

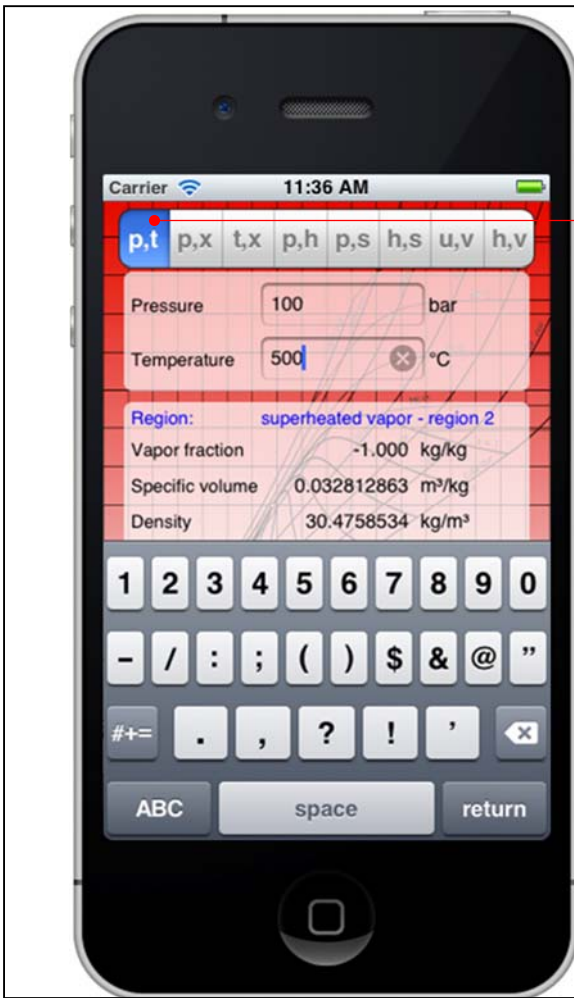
Kretzschmar, H.-J.; Kunick, M.:  
**Steam Tables for Education**

- ▶ New 2012: Steam Tables for MATLAB®  
77 Downloads since July 2012
- ▶ Steam Tables for Microsoft Excel® and Mathcad®  
1015 Downloads since September 2011  
3198 Downloads altogether (since 2009)
- ▶ Steam Tables for Casio, TI, and HP Pocket Calculators  
776 Downloads since September 2011  
5416 Downloads altogether (since 2007)
- ▶ Proposal: Steam Tables for iPhone, iPad, and iPod touch

IAPWS Meeting, Boulder 2012

### Steam Tables for Apple iOS and Android

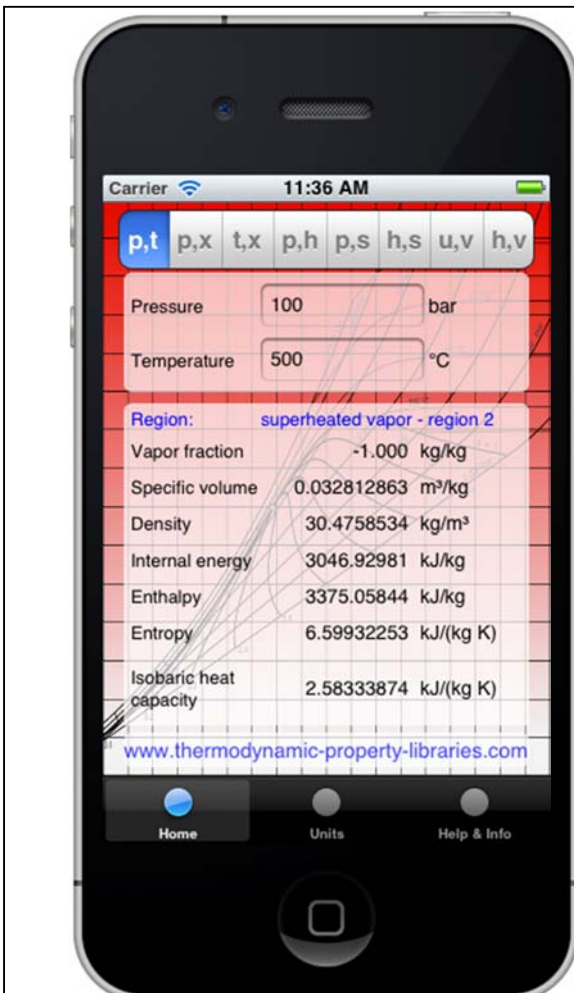




## International Steam Tables App

- Available input variable combinations

$p, t$	Pressure $p$ and temperature $t$
$p, x$	Pressure $p$ and vapor fraction $x$ for wet steam region
$t, x$	Temperature $t$ and vapor fraction $x$ for wet steam region
$p, h$	Pressure $p$ and specific enthalpy $h$
$p, s$	Pressure $p$ and specific entropy $s$
$h, s$	Specific enthalpy $h$ and specific entropy $s$
$u, v$	Specific internal energy $u$ and specific volume $v$
$h, v$	Specific enthalpy $h$ and specific volume $v$



## International Steam Tables App

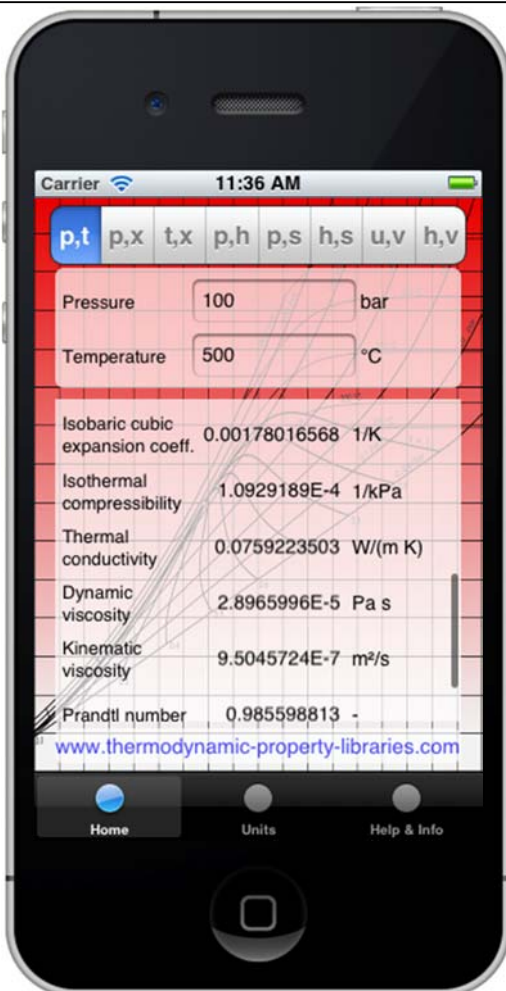
- Output properties

Pressure	$p$
Saturation pressure	$p_s$
Temperature	$t$
Saturation temperature	$t_s$
Vapor fraction	$x = \frac{m''}{m}$
Specific volume	$v$
Density	$\rho = 1/v$
Specific internal energy	$u$
Specific enthalpy	$h = u + p \cdot v$
Specific entropy	$s$
Specific isobaric heat capacity	$c_p = \left( \frac{\partial h}{\partial T} \right)_p$
Specific isochoric heat capacity	$c_v = \left( \frac{\partial u}{\partial T} \right)_v$

## International Steam Tables App

### • Output properties

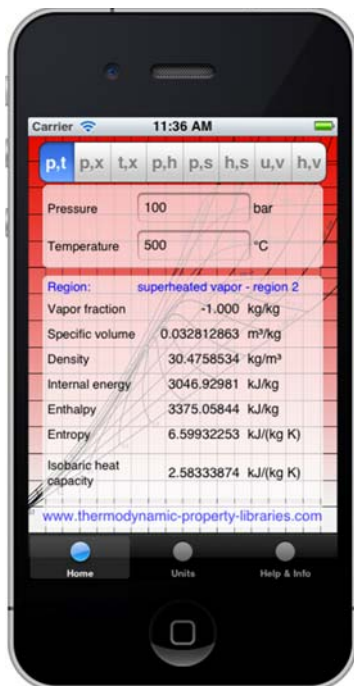
Isentropic exponent	$\kappa = -\frac{v}{p} \left( \frac{\partial p}{\partial v} \right)_s$
Speed of sound	$w = v \sqrt{-\left( \frac{\partial p}{\partial v} \right)_s}$
Isobaric cubic expansion coefficient	$\alpha_v = \frac{1}{v} \left( \frac{\partial v}{\partial T} \right)_p$
Isothermal compressibility	$\kappa_T = -\frac{1}{v} \left( \frac{\partial v}{\partial p} \right)_T$
Thermal conductivity	$\lambda$
Dynamic viscosity	$\eta$
Kinematic viscosity	$\nu = \eta / \rho$
Prandtl number	$Pr = \frac{\eta \cdot c_p}{\lambda}$
Thermal diffusivity	$a = \frac{\lambda}{\rho \cdot c_p}$



## International Steam Tables App

Price: 5,99\$ (4,99€)

Could it be listed in  
Educational Resources  
on [www.iapws.org](http://www.iapws.org)?



iOS

