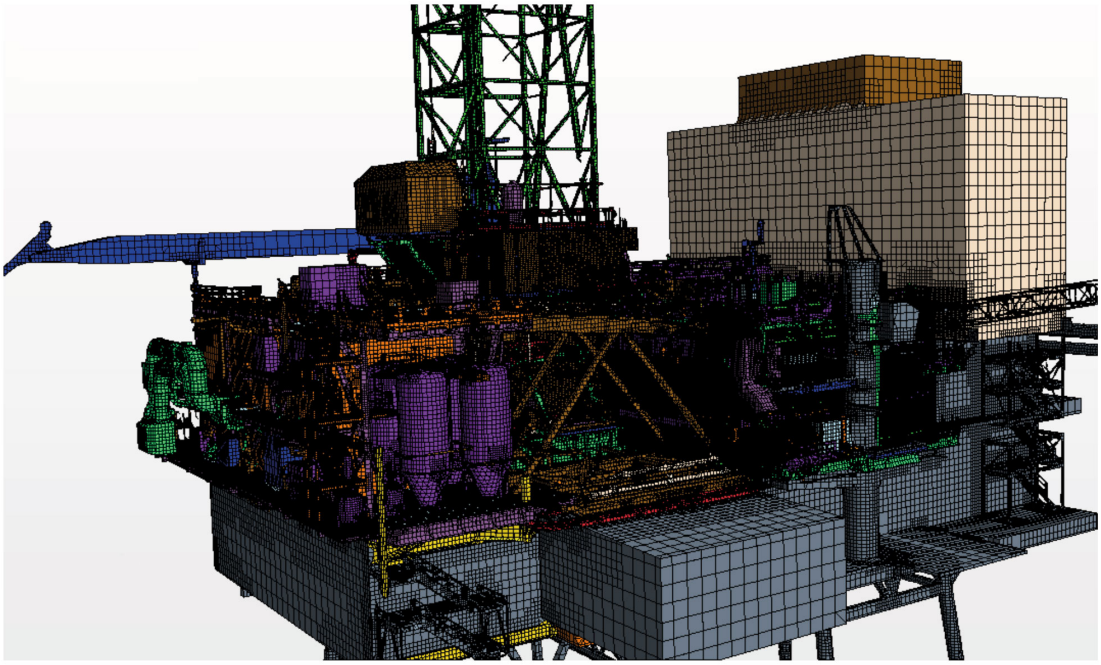
TEASISTEMI

ENERGY AND ENVIRONMENT TECHNOLOGIES

CONSEQUENCE ANALYSIS

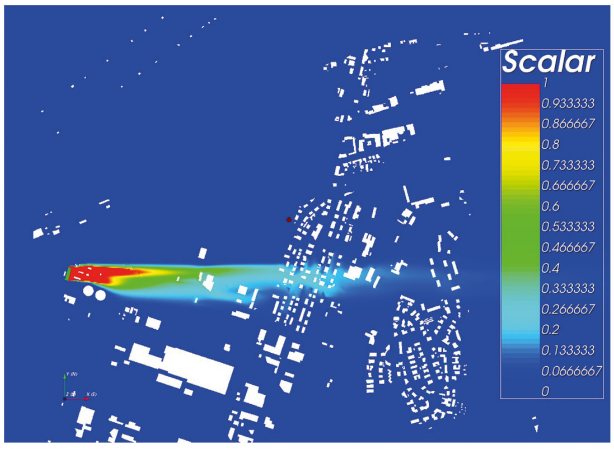
CFD for Consequence Analysis

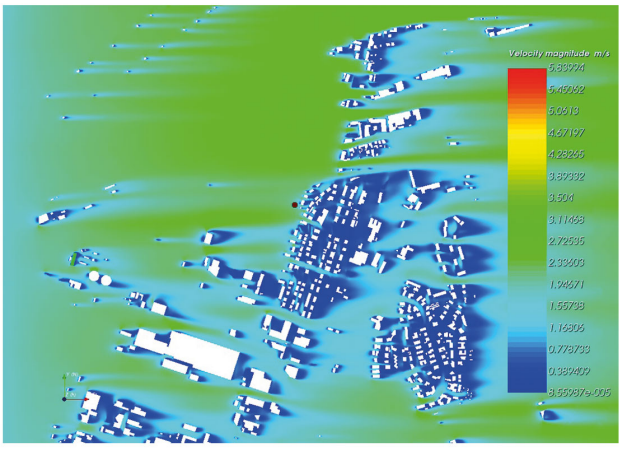
Ventilation, flammable gas & liquid dispersion, fire, smoke propagation and explosions are important considerations for the safe operations of Oil & Gas facilities, both onshore and offshore. TEA Sistemi is a leading specialist in the use of Computational Fluid Dynamics (CFD) techniques for the analysis of upstream & downstream hydrocarbon hazards to optimise design, minimise commercial risk and maximise safety.



Software

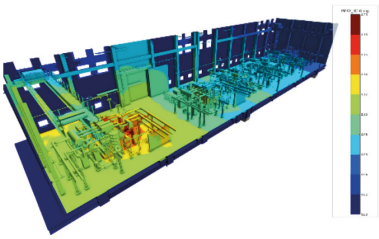
TEA Sistemi uses the best computational software available on the market in order to perform design activities and to meet Client's needs. Among our main tools we cite ANSYS Fluent, STAR-CCM+, FLACS, FDS, OpenFOAM.

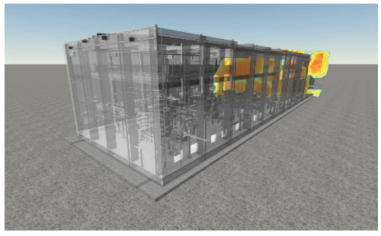




Explosion Risk Analysis

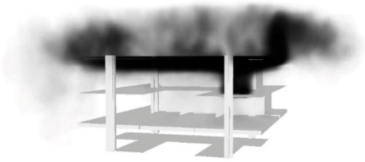
Vapour cloud explosions on onshore/offshore facilities represent a significant risk that needs to be considered due to the impact on personnel safety and plant damage. CFD is used to quantify the effects of hydrocarbon gas explosions and to minimize escalation into safety critical areas. A full probabilistic explosion analysis can be performed in order to generate representative overpressures for an area based on probabilistic arguments (leak frequencies, weather data, ignition probabilities).

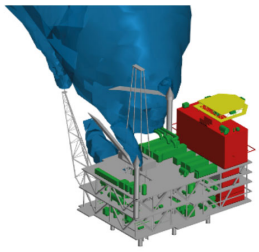




Smoke Analysis

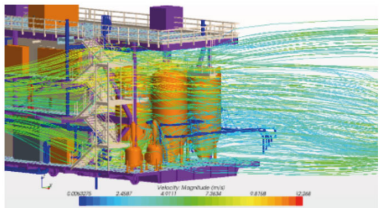
Smoke studies are focused on the analysis of the dispersion of smoke, toxics and combustible products from major process related incidents and to quantify their impact on the escape routes, temporary refuges and platform embarkation areas. The smoke analysis is performed in order to evaluate all possible impacts related to: reduction of visibility due to the smoke column, concentration of toxic gases in the smokes and temperature field.





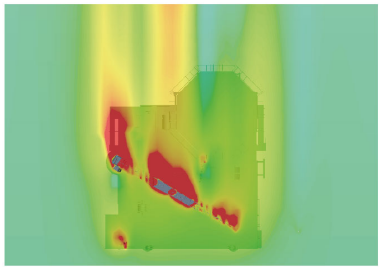
Exhaust Gas Analysis

Gas exhaust analysis is performed to assess the exhaust gas emissions from the flare and the gas turbines, which can represent a major hazard to personnel as well as helicopter operations. These exhausts, are typically very high in temperature and toxic gas concentration, including CO, CO2, SOx and NOx. A CFD approach is used to measure the gas concentration and temperature levels in the critical areas.



Helideck Operations

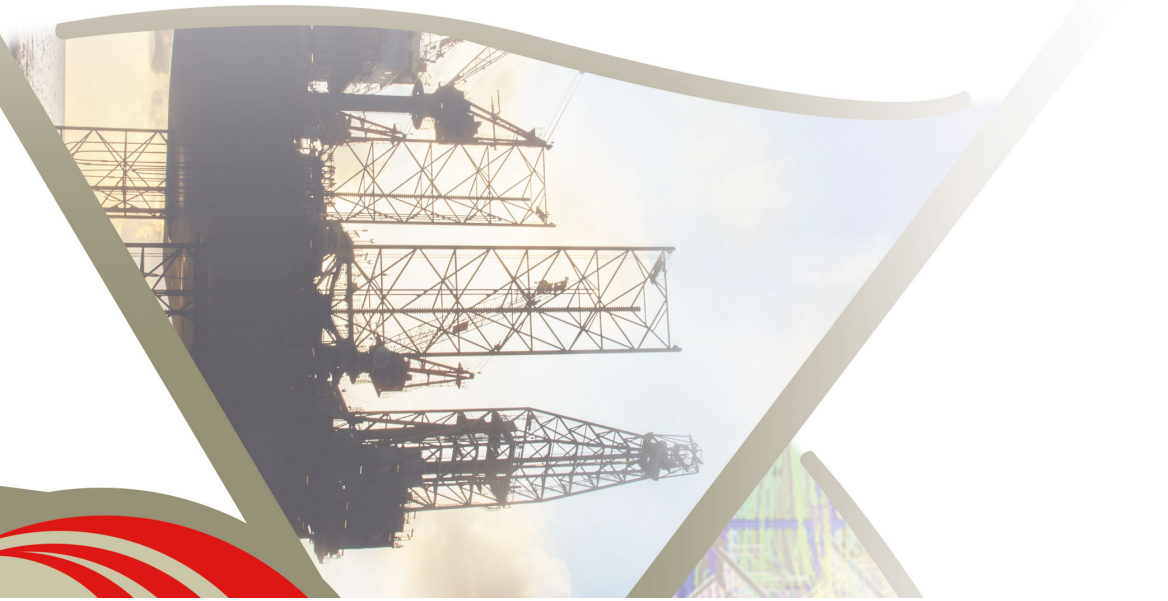
CFD methods allow to model the behaviour of three-dimensional, turbulent, hot fluid flows in order to assess the flow and temperature distributions around helidecks. CAP 437 temperature rise and turbulence criteria are applied to determine the impact of the thermal flow field in the helideck region and to investigate the annual helideck availability as well as the helicopter operational envelope.



TEASISTEMI

ENERGY AND ENVIRONMENT TECHNOLOGIES

experience knowledge solutions



CONTACTS

info@tea-group.com

+39 050 6396101