SE-PLUME

Jet Aircraft

CFD

INFRARED

Hot Gas

SIGNATURE

Simulate Jet Aircraft signature

OKTAL-SE

Synthetic Environment

# SE-PLUME, extension of the SE-Workbench-EO, is the most advanced and validated solution on the market to compute aircraft infrared signatures

Context

- **Derivates from specific project for French MoD (DGA)**
- **Addresses military and civil aircrafts (with gas turbine engines)**
- **Addresses mainly foreign aircrafts with poor data availability**
- **Is based on the SE-Workbench-EO Suite**

Advanced features

1. Defines a cloud of points characterizing the plume: molar concentrations of gas species, temperatures and pressures.

2. Compatible with SE-SCENARIO, this file (.plu) can be managed as others entities (e.g. sensors, special effects…) .

3. Calculates with SE-RAY-IR-RT the radiative transfer through the plume and generates a realistic aircraft EO signature even in the case of poor data availability: several tunable parameters are available.

4. Generates a thermal definition file (.dth) of the aircraft body skin temperatures.

5. Integrates flight conditions for plume computation: speed, aircraft position, atmospheric conditions…

6. Real time & non real time capacity.

7. Based on FLUENT™ for fluid dynamics computation.
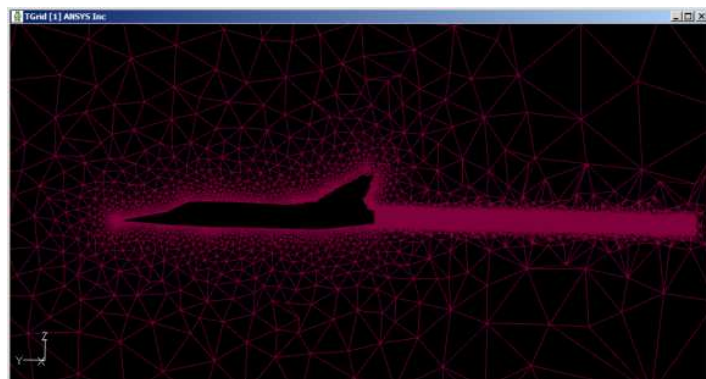
Benefits:
Unique & validated simulation tool for plume simulation

System requirements:
Windows™ XP and 7
Linux Red Hat Entreprise 4

Validated results

The SE-PLUME process is based on the combination of highly trustable COTS, phenomenological models, validated models & SE-Workbench-EO physics.

The validation process includes comparison with other codes (ONERA/CRIRA & NATO/NIRATAM).

Integrated architecture
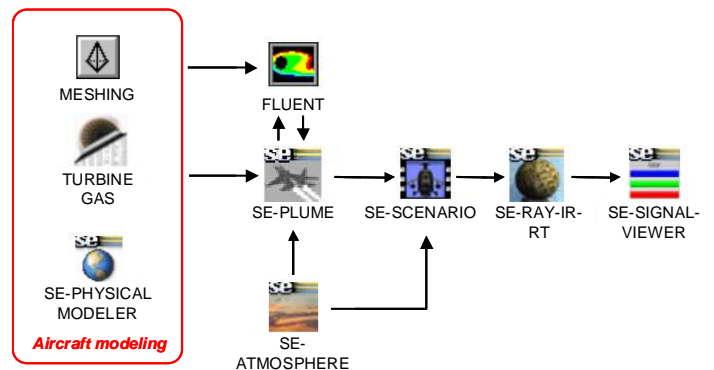
SE-PLUME is an integrated tool that enables to parameterize and interface dedicated A/C physical pre-computation software.

SE-PLUME converts Computational Fluid Dynamics results to plume and thermal data compatible with the SE-Workbench world.

Dedicated GUI

Synthetic Environment