

RAMS&E PROVIDES ITS CUSTOMERS COURSES AND HIGH-LEVEL TRAINING PROJECTS, ALSO IN COLLABORATION WITH PRESTIGIOUS UNIVERSITIES, ON THE ISSUES OF RELIABILITY AND AVAILABILITY OF COMPLEX TECHNOLOGICAL SYSTEMS, MAINTENANCE ENGINEERING, RISK ANALYSIS AND MANAGEMENT, HEALTH AND SAFETY OF WORKERS, ENVIRONMENTAL MANAGEMENT AND MANAGEMENT SYSTEMS.

THE TRAINING OFFERED IN THE CATALOGUE REFERS TO TWO AREAS OF ESTABLISHED EXPERTISE FOR RAMS&E, RAMS AND HSE, AND COMPRISES THE FOLLOWING 15 COURSES.



1. RAMS Analysis: theory and fundamental techniques. The course focus on the characterization of the components and of the systems from the point of view of their reliability, providing an overview of the main techniques of RAMS analysis (FMECA, HAZID, HAZOP, FTA, RBD, etc.) – **2 days | 16 hours.**

2. Fundamentals of functional safety and SIL studies. The course illustrates the reference standards, like the international standard IEC EN 61508, and the methodologies for the allocation and verification of the SIL (Safety Integrity Level) – **2 days | 16 hours.**

3. Introduction to Reliability Centered Maintenance (RCM). The course shows the basics of RAMS analysis and its implications on the planning of industrial and transportation maintenance – **2 days | 16 hours.**

4. RAMS Analysis: advanced course for the oil & gas domain and process industry.

The course deepens the aspects of reliability, availability, safety and maintainability with specific reference to the oil & gas domain and process industry. It deals with the reference standards, the techniques of analysis, the technical and management aspects during all the phases of the life of a facility, from its conception, to the design, the commissioning, the operation and the disposal – **4 days | 32 hours.**

5. Functional safety and SIL studies: advanced course for the oil & gas domain and process industry.

The course explains in detail the aspects of functional safety for the oil & gas domain and process industry. In addition to a deep presentation of the reference standards and the techniques for SIL allocation and verification, the course also includes the presentation of complex case studies and a focus on the aspects of functional safety linked to software – **4 days | 32 hours.**

6. RAMS Analysis: advanced course for the rail industry. The course teaches the reference standards, the analysis techniques, the technical and managements aspects linked to reliability, availability, maintainability and safety in the rail sector, dealing with all the phases of an order, from the bidding stage to after sales – **4 days | 32 hours.**

7. Functional safety and SIL studies: advanced course for the rail industry. The course explains in detail the aspects of functional safety applied to the rail sector. In addition to a depth presentation of the reference standards and of the techniques of SIL allocation and verification, it includes the presentation of complex case studies and a focus on the aspects of functional safety linked to software – **4 days | 32 hours.**

- 1. Introduction to Quantitative Risk Analysis (QRA).** The course illustrates the structure of the quantitative risk analysis, presenting the techniques applied in each of its phases: hazard identification, probabilistic analysis, consequence analysis, risk estimation – **2 days | 16 hours.**
- 2. Analysis of process risks: advanced QRA course.** The course deepens the reference standards and the techniques applied in the quantitative risk analysis, from hazard identification (historical analysis, HAZOP, HAZID, FMECA), to probabilistic analysis (Event Tree, Fault Tree) and calculation models for accidental consequences, until risk estimation with reference to tolerability criteria. The course includes the presentation of practical case studies – **4 days | 32 hours.**
- 3. Technical and regulatory framework for installations at risk of major accident.** The scope of the course is to illustrate in detail the fulfilments linked to D.Lgs. 105/2015, with particular reference to the manager's obligations. Furthermore, the methodologies for the drafting of the Safety Report are presented – **2 days | 16 hours.**
- 4. HAZOP technique.** The course deals with the basic concepts of HAZOP methodology, and illustrates its main characteristics through a guided group exercise - **3 days | 24 hours.**
- 5. HAZOP technique: advanced course.** This course deepens the contents of the first level HAZOP course, focusing on the role of HAZOP in the field of a design flow and the role and characteristics of the HAZOP Team components. The course includes a guided group exercise with role-playing game – **4 days | 32 hours.**
- 6. LOPA technique – Layer of Protection Analysis.** The course illustrates the application methodologies of LOPA technique for the purpose of the process risks control - **2 days | 16 hours.**
- 7. Protection against the explosive atmospheres.** The course deepens the analysis techniques which are necessary to follow the fulfilments deriving from Title XI of D.Lgs. Government 09/04/2008 n° 81. It deals with elements of chemistry and thermodynamics of explosions (gas and dusts), the risk evaluation, the conformity of workplaces and in particular of electrical plants – **2 days | 16 hours.**
- 8. Management of Process Safety: advanced course.** The course presents essential elements of the activities related to the process safety management, with particular attention to their contextualization and integration in the field of the facilities and management processes life cycle – **4 days | 32 hours.**

In addition to what relates to the catalogue courses, RAMS&E is a qualified partner in the offer of training initiatives, tailored to the specific needs of the customer, making use of its abilities in the identification and definition of the training objectives and in the planning of educational activities.

The preparation and delivery of training courses is entrusted to its professional staff, also all active in the analysis and consulting activities and, most of them, with higher university education (Master's Degree and/or Ph.D.).

RAMS&E also relies on a network of highly qualified staff to deliver training on specific aspects (eg. electrical safety, reliability and security of software, business organization).