



# Property Database for Humid Combustion Gases, Humid Air, Water and Steam for Calculating Heat Cycles and Turbines

Humid Combustion Gases	Humid Air	Water and Steam
<p><b>Library LibIdGas</b></p> <p>VDI-Guideline 4670 for low pressures, high temperatures</p> <p><b>Library LibHuGas</b></p> <p>Model: Ideal mixture of real fluids for high pressures, low temperatures</p> <ul style="list-style-type: none"> <li>Ideal mixture of the real fluids           <ul style="list-style-type: none"> <li>CO<sub>2</sub> - Span and Wagner</li> <li>H<sub>2</sub>O - IAPWS-95</li> <li>N<sub>2</sub> - Span et al.</li> <li>O<sub>2</sub> - Schmidt and Wagner</li> <li>Ar - Tegeler et al.</li> </ul> </li> <li>and the ideal gases:           <ul style="list-style-type: none"> <li>SO<sub>2</sub></li> <li>CO</li> <li>Ne</li> </ul> </li> <li>scientific equations (Bücker et al.)</li> <li>Consideration of - Dissociation from VDI-Guideline 4670 - Poynting effect</li> </ul>	<p><b>Library LibIdAir</b></p> <p><b>Library LibHuAir</b></p> <ul style="list-style-type: none"> <li>Ideal mixture of the real fluids           <ul style="list-style-type: none"> <li>dry air: Lemmon et al.</li> <li>steam and water: IAPWS-IF97</li> </ul> </li> <li>Consideration of - Dissociation from VDI-Guideline 4670 - Poynting effect</li> </ul> <p>Software for  <b>Pocket Calculators</b></p>	<p><b>Library LibIF97</b></p> <ul style="list-style-type: none"> <li>Industrial formulation IAPWS-IF97</li> <li>Supplementary backward equations IAPWS-2001</li> <li>Development of further backward equations for critical and supercritical regions</li> </ul> <p><b>FluidMAT for Mathcad®</b></p>

## Add-In FluidEXL<sup>Graphics</sup> for Excel<sup>®</sup> including thermodynamic charts

**LibHuGas**

**LibHuAir**

**LibIF97**

The screenshots illustrate the user interface for the FluidEXL add-in, showing various input fields for pressure, temperature, and composition, as well as calculation windows for isentropic expansion and thermodynamic property lookups. It also displays several thermodynamic charts, including the Mollier diagram (h-s) and the T-s diagram, used for cycle analysis.