

SME ENVIRONMENT

Safety management & expertise for Environment

EQUIPMENT & SERVICES



SME ENVIRONMENT

Thanks to its experienced feedback in technological hazards management, SME Environment (Safety management & expertise for Environment) meets the needs of ever-more technical regulation for all sectors with potentially high concern hazards.

EXPERT IN TECHNOLOGICAL RISK MANAGEMENT

Key service areas, studies and expertise relevant to:

- Accidental and chronicle risks assessment for SEVESO facilities
- Safety Management Systems Audit
- Chemical and pyrotechnical processes safety
- Drafting of material safety data sheets (MSDS)
- Hazards mastering in relation with explosive atmosphere (ATEX) and with static electricity phenomena,
- Lightning risks prevention using the QUALIFOUDRE reference (certificate no. 082397906044),
- Behavior characterization of dangerous materials and goods (fire, explosion, toxicity, etc.),
- Dependability (RAMS) of munitions and pyrotechnic objects,
- Insensitive Munitions design support,
- Pyrotechnical safety insurance of sites and military vessels,
- Eco-design and sustainable development methodologies.

The methods and means put in place by the specialists at SME Environment are supported by ArianeGroup's engineering teams, both for experimental works as well as for 3D numerical simulations.



REFERENCES

ISO9001, EN9100 and AQAP2110 certified, SME Environment has the necessary competencies recognized by safety-related organizations and authorities, for example:

- The Ministry of Ecology for critical analyses of risk studies and by its participation in a sectoral working group dedicated to pyrotechnics,
- The DGA for dependability studies, pyrotechnical safety for munitions in nuclear environment,
- Professional unions and standardization groups for its expertise in pyrotechnic safety and systems dependability.

RESOURCES

- Over 60 methodological guides,
- Databases for accidents, physico-chemical characteristics, safety and dependability,
- Numerical simulations center using the most advanced software for modeling fires, explosions, toxic dispersion,
- Testing laboratory for pyrotechnic safety accredited by COFRAC,
- Facilities for abuse testing on Lithium-Ion batteries with thermal and chemical instrumentation,
- Sites for experiments from a few grams to multiple tons: pyrotechnic testing, munitions vulnerability trials,
- Climatic and mechanical environment tests for munitions,
- Non-destructive controls on large pyrotechnic items.

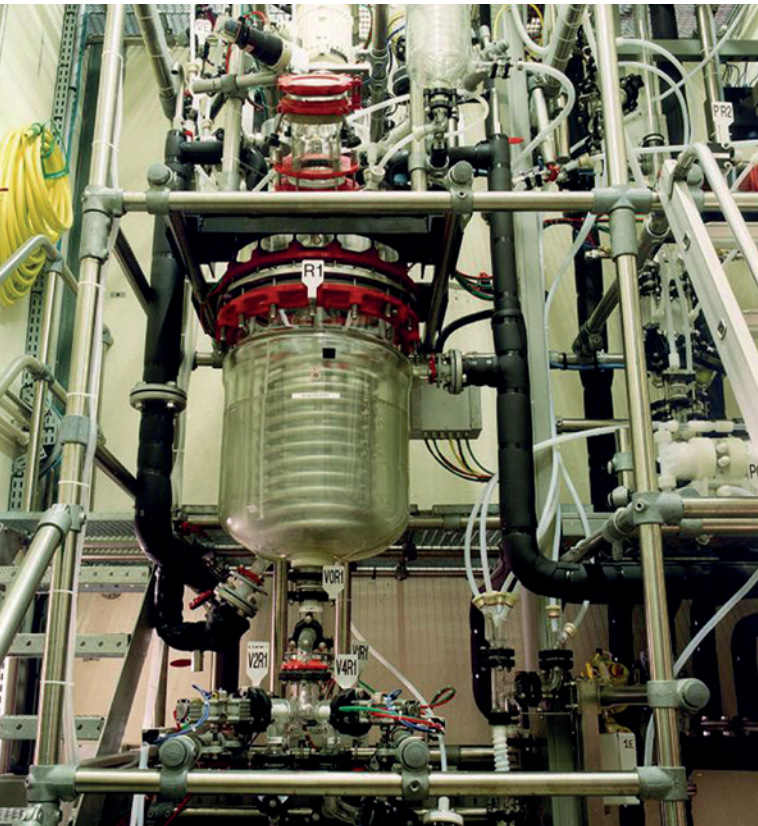
Training in our fields of expertise are offered and adapted depending on your requirements.

ArianeGroup is a training organization registered under no. 11922145092.

A specific brochure can be made available upon request.



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DEPENDABILITY AND SAFETY

SME Environment provides its clients with methods that have been subject to testing for high-tech sensitive applications:

- Dependability demonstrations using recognized methods: AMDEC, HAZOP, Fault Tree Analysis, etc. as well as its own method [Industrial Processes Risk Analysis],
- Proof of reliability of “one-shot” devices using specific methods such as those used in hardness testing,
- Statistical studies (variance analysis, experiment plans, predictive models) in order to optimize process development.

These methods are implemented for new processes and complex systems: missiles, munitions, space launchers, satellites, aviation, automobiles etc.

PYROTECHNICS AND DANGEROUS MATERIALS/OBJECTS

To master pyrotechnic risks from dangerous materials and objects, SME Environment draws on its expertise in:

Behavior of dangerous materials/objects:

- Characterization of the sensitivity of materials to mechanical, thermal, electrostatic stresses etc.,
- Trials for Hazards Division classification,
- Specific test ability from a few grams to multiple tons of pyrotechnical materials,
- Physico-chemical characterizations,
- Safety testing on electric vehicles batteries etc.

Development of regulatory studies

- Work Safety Studies,
- Munitions Safety Dossiers,
- Munitions Dependability Reports.

Insensitive Munitions

SME Environment manages all testing and analyses related to the behavior and labelling of Insensitive Munitions (IM)





SEVESO FACILITIES RISK MANAGEMENT

In order to respond to demands for ever more complex regulations, SME Environment, as well as being a third party expert, can guarantee delivery of risk analyses and undertake studies and develop regulatory reports:

- Operating permit file,
- Regulatory reports of hazards analysis,
- Environmental impact assessment,
- Third-party appraisal,
- Internal operation Plan
- Audit of Safety Management Systems (SMS),
- Greenhouse gas balance (GHGB),
- SEVESO III classification assessment,
- Seismic risk analysis.



ECO-DESIGN

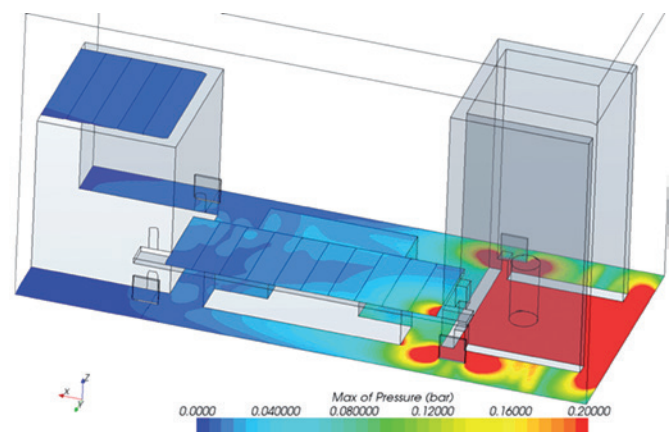
In terms of sustainable development, SME Environment provides reliable and meaningful support through eco-design, particularly with the implementation of Lifecycle analyses (LCA) using SIMAPRO software.

Footprint evaluation linked to raw material procurement, manufacturing phases, utilization, transport and elimination at end-of-life.

BLAST PROOF ROOMS & PYROTECHNIC FACILITIES

SME Environment is able to design blast resistant buildings using its advanced knowledge in explosion phenomena and reference documents as the UFC 3-340-02.

Building design can be developed with engineering formulas or using 3D numerical simulations for complex drawings. Through that way, installations are scaled at their right needs limiting costs.



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DANGEROUS PHENOMENA

SME Environment has specific methods, tests and models to respond to requirements for forecasting and expertise in the effects of dangerous phenomena:

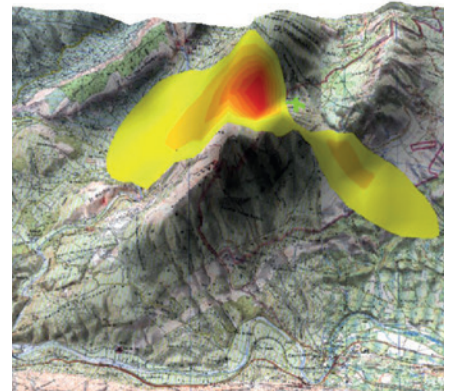


Fires

- Instrumented testing with several transducers and Infra-Red cameras,
- Composition determination of combustion gas (OPHELIE code),
- Modelling of fire propagation and efficiency of sprinklers (FDS code),
- Vulnerability study of equipment exposed to thermal effects.

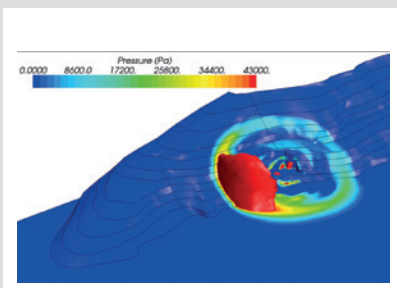
Atmospheric dispersions

- Numerical simulation of atmospheric dispersion of toxic gases (PHAST, ADMS codes).

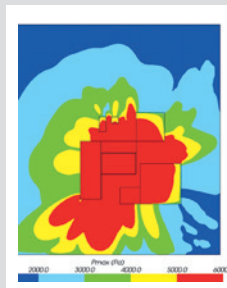


Explosions

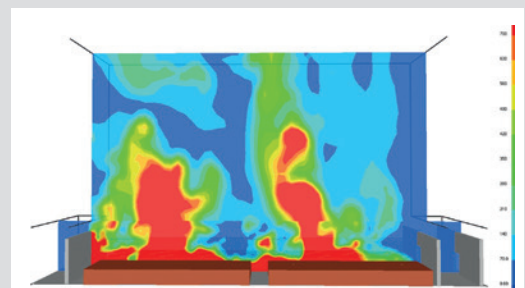
- Instrumented testing at all scales with high speed full frame & Infra-Red cameras ,
- Modelling of propagation of pressure waves and determination of impact zones (LS-DYNA, OURANOS, and FLUENT codes),
- Evaluation of projection distances and probability to be impacted (DENSECLAT code),
- Designing of structures/buildings that must resist blast or projection effects (SEP, EGC, PERFIDY and LS-DYNA codes).
- Dangerous effects of VCE, UVCE, BLEVE, BOIL OVER, etc.,
- Air vent sizing.



Overpressure waves from an explosive underground storage detonation



Blast waves generated by explosion of a gas boiler room



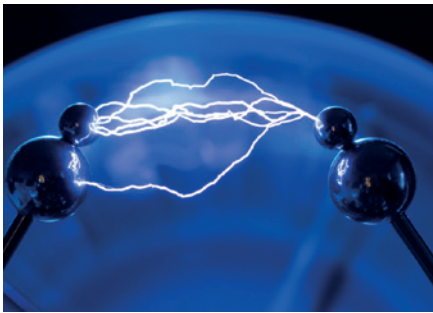
Pyrotechnic materials fire in a storehouse



THERMAL RUNAWAY

SME Environment offers a methodological approach to the risk assessment:

- Thermal runaway of chemical reactions, self-heating during drying phases, atomization, storage and transport.
- Micro calorimeters and reaction and adiabatic calorimeters (ARSST), AKTS software for forecasting critical temperature in storage.



STATIC ELECTRICITY

SME Environment offers an original method for achieve genuine control of the risk associated with static electricity.

This method takes into account the system as a whole, including: operators, products, processes, and equipment, as well as packaging, ground conditions, atmosphere, tools, procedure, etc.



LIGHTNING

QUALIFOUDRE certified, SME Environment knows how to mitigate lightning risks, and can put together a LRA (Lightning risk analysis) and TS (Technical study) as required by current European Regulations.

LI-ION BATTERIES

SME Environment is highly competent in undertaking abuse testing on li-ion batteries at any scale (physical measurements and gas analysis) and has the means to undertake environmental testing (vibration, shock, thermal, etc.).

ATEX STUDIES

SME Environment offers pragmatic, regulation-compliant methods; requirements are adjusted at their right needs:

- identification, classification and reduction of ATEX zones,
- compatibility analysis of materials located in ATEX zones,
- assistance with drafting the explosion protection document required by regulation.

FIRE VULNERABILITY

These studies identify any vulnerable aspects of a business faced with a fire risk and also determine a treatment plan that sets out prevention and protection measures.

Additionally, SME Environment can support a business with the development of its business continuity plan.

#spaceenablers

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