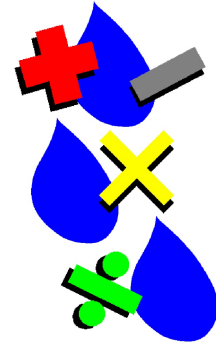


WaterCalc™ 1.0



WaterCalc™ 1.0 is a Windows™ based suite of analytical tools for water system design and analysis. It includes routines for calculating a variety of stress, flow, and pressure values for devices and pipe associated with virtually any pressurized piping application that transports or delivers water or similar liquid. The included features are...

WaterCalc 1.0 Calculations & Features		
<i>FLUID PROPERTIES</i>		
Create Properties File	A support file used to allow calculation of various fluid properties including specific weight, specific gravity, viscosity, and bulk elastic modulus for a fluid at a specified temperature.	
Convert Viscosity Values	Calculates an equivalent viscosity value between various dimensional units.	Supported units: • Centipoise • Centistoke • Ft ² /sec • Lbm/ft-sec • m ² /sec
Atmospheric Pressure	Calculates the atmospheric pressure for a given elevation or an elevation based on pressure value.	Supported methods: • AGA Measurement • ASHRAE - 2009 • Handbook Of Chemistry & Physics • NOAA - 1976
Average Pressure	Calculates the average pressure in a pipe segment or pair of values.	Supported method: • Linear (Arithmetic) Average
Average Temperature	Calculates the average temperature in a pipe segment or pair of values.	Supported method: • Linear (Arithmetic) Average
<i>PIPE VALUES</i>		
Pipe Flow	Calculates various values associated with flow through a single or series of pipe segments. Allows calculation of diameter, length, flow rate, roughness, pressure drop, and downstream temperature. Allows fittings to be attached.	Supported methods: • Darcy-Weisbach • Darcy-Weisbach (AWWA) • Darcy-Weisbach (EPANET) • Hazen-Williams
Volume	Calculates the volume of fluid contained in a single or series of pipe segments.	
Plastic Pipe Design	Calculates design values for plastic pipe segments.	Supported methods: • AWWA C900-07 - PVC Occasional Surge Pressure Capacity • AWWA C900-07 - PVC Pressure Class Designation • AWWA C900-07 - PVC Recurring Surge Pressure Capacity • Plastic Pipe Institute - Inside Controlled Diameter • Plastic Pipe Institute - Outside Controlled Diameter



WaterCalc 1.0 Calculations & Features

Bending Stress - Span	Calculates values associated with a pipe span. Supports pinned and fixed end conditions.	
Hoop Stress	Calculates hoop stress and SMYS comparison for User specified conditions.	
Thermal Expansion	Calculates stress and change in length values associated with the temperature change of a pipe segment.	
Buoyancy	Calculates buoyancy and weight requirements for wet environment crossings.	
Surge Pressure	Calculates the pressure increase (surge pressure) associated with a sudden velocity change.	
Hydraulic Diameter	Calculates the hydraulic diameter of a pipe section based on User specified dimensional values.	Supported methods: <ul style="list-style-type: none"> • AWWA PVC Average Outside Diameter & Minimum Wall Thickness • Outside Diameter & Wall Thickness - Customary • Outside Diameter & Wall Thickness - Conservative • PPI Outside Diameter Controlled Pipe Using Dimension Ratio • PPI Outside Diameter Controlled Pipe Using Wall Thickness
Flow Area	Calculates the flow area of a pipe or opening based on User specified conditions.	
MISCELLANEOUS CALCULATIONS		
Pump	Calculates various values associated with pump operation including, flow rate, suction pressure, discharge pressure, pump efficiency, and power.	Supported method: <ul style="list-style-type: none"> • Theoretic (Centrifugal Water)
Velocity	Calculates the flow velocity through an opening.	
Reynolds Number	Calculates the Reynolds Number associated with User specified flow conditions.	
Container Volume	Calculates the volume of various shaped containers.	
UTILITY CALCULATIONS		
Unit Conversions	Calculates dimensional equivalent of a User specified value. Supports over 100 different dimensional units.	
SELECTED PROGRAM FEATURES		
Dimensional Units - Supports standard US, metric, and diverse unit systems. Includes a wide range of industry related units.		
User Interface - Provides intuitive and easy to understand and use fill-in-the-blank data screens for interacting with the many calculation routines.		
Pipe & Fitting Property Tables - A comprehensive set of tables provides values required by the various pipe and fitting calculations. Includes a robust editor which allows the User to add, delete, and modify the various items contained in the Property Tables, to meet their individual specific requirements.		

