



CAMEL-Pro™



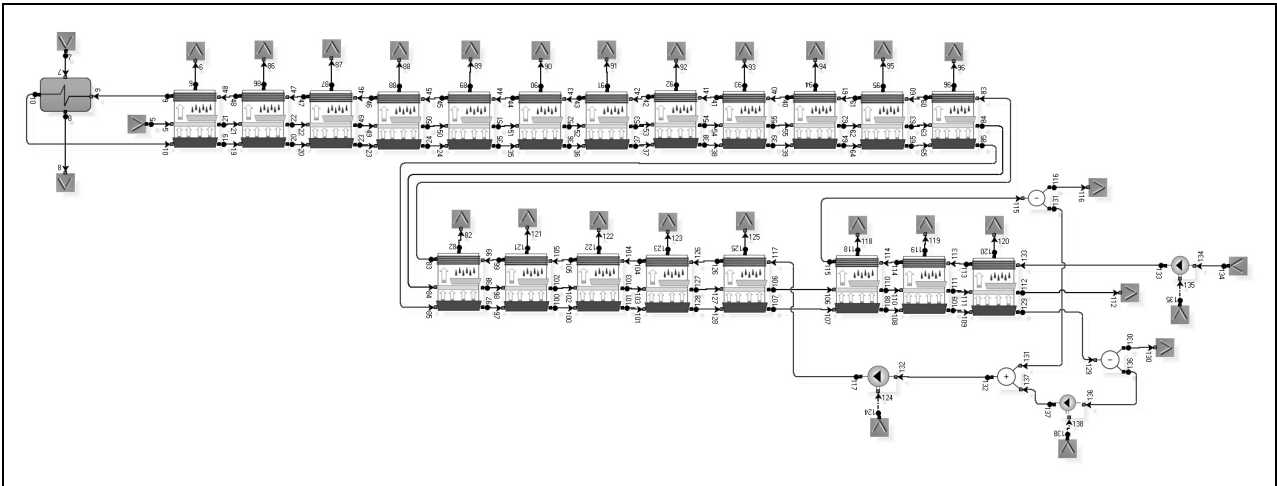
Università di Roma 1
La Sapienza

CAMEL-Pro™ is a novel process simulation software, developed at the Mechanical Engineering Department of the University of Roma La Sapienza. The package is totally object-oriented, written in C++ and C#, with an interactive and user-friendly Graphic User Interface. CAMEL-Pro™ performs mass-, energy and cost balances of energy conversion systems, and is provided with additional exergy- and a thermo-economic calculation utilities. The code (whose acronym stands for “**CA**lcolo **MO**dulare ad **EL**ementi” –Modular Elemental Calculation), is entirely modular: the user can assemble, in any desired combination, all of the components available in the Components Library (thermodynamically and physically incorrect interconnections are automatically detected by the GUI). The structure of the numerical assembler/solver is modelled after the most advanced current CFD packages, and constitutes a significant improvement in the field of Process Simulators. The process scheme assembled on the screen by the user is automatically translated into a matricial system of non-linear equations: the steady-state solver is based on an iterative under-relaxed modified Newton-Raphson scheme and the time-marching is based on a 4-steps Runge-Kutta method with timestep adjustment.

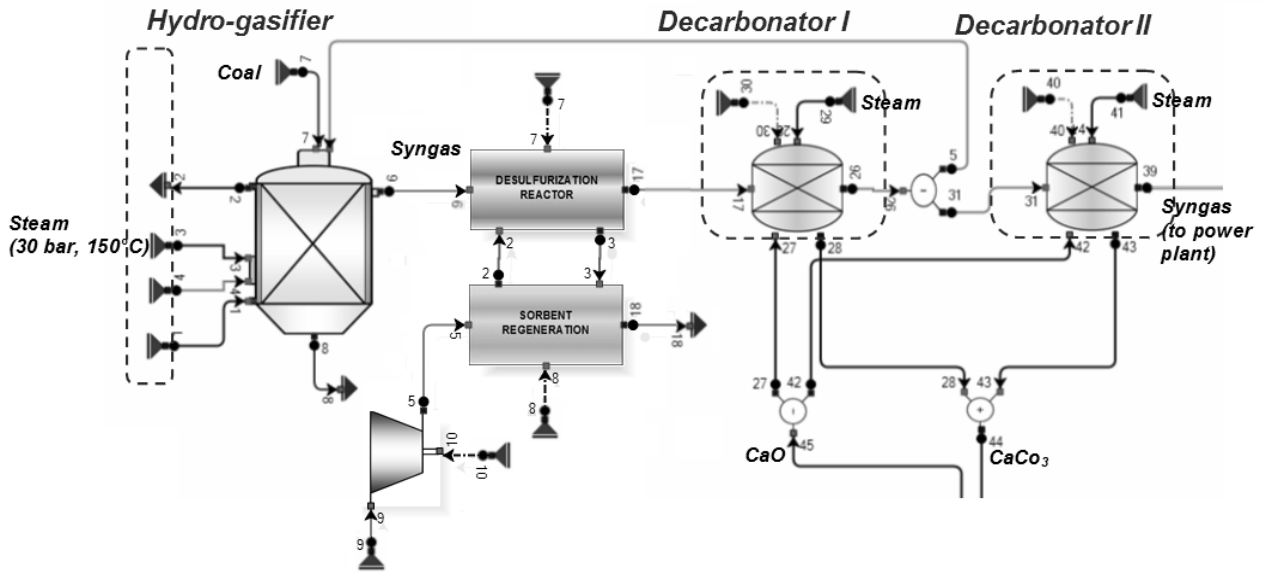
CAMEL-Pro™ Components Library includes Pumps, Compressors, Turbines, Boilers, Heat Exchangers, Condensers, Solar Panels (Thermal & PV), Fuel Cells, Desalination Devices (MED, MSF, RO Stages), Combustors, I.C. Engines, Turbojets and Scramjets, Gibbs' Chemical Reactors and a series of connecting devices (Pipes, Valves, Flow Mergers & Splitters, etc.). The Stream Library includes Gas, Fuel, Water, Brine, Solid Phase, Mechanical Power, Electrical Power, Thermal Power. The most common elements (C, O₂, H₂, NO_x, H₂O, C_mH_n, SO₂, H₂S, SiO₂, CaO, CaCO₃ and others) can be included in the mass- and energy balances: updated property Tables are available.

The code runs only on WINDOWS platforms.

CAMEL-Pro™ is available on a license basis from the University of Roma 1: inquiries and applications under <http://www.turbomachinery.it>



A 20-stage MSF plant



A Coal-gasifier for syngas production with CO₂ capture