# Training - Troubleshooting in the Oil and Gas Industry

TBS-EN-P | Face-to-face only | 3 days

This course provides a better understanding of what troubleshooting is and gives keys to solve basic troubleshooting cases on refining and petrochemical equipment and plants

## Level

Skilled

## Public

Engineers, senior operation personnel or technical supervisory staff interested in solving troubleshooting cases on refining and petrochemical plants

## Objectives

Attendees will be able to implement the following skills:

- Troubleshoot main equipment problems: air cooler, distillation column, reactor, furnaces...
- Systematically use an easy-to-implement methodology of troubleshooting

## Pedagogical & technical resources

- “Gamification”, quizzes and exercises
- Videos
- Interactive and realistic sessions of troubleshooting cases studies

## Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer, such as case studies per group
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners’ understanding and assimilation of the knowledge linked to the training objectives

## Prerequisites

No prerequisites are necessary to follow this course

## Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

# Program

### TROUBLESHOOTING IN PRACTICE — 0.75 day

What is troubleshooting? Typical cases seen in refineries and petrochemical plants.
How to start with a troubleshooting case: main rules, laws, orders of magnitude often used during a troubleshooting exercise on site (mass and energy balances, pressure and pressure drop behavior, thermodynamical laws...).
Main onsite practical devices used in troubleshooting for temperature, pressure, flows measurements, chemical analysis, gamma scanning... - Advantages and drawbacks, precautions of uses.

## METHODOLOGY — 0.25 day

Overview of different methods used in troubleshooting: 5 Why, RCA, PDCA...
Presentation of an easy-to-implement method based on PDCA. This methodology will be use during all the training to solve the different troubleshooting exercises.
Exercises to implement the methodology on real cases studies.

## TROUBLESHOOTING OF EQUIPMENT - CASES STUDIES — 2 days

Troubleshooting case study on industrial equipment.
The objective of these exercises is to list, per equipment, the main operating conditions, the main causes of malfunction or failure and the different solution to implement in order to solve the situation (PDCA Method).
Review of the main causes of malfunction of equipment (troubleshooting checklists):

- Heat exchangers (performances, velocity influence, potential problems, fouling and cleaning, water exchanger, tubes inserts types and influence...).
- Air cooler (optimization, potential problems, fouling and cleaning, fogging system).
- Furnace (combustion and yield, controls, fouling and cleaning, tubes coking...).
- Distillation column (tower tray: efficiency and flooding, commissioning...).
- Reactor (internals, catalysts: potential problems...).
- Vacuum system (functioning, potential problems...).
- Pumps and compressors.

Troubleshooting case study on industrial units.
The objective of these exercises is to summarize and practice all the elements discussed during the course.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com