, how to reach and measure it. The length and content of the course can easily be adjusted to your needs and expectations: leak detectors, pumps, vacuum production, outgassing.*



©40-30 Bernin

Vacuum for particle accelerators: introductory course

MS111-4 11 hours

Attendees

Maintenance and engineering staff, researchers.

Training objectives and targeted skills

- To understand the very complex processes linked to the beams interacting with the residual gas and the walls of the vacuum equipment
- To find the threshold from which the effects of these interactions become a real burden and prevent from reaching the required pressure for the ideal functioning of the instrument

+ *This training will enable engineers and researchers to have the required behavior adapted to environment of modern and very complex instruments.*

Vacuum for particle accelerators: intermediate level

MS111-5 11 hours

Attendees

Maintenance and engineering staff, researchers.

Training objectives and targeted skills

To have a better understanding of

- Modern technics of thin films production and characterization for accelerators
- The method of Electrolytic treatment of materials
- The Bayard- Alpert pressure gauge and its modification for UHV/XHV
- Solving the basic equation for pressure profile calculations in a chamber
- The different methods of Leak Testing related to Helium gaz

+ *This training will enable engineers and researchers to have the required behavior adapted to this environment of modern and very complex instruments.*

Cleanrooms engineering design

MS813 7 hours

Attendees

Cleanroom's maintenance and engineering staff, facilities managers.

Training objectives and targeted skills

- Understanding cleanrooms principles and limitations
- Regulations and Standards
- Cleanrooms layout
- Power saving devices

+ *50% of the training are dedicated to various systems used today through a presentation with calculations on real cases. The rest of the training implies cleanroom practical modelling.*

Helium leak detection

MS112 14 hours

Attendees

Operators, technicians and engineers working on coating, etching, ionic implantation, thermal treatment equipment.

Training objectives and targeted skills

- Understand the theory related to leak detection
- Improve the leak detection techniques: global, sniffing and accumulation tests
- Understand and interpret the results

+ *This course will provide you with knowledge and practice required to use and exploit the equipment to its full extent. It will allow you to find leaks using the helium spraying method and to quantify them by means of the global and accumulation sniffing techniques. The instructors are members of the 40-30 engineering activity and are certified COFREND level 2 or 3 (ICNDT – International Committee for Non Destructive Testing).*

Residual gas analysis and mass spectrometry

MS117 21 hours

Attendees

Operators, technicians and engineers working on coating, etching, ionic implantation, thermal treatment equipment.

Training objectives and targeted skills

- Understand outgassing
- Get a better understanding of Mass spectrometry and specially of a Residual Gas Analyser (RGA)
- Integrate practical topics, effects of time/ temperature and vacuum pressure and understanding of the RGA limitations

+ *This training will further improve the understanding of mass spectrometry and will answer all of your questions related to the use and interpretation of an RGA scan. The training program has been developed with the assistance of 40-30 staff who are qualified to PhD and engineering level.*

Mass Flow Controllers (MFC): fundamentals, techniques & applications

MS114 7 hours

Attendees

MFC's users with a technical background.

Training objectives and targeted skills

- To understand the gas flow control
- To use MFC knowing about their applications and technical limits for optimal and secure performances
- To practice troubleshooting and diagnosis

+ *This training will aims to help understand the Mass Flow technology, its evolution and environment (gas categories, type of seals...) to optimise their use and lifespan. A troubleshooting methodology will be handed out to you. The course will alternate between lectures and exercises, demonstrations and practical work on gas panels.*

Ultrasonic cleaning

MS211 14 hours

Attendees

Technicians and ultrasonic cleaning users.

Training objectives and targeted skills

- Employ the ultrasonic cleaning technology with a full understanding to assure an optimum cleaning of the products
- Develop knowledge to optimise cleaning and preventing physical changes to dimension features

+ *We will introduce practical exercises demonstrating poor cleaning and measure the results. The program will provide students information using ultrasonic waves in an aqueous environment by studying parameters affecting cleaning, measuring the power output of ultrasonic waves and how to select the best machine for your application. 40-30 has over 10 years of experience in the removal and measuring of contamination at an atomic level. This training course is aimed at ultrasonic excluding megasonic cleaning technology.*

Use of wet/ dry blasting machine

MS212 14 hours

Attendees

Technicians and blasting machines users.

Training objectives and targeted skills

- Creating the correct recipe for your application (media, air pressure, water flow...)
- Extending component life
- EHS awareness

+ *Practice - using wet/ dry blasters with a mix of media to change and analyse surface roughness.*

Applied English for vacuum technology

MS811 28 to 70 hours

Attendees

Technical documentation users.

Training objectives and targeted skills

- To master vacuum technology vocabulary
- To understand the contents of manuals and technical documentation written in English
- To avoid misinterpretation
- To understand English written instructions

+ *An experienced staff will tutor participants, under the supervision and guidance of a bilingual specialist who earned a Master Degree in Translation F/E, E/F.*

Best use of vacuum systems

MS128 14 hours

Attendees

Vacuum systems users.

Training objectives and targeted skills

- Presenting various types of pumping mechanisms that are used to create different stages of vacuum based on the application requirement
- To introduce practical & theoretical knowledge to users for optimising maintenance, pump service and vacuum system availability

+ *The training tools will be selected according to your specific requirements. Our training alternates between lectures, practical work and demonstration tools.*

Gas pumping systems

MS129 14 hours

Attendees

Technicians, process and research engineers.

Training objectives and targeted skills

- Understanding different technologies to produce vacuum, their use within industries
- Condition of operation
- To understand and adapt the vacuum system to the process

+ *We can adapt the content of the training to suit your requirements. The training will take place at 40-30 facilities where we maintain primary and secondary vacuum pumps. We can also arrange this training at your site if this is required.*

Use of Helium Leak Detectors (HLD)

MS115 7 hours

Attendees

Users who will regularly use HLD for simple leak detection methods.

Training objectives and targeted skills

- Theory and principles
- Practising testing using the Helium leak detector and interpreting results

- + *This course has been developed to allow the user to practice using the machine and adopting one or two methods of testing. A leak test will be performed with the guidance of the instructor over a period of four hours. This will allow users to interact with the tutor so that they can ask questions and receive hands-on answers in order to provide them with clear explanations.*

Use of Residual Gas Analysers (RGA)

MS118 7 hours

Attendees

RGA users.

Training objectives and targeted skills

- Interpreting RGA readings incorporating the vacuum environment
- Verifying partial pressure within the chamber
- Interpreting gasses being monitored by the RGA within the chamber
- Familiarisation with the use of RGA technology

- + *Do's & Don'ts of RGA use.*

Vacuum instruments and calibration

MS122 14 hours

Attendees

Maintenance and engineering staff.

Training objectives and targeted skills

- Introduction to various manometers used today, principles and use
- Understanding gauge errors and drifts
- Gauge selection, understanding pressure regions and interpreting the values
- Calibration methodology
- The use of correction factors
- Carrying out a level 1 maintenance to improve reliability

- + *All practical work is carried out in 40-30 calibration laboratory, accredited by COFRAC for vacuum pressure calibrations (COFRAC Accreditation n°2-1386 pressure, site and scope available on www.cofrac.fr). An experienced staff will tutor participants.*

Clean concept: behaviour in cleanrooms

MS215 7 hours

Attendees

Maintenance staff and users liable to work in cleanrooms.

Training objectives and targeted skills

- Application of dressing instructions, recommended behaviour in cleanrooms
- Practical knowledge to choose materials for decontamination
- Assessing contamination risk in cleanrooms
- Minimizing contamination risks
- Appropriate cleaning
- Setting up ISO 14 644 and contamination awareness

- + *In partnership with Faure QEI: This training will be broken into theory and practice. Hands-on exercises will be carried out in cleanrooms: Faulty dressing inducing particle generation, surface particles detection and decontamination. Particles counter with grazing angle light source.*

Helium Leak Detectors (HLD)

MS113 21 hours

Attendees

Maintenance staff and users.

Training objectives and targeted skills

- Theory and principles of the HLD
- Do's and Don'ts of HLD operation and use
- Diagnosing faults and determining the correct maintenance actions
- Calibration and test

+ *This training will be dedicated to your needs and will be carried out on the same machines as in your facilities. Trainees will receive hand-outs to guide them through diagnosis.*

First level maintenance for Helium leak detectors

MS113-2 14 hours

Attendees

Maintenance staff and users.

Training objectives and targeted skills

- Hands-on activities for full maintenance of Helium Leak Detectors (HLD)
- Introduction to Helium Leak Detectors: principles, technology and use
- System diagnostics, planning and carrying out maintenance improving the lifetime

+ *This training provides the trainee with the knowledge and good practise required for an optimized and appropriate use of Helium leak detectors. Trainees will receive hand-outs to guide them through diagnosis.*

First level maintenance for vacuum systems

MS121 14 hours

Attendees

Technicians, managers and all vacuum pumps users.

Training objectives and targeted skills

- Introduction to various pumps used today, principles and use
- System diagnostics, planning and carrying out maintenance improving the lifetime
- Hands- on activities in maintaining a vacuum system

+ *We will try to provide components similar to the equipment used by your staff.*

Turbomolecular pumps: principles and maintenance

MS123 14 hours

Attendees

Maintenance staff and users.

Training objectives and targeted skills

- Introduction to various turbo pumps used today, principles and use
- Operation of a turbo molecular pump
- Planned maintenance
- Knowledge-based fault collection

+ *This training will enable you to solve the most common failures on this type of equipment and increase their lifespan. During this training, AMPS® (Advanced Management Procedures System) will be used as an interactive training tool, to carry out maintenance. The instructor will use various multimedia tools in order to help you understand the technology further.*

Cryogenic pumps: principles and vacuum head maintenance

MS132 14 hours

Attendees

The users and maintenance technicians.

Training objectives and targeted skills

- System diagnosis, planning and carrying out maintenance improving the lifetime
- Principles of cryogenic pumps
- Carrying-out a vacuum head maintenance

+ *70 % of hands-on activities, carried out on equipment equivalent to the one used in your workshops. This training will give you the knowledge and the good practices needed to maximise the use, performance and lifetime of the pumps.*

Chillers: troubleshooting and preventive maintenance

MS124 14 hours

Attendees

The users and maintenance technicians.

Training objectives and targeted skills

- Installed base survey
- System diagnostics, planning and carrying out maintenance improving the lifetime

+ *The practical work will be carried out on the most common equipment used in industry (i.e Neslab HX150 / Steelhead).*

Troubleshooting on complex instrument: focus on the electric part

MS314 35 hours

Attendees

Maintenance operators, service technicians and assistants involved in PECVD.

Training objectives and targeted skills

- To understand how failures occur in complex equipment
- To understand troubleshooting and the basic electronic circuits often observed on Plasma coating and etching (PECVD) equipment
- To analyze the failures linked to the RF, gas pressure, gas flow, energy transfer under strong RF, cooling system, in a methodological way, by introducing the concepts of failure rates
- Preventive maintenance scheme considering the wear and weakness of certain pieces

- + *The objective of this training is to help the trainees to find solutions to RF failures on their own, in order to improve their skills. The trainee will experience a real troubleshooting hands-on training on equipment. The trainees will be able to, elaborate a simplified scheme, extract a flowchart and find out the faulty subset. 50% of the training time will be devoted to applied hands-on learning and analysis of situations the trainee has already faced.*

AstiPure™ pumps (Saint Gobain): principles and maintenance

MS127 11 hours

Attendees

Maintenance staff and users.

Training objectives and targeted skills

- Understand AstiPure™ pumps functioning principles and their applications in industry and research
- System diagnosis, planning and carrying out maintenance improving pumps' lifetime
- Carry out corrective maintenance

- + *Practical training can be arranged in the ASTI factory or on your site. Also we can simulate past issues you have encountered in order to rectify the fault. The objective of this training is to guarantee the correct functioning and maintenance of your AstiPure™ equipment according to your applications.*

RF principles & techniques

MS311 14 hours

Attendees

Technicians and engineers with knowledge in electronics deposition and etching equipment.

Training objectives and targeted skills

- Provide RF principles diagnosis methods for generators, matches and plasma

- + *A theoretical and practical approach consistent with the use of existing process equipment installed at our facilities.*

Methodology for RF diagnosis on etch and deposition equipment

MS312 14 hours

Attendees

Operators, technicians and maintenance assistants using etching and deposition equipment.

Training objectives and targeted skills

- Diagnosing faults related to RF using a methodical approach, identifying issues and failures

Participants will have the opportunity to produce simple plans that will formulate graph to assemblies creating faults and issues related to the plasma.

- Students will further understand components & process interaction versus deposition or etching requirements

Participants will conduct diagnosis on equipment, using associated RF metrology.

- + *The objective of this training is to improve participant's awareness resolving RF faults, for improved stability & performance. Majority of the training is dedicated to practical work and analysing cases that you have encountered. Our diagnosis tools include an etching and deposition process machine.*

RF with technical applications HPCVD Rack (ETO / ASTeX type)

MS314-1 18 hours

Attendees

Technicians and engineers with knowledge in electronics and HPCVD rack equipment.

Training objectives and targeted skills

- Provide RF principles diagnosis methods for generators, RF matches and plasma

Related components:

SSD Top, Side and Bias / PA tube / Wattmeter / Matchbox: AZX-63, top and side match / Variable frequency RF sources.

- + *The objective of this training is to improve participant's awareness resolving RF faults, for improved stability & performance.*

RF-Plasma interaction

MS313 14 hours

Attendees

Process and maintenance staff.

Training objectives and targeted skills

- Understand how plasma (physical chemistry parameters) and RF energy source (hardware) interact with one another
- Adjust process parameters according to the equipment tolerance
- By the end of the training, participants will create or correct recipes with the understanding of their limits thresholds within the RF network

- + *This course was developed to bring together process and maintenance staff to understand RF related issues in order to allow these teams to discuss this subject in a forum.*

Technical procedures writing for know-how capitalization

MS900 21 hours

Attendees

Maintenance staff and engineers involved in technical procedures writing, updating or management.

Training objectives and targeted skills

- To gain skills to carry out capitalization of key technical knowledge: identification, modelling, collection, usage, follow up
- To apply methodology to maintenance procedures writing, in order to improve the service or workshop performance
- To understand and to apply didactic techniques of procedure writing to fit to users needs

- + *This training will emphasize the role and the lifecycle of a procedure, the cognitive process involved in a procedure, writing methods (use of multimedia like pictures, illustrations, videos..) and procedure management. During these training sessions you will perform a full procedure writing, followed by an evaluation in real condition. The strength of 40-30's approach relies on relevant accessible illustrations. You will take benefit from 40-30 experience: first focusing on procedure writing and then extending the knowledge further internally.*

Technical procedures writing, creation and management using AMPS®: level 1

MS901 7 hours

Attendees

Maintenance staff and engineers involved, in technical procedure writing, updating or management, on the other hand, in technical database management.

Companies interested in purchasing the software 40-30 AMPS® (Advanced Management Procedures System).

Training objectives and targeted skills

- Understanding the fields where AMPS can be applied and used
- Using the functionalities of the following 4 modules: AMPS Creation, AMPS Realization, AMPS Management and AMPS supervision
- To create, to write and to run a simple procedure
- To understand the lifecycle's management of a procedure: updating, validating, etc...

- + *Tools: 40-30 AMPS® software
Alternating seminars with hands-on exercises.
Case study analysis, tailored for the client's procedures, documentations, topics and working environment.*

Technical procedures writing, creation and management using AMPS®: level 2

MS902 14 hours

Attendees

Maintenance staff and engineers involved on one side, in technical procedures writing, updating or management, on the other side, in technical database management.

Companies interested in purchasing the software 40-30 AMPS® (Advanced Management Procedures System).

Training objectives and targeted skills

- To create complex procedures, to carry out, to set up, to manage, to supervise AMPS®
- To set up groups of tools and subscriptions of procedures to clients and subcontractors
- To create and manage workgroups, consumables, staff's certifications, documentation
- To manage procedures lifecycle.

- + *Tools: 40-30 AMPS® software
Alternating seminars with hands-on exercises and laboratory works.
An analysis of AMPS® recipes, tailored for the client's procedures, documentations, topics and working environment.*

Complete maintenance of rotary vane pumps

MS711 21 hours

Attendees

Maintenance staff.

Training objectives and targeted skills

- Rotary vane pump maintenance (customer to specify type of pump)
- Disassembly, inspect, clean, assemble & test

- + *40-30 will make use of AMPS® (Advanced Management Procedures System), attendees will be guided through step-by-step maintenance. In addition sectioned rotary pumps will be used to explain how the mechanism works. We are also targeting improving the pump in service by further educating your maintenance staff.*

RF technology and sub-assembly repair

MS712 35 hours to 70 hours

Attendees

Maintenance staff with electronic background.

Training objectives and targeted skills

- Provide RF principles and diagnosis methods for generators, RF matches and plasma
- Introduction into basic preventive and corrective maintenance procedures
- Application of security requirements for RF equipment

- + *Training will take place at your site using your equipment. Our training has been developed to provide a high percentage of hands-on-exercises in conjunction with data collection and understanding the information recorded. Training can be broken down into several blocks allowing you to arrange time for production needs. In between training blocks your staff can put into practice what they have currently learned and can share their experience during the next phase training. Our training instructor is available to audit your staff once the training has taken place. This will be used as an evaluation on skills learned to further improve your ability to become self-supportive. Please contact 40-30 training department to discuss your training needs.*

Cleanroom maintenance

MS812 14 hours

Attendees

Cleanroom's maintenance and engineering staff, facilities managers.

Training objectives and targeted skills

- Principles of air filtration
- Preventive maintenance program
- Monitoring and maintaining supplies to the cleanrooms

+ In partnership with Faure QEI:

One day dedicated to theory describing the components that make up a cleanroom environment. Pre-filter, HEPA filter, fan systems and services supplied to carry out processes within the cleanroom environment. The second day we will walk the cleanroom facilities and discuss preventive maintenance.

Full maintenance of roots blowers

MS713 21 hours

Attendees

Maintenance staff and engineer.

Training objectives and targeted skills

- Introduction to various Roots Blowers used today, principles and use
- Operation of a roots blower pump
- Planned maintenance
- Knowledge-based fault collection

+ This training will enable you to solve the most common failures on this type of equipment and increase their lifespan.

During this training, using AMPS® (Advanced Management Procedures System) will be used as an interactive training tool, to carry out maintenance. The instructor will use some multimedia tools in order to help you understand the technology further.



©40-30 Bernin

“Application of security rules, as well as the equipment technology knowledge, are at the core of maintenance jobs.

Chemical risks

MS511 11 hours

Attendees

Staff working or using chemicals.

Training objectives and targeted skills

- Do's and Don'ts in the use of chemicals
- CLP (Classification, Labelling, Packaging) and symbol awareness
- PPE selection
- Site preparation and handling
- Reacting to an incident

+ *Training modules can be developed to accommodate the student's work place*

Awareness raising to ATEX risks

MS512 4 hours

Attendees

Level 0 staff working in ATEX environment.

Training objectives and targeted skills

- Learning the good practise to adopt in workplace being in explosion risk zone

+ *Trainer with Ism ATEX level 3 M E certification*

Safety measures in maintenance operations on thin films deposition chambers

MS513 14 hours

Attendees

Maintenance engineers and Senior staff.

Training objectives and targeted skills

- Understanding the risk linked to each subset of the chamber
- Learning the good practise to adopt in workplace being in explosion risk zone
- Evaluating the risks for promoting safe intervention for staff and the production tool
- Setting up an adapted prevention scheme: precaution to take
- Keeping events under control: from preparation to the end of intervention

+ *Alternating seminars with hands-on exercises.*

Our training instructor will be available to make an analysis of situations encountered by the staff. Plasma etching and deposition equipment will be used.



40-30 participated in a best practise award programme operated by a European Agency for Health & Safety at Work.

Low voltage electrician HO-HOV / B1-B1V / B2-B2V / BR / BC / BE / BP

MS611 21 hours or 11 hours for recycling

Attendees

Non-professional electricians liable to access rooms or sites reserved to professional electricians.
Non-professional electricians liable to carry out simple electrical connections (BS certification).

Training objectives and targeted skills

- Mastering and implementing the norm NF C18-510*
- Accessing a High Voltage Room and safely managing the electrical environment

Low voltage and high voltage electricians H1-H1V / H2-H2V / HC / HE / B1-B1V / B2-B2V / BR / BC / BE / BP

MS612 21 hours (BT) or 28 hours (BT + HT) or 14 hours for recycling

Attendees

Professional electricians (LV and HV).

Training objectives and targeted skills

- Mastering and implementing the norm NF C18-510*

Non-professional electricians low and high voltage H0-H0V / B0-BS

MS613 14 hours or 7 hours for recycling

Attendees

Electricians (LV and HV).

Training objectives and targeted skills

- Mastering and implementing the norm NF C18-510* in workplaces such as high voltage rooms or low voltage power cabinets in order to manage the risk linked to the proximity of electrical equipment (HO-BO)
- Liability to carry out simple electrical connections (BS certification)

* NF C18-510 is a french regulation regarding operations in an electrical risk environment.

i The principal aim behind RECYCLING is to update knowledge, to redefine the tasks and sectors authorized according to new rules and new equipment.

+ Supports: slide shows, video, laboratory electrical equipment, decks for hands-on practical experiments.
The APTELEC evaluation quiz will be used as a standard.

+ The lecturer is an expert in the field with thirty years of experience.

+ According to the CARSAT statistics, 80% of injuries are due to behavioural skills.
40-30 is providing in these training sessions the unique opportunity to face and to handle real situations.



e-learning

40-30 can use the protocol APTELEC to train your staff in electrician accreditation. This training mixes together e-learning and face-to-face learning. This format offers flexibility and allows to adjust to trainee's individual needs.

Non Destructive Testing (NDT) Helium Leak Testing



HLC CERN accelerator

Reasons why you should obtain NDT accreditation ?

Helium Leak Detection has pin-point accuracy of where the leak is located; in addition we can also quantify the leak rate. This method is applicable to systems, components with intricate piping and connections. All NDT staff are qualified and recognised by industry through certification applicable to the country of requirement.

Areas of Industry Requirement

Aerospace, Petrochemical, Semiconductor, Gas lines, Energy Sector, Research & Development (Vacuum related requirements)...

“ 40-30 instructors are recognized under ISO 9712 Levels 1, 2 & 3.



e-learning

40-30 offers customized support to the certification exam. We offer hands-out before the training and we provide as well tools for distance learning.

Non Destructive Testing (NDT) Helium Leak Testing

Training level 1

MS411 80 hours

Attendees

Staff who require system integrity.

Training objectives and targeted skills*

- Helium Leak Detector (HLD) calibration
- Performing Helium test
- Following test procedures and recording the results

Training level 2

MS412-MS413 120 hours

Attendees

Staff who require system integrity.

Training objectives and targeted skills*

- Selecting the appropriate testing method
- Defining the limitations of the method selected
- Developing and writing a procedure that is appropriate for the testing required
- Adjust equipment being used to quantify the leak rate value of equipment/machine/component under test
- Performing or supervise helium test
- Analyse the results according to the procedure and provide the written report on findings

Training level 3

MS414 80 hours

Attendees

Certified level 2 with 1 year practical experience.

Training objectives and targeted skills*

Within the framework of the Cofred certificate, a level 3 certified agent can be authorized to :

- Ensure the management of non-destructive testing installation or of exam center and its staff
- Draft, verify and validate the instructions and procedures for non-destructive testing
- Decide of the methods, procedures and instructions suitable for a specific non-destructive testing
- Carry on and oversee all the operations of all levels
- Guide NDT staff of all levels

**According to standard ISO 9712:2012*

- + We carry out a pre-audit of trainees to turn them to trainings of level 1, 2 or 3, according to their level of knowledge and experience.
- + One week pre-exam refresher course is available. This training is provided by 40-30 instructor certified Cofrend level 3 with an extensive industrial experience.

Training evaluation



40-30 consistently uses two levels of evaluation for its training

The level of satisfaction from the participants

Level 1

- Did the content fit their expectations and needs?
- Was the instructor open to their questions?

The pedagogical level

Level 2

- Multiple choice questionnaires at the beginning and end of the training or professional test

In a training engineering approach, 40-30 can use two more levels

The transfer onto workstations level

Level 3

- 6 months after the training, what new behaviour did the participants adopt?
- Did the participants transfer what they learnt to their workstation?

The evaluation of impacts level

Level 4

As part of the training plan, production improvement plan or maintenance cost reduction

- What is the impact of the training on the company's results?
- Has the MTBF improved?
- How did the training allow to optimise maintenance methods?
- Did I use less spare parts?

“The training activity contributes to the learning organisation: learning with clients, suppliers and partners, learning from mistakes and experiences and transferring knowledge to clients and between colleagues.

“40-30 training engineering department only has one goal: to make professional training more efficient. It really means to change from a logic of consuming training to a logic of investment and return on investment.

Virtual classrooms courses

Education is mobile. It follows you.

Engage students in a highly interactive, real-time virtual training

Multiple interactive whiteboards, markup and annotation tools, file and document sharing, screen sharing and many other collaboration tools.



Virtual classrooms courses available right now !

REF	VIRTUAL CLASSROOMS	DURATION
MV111	Vacuum physics and technology level 1 (introductory)	8 units; 2 hours per unit
MV111- 2	Vacuum physics and technology level 2 (advanced)	8 units; 2 hours per unit
MV112	Helium leak detection	5 units ; 2 hours per unit
MV117	Residual gas analyser and mass spectrometry	8 units; 2 hours per unit
MV132	Cryogenic pumping	3 units; 2 hours per unit
MV123	Turbomolecular pump : principles and maintenance	4 units; 2 hours per unit
MV311	RF principles & techniques	6 units; 2 hours per unit
MV313	Plasma techniques	6 units; 2 hours per unit

For registration please contact us:  +33 (0)4 76 84 40 30  training@40-30.com

Learning's journey

- For each training, pre-reading exercises.
- Learner induction and monitoring.
- We break our training into smaller chunks: 2 hours per unit.
- Between each unit, all participants will receive hands-out and exercises.
- We arrange one-to-one coaching.
- Sessions online to review specific tasks or exercises if learners need them.
- Limited at 8 attendees per session

Certificates: providing competence-based evidence of skills

- Candidates gain a competence-based certificate on successful completion of a course.
- Certificates specify the skills that candidates have gained.
- Competence-based certificates are recognized throughout industry as a fair and accurate assessment of an individual's skills.

Contact



The person in charge of each training is at your service for any questions

André TINNIRELLO
Mass flow controller

Cédric COMBE
Use of leak detectors
Helium leak detection

Christophe GERVASONI
Ultraclean reconditioning

Irma DALMAS
AMPS® (Advanced Management Procedures System)

Jean-Luc LEPLOMB
Maintenance methodology on complex equipment

Claire CIAURRIZ
Low pressure metrology

Manuel LEBE
Industrial Radio Frequency

Aurélie GRIET
Chillers maintenance

Michel Malick THIAM
Residual gas analysis and mass spectrometry
Vacuum technology and Non Destructive Testing (NDT)
Helium leak testing *According to standard ISO 9712-2012*

Nicolas DOTI
Use of mass spectrometers and troubleshooting on leak detectors

Norbert FIGUEROA
AstiPure™ pumps (Saint Gobain)

Stéphane PUISAIS
Electrical Certification

Nacim ABADLAH
Cryogenic and turbo pumps

Laurence FREULON
Training Group Manager
▪ laurence.freulon@40-30.com
▪ T +33 (0)4 76 84 40 30



©40-30 Bernin

40-30 team advises and guides you throughout your projects

The training staff is composed by specialists in their fields and qualified instructors

40-30 account managers, actively involve with the maintenance teams



Trainingby4030.com

Photos ©Artechnique / Design ©40-30 / 2022-09

Maintenance Training

To support manufacturing & research

40-30 HQ // 29, boulevard de l'Europe // 38176 Seyssinet-Pariset // France
T +33 (0)4 76 84 40 30 // 40-30@40-30.com // www.40-30.com

