Property Libraries for Working Fluids for Calculating Heat Cycles, Turbines, Heat Pumps, and Refrigeration Processes

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The program libraries developed for calculating thermophysical properties of working fluids can be used for the daily work of an engineer who calculates heat cycles, steam or gas turbines, boilers, heat pumps or other thermal or refrigeration processes. Thermodynamic properties, transport properties, thermodynamic derivatives and inverse functions can be calculated.

The following property libraries will be presented:

- LibHuGas for humid combustion gas mixtures at high pressures calculated as ideal mixtures of real fluids. The library also includes mixtures of steam and carbon dioxide. The dissociation at high temperatures, the Poynting effect, and the condensation of water are considered.
- LibHuAir for humid air at high pressures calculated as an ideal mixture of the real fluids dry air, steam and water or ice. The dissociation at high temperatures and the Poynting effect are considered.
- LibAmWa for mixtures of ammonia and water in the Kalina cycle, in absorption-refrigeration processes or in absorption heat pumps.
- LibWaLi for mixtures of water and lithium bromide in absorption-refrigeration processes or in absorption heat pumps.
- LibIF97 for water and steam calculated from the Industrial Formulation IAPWS-IF97 and all new backward equations of the four supplementary standards adopted by IAPWS between 2001 and 2005.
- LibIdGasMix for 25 ideal gases and their mixtures.
- LibHe for helium.
- LibH2 for hydrogen.
- LibCO2 for carbon dioxide.
- LibNH3 for ammonia.
- LibR134a for the refrigerant R134a.
- LibPropan for propane.
- LibButan_Iso and LibButan_n for Iso-butane and n-butane.

The libraries contain the most accurate algorithms for thermodynamic and transport properties.

The following software solutions will be presented:
- DLLs for Windows® applications,
- the Add-In FluidEXL for Excel® ,
- the Add-On FluidMAT for Mathcad®,
- property libraries for pocket calculators.

Student versions of all programs are available.