

DEVELOPMENT OF A FHTS SOLVER BASED ON CEDRIC SPATIAL

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OBJECTIVE

TO DEVELOP A 2- Φ TRANSIENT SOLVER IN FHTS BASED ON CEDRIC SPATIAL THERMO-HYDRAULIC SOLVER

WHY ? : TO TAKE ADVANTAGE OF CEDRIC PERFORMANCE
(cf. comparisons since beg. 90's)

HOW ? : DEVELOPMENT OF A PROTOTYPE WITH LIMITED FUNDING
- use of existing CEDRIC thermo-hydraulic solver
- extension of the existing CEDRIC thermal solver to full networks

OBJECTIVE : MORE RELIABLE SOLVER (STABILITY, CONVERGENCE Δt , ...)
FASTER SOLVER (ratio > 5 minimum)

QUESTION : IS THE DEVELOPMENT OF A FHTS SOLVER BASED ON CEDRIC SPATIAL WORTH WITH REGARDS TO OTHER FHTS SOLVERS AVAILABLE AT THE END OF THE DEVELOPMENT ?

DEVELOPMENT ORGANISATION

DECLARATION OF INTENT (ALSTOM, CEA, CNES, ESA, PRINCIPIA, TECHNICATOME)

CNES R&D CONTRACT TO PRINCIPIA R.D.

1) DEVELOP A FULL THERMAL SOLVER IN CEDRIC SPATIAL ("CEDTAN") TO GET A FULL THERMO-HYDRAULIC SOLVER

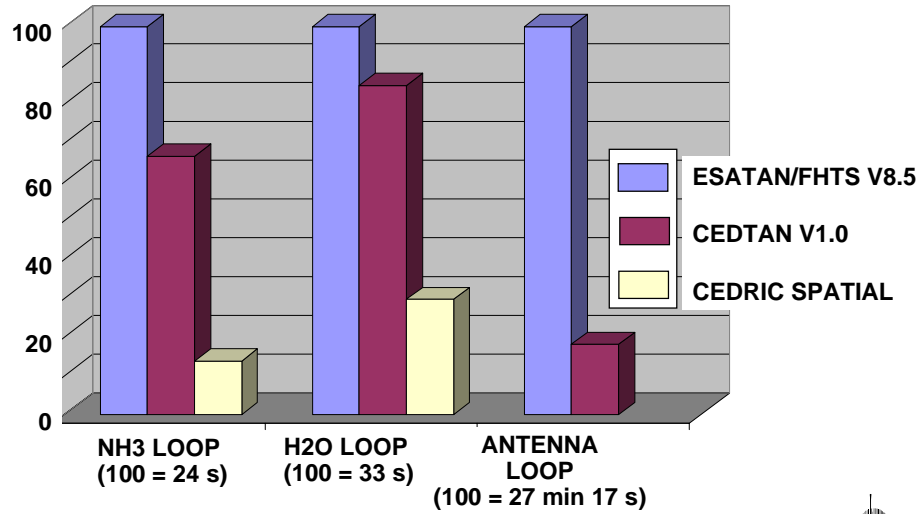
2) IMPLEMENT THIS SOLVER IN FHTS AS A PROTOYPE ("SOLCED")



3) INDUSTRIALIZE THE PRODUCT WITH ESA & ALSTOM ("?")

RESULTS

CPU TIME FOR 3 TEST CASES (base 100 = ESATAN/FHTS V8.5 / FGENFI) :



CONCLUSION

GOOD RESULTS ...

BUT CANNOT COMPETE WITH ALREADY INTEGRATED SOLVERS

=> RESULTS CAN'T JUSTIFY THE DEVELOPMENT OF THIS NEW FHTS
2- Φ TRANSIENT SOLVER

DEVELOPMENT IS STOPPED