

# EngCalc

for Pocket PC

Version 2.0  
User Guide

**Product of:-**

3GR Technologies

For Installation information & Sales/Support contacts refer the Read Me file.

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## Contents

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1	Introduction.....	3
1.1	Installation/Uninstallation.....	4
2	Application Overview.....	6
2.1	List of Calculators.....	7
2.2	List of Property Tables.....	13
2.3	To Start with Calculator Functions.....	20
3	Input Panel.....	21
4	In-Place Unit Converter.....	22
5	Preferences.....	23
6	How to Register.....	25

# 1. Introduction

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EngCalc is a Powerful calculator tool for Engineering professionals. It combines performance & accuracy which enables to perform complex engineering calculations.

## New Features:

- Calculations in **US units** or **Metric units**. Apply settings for all the calculators.
- Includes large input panel to enter values.
- Mostly operated with finger, no need of stylus.
- In-place Unit Conversion to switch between **US-Metric units for single Input/Output**.

**Note:** - Latest version of MxCalc SE is now installed separately. It's no longer embedded in the EngCalc program.

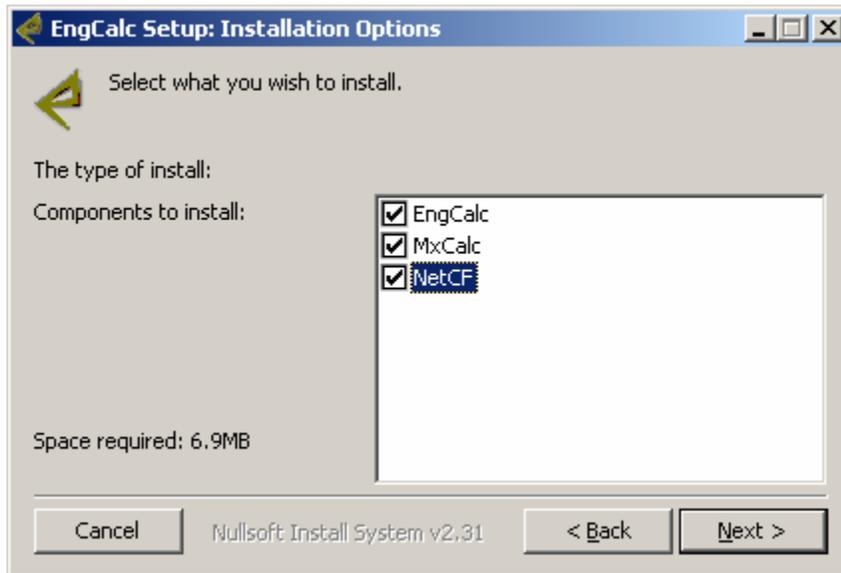
## 1.1 Installation/Uninstallation.

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### Requirements:

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.
- **.Net Framework**

To install the .net framework, check the NetCF option while installing the program. Selected by default.



Alternately you can download & install the .Net Framework from the following links in case the system prompts for missing runtime files.

- **Pocket PC (.Net Compact Framework)**

<http://www.microsoft.com/downloads/details.aspx?familyid=9655156b-356b-4a2c-857c-e62f50ae9a55&displaylang=en>

- **Desktop (.Net Framework)**

<http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5&displaylang=en>

### **Steps to Install EngCalc program.**

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.  
Execute EngCalcPPC\_Full.exe and follow instructions.
- When finished, go to Start Menu>>Program, here you will see the Icon of

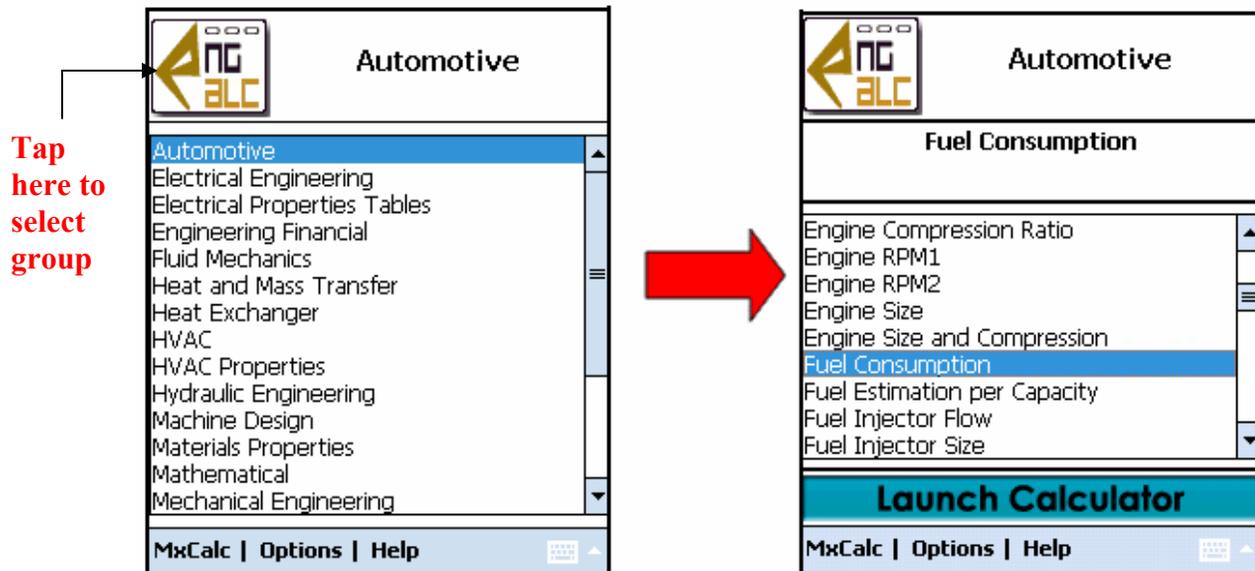


### **Steps to Uninstall EngCalc program.**

To remove the product from your Pocket PC:

- Go to **Start menu >> Settings**
- Select **System** Tab and tap on **Remove Programs**
- Select EngCalc from the list and tap on the Remove button
- Choose **"Yes"** to confirm removing

## 2. Application Overview



### How to Start

- To start with you need to select the group from the list of 16 Groups. This will become the default group to be loaded on program startup.
- As shown in the above figure tap the button shown to select the group.



- Select a Group from the list. **(E.g. In the above figure Automotive is selected.)**
- After that select the calculator **(E.g. after selecting Automotive group, Fuel Consumption calculator is selected.)**
- Tap on Launch Calculator button.

**Launch Calculator**

- The calculator consists of Inputs and Outputs. After entering the values in all the Inputs (**Mandatory**) tap **Calc** button.
- Options module helps you to customize Properties, Units, Calculator(s), and Group(s) by making them visible or hidden thereby saving the load time.
- To add a New Property, go to Options->New.

## 2.1 List of Calculators

### Automotive

Airflow Alternate Depression
CFM of Carburetor (Displacement in <sup>3</sup> )
Circle Surface Area
Coil Spring Rate
Cone Surface Area
Coolant Percentage
Coolant Volume
Crawl Ratio
Crawl Speed
Cube Surface Area
Cylinder Surface Area
Dew Point And Relative Humidity
Differential Gear Ratio
Drag Performance
Dyno Correction
Ellipse Surface Area
Engine Compression Distance
Engine Compression Ratio
Engine RPM1
Engine RPM2
Engine Size
Engine Size and Compression
Fuel Consumption
Fuel Estimation per Capacity
Fuel Injector Flow
Fuel Required For Trip
Gas Oil Mixture Ratio (Metric Values)
Gas Oil Mixture Ratio (US Values)
Gear Ratio Tire size
Gear Selector
Header Tube
Highway costs with energy track
Horse power Gain
Horsepower (ET method)
Horsepower (Trap-speed method)
Incline Downgrade Grade Percent
Inlet Runner Area to Engine Size Match
Irregular Triangle Surface Area
Metric Grade Percent1
Metric Grade Percent2
Metric Vertical Climb Index
Mileage Compensation
MPH
Oblong Cylindrical Tank Volume
Octane Rating
Optimum Runner Size

### Electrical Engineering

Ammeter Shunts
Cap. of a Sphere in Space (Capacitance)
Cap. of a Sphere in Space (Radius)
Capacitance
Capacitance Law
Capacitance of a Toroid
Capacitive Energy
Capacitor Charge
Cap-Freq-Ind (Capacitance)
Cap-Freq-Ind (Frequency)
Cap-Freq-Ind (Inductance)
CCD Object Size
Coulombs Law
Cylindrical Capacitor
DC Inductor Voltage
Electrical Harmonics
Helical Coil Inductance
Helical Primary Turns for Coils
Horsepower Created by a hydraulic motor
H-Pad Resistance
Impedance & Resonant Capacitor for Coils
Impedance & Resonant Capacitor for Coils
Inductance For Spiral Flat Coils
Inductive Energy
Inverting Amplifier
Jar Capacitance For Coils
L / C Reactance (Capacitive Reactance)
L / C Reactance (Inductive Reactance)
Len of Wire AND Freq. of Coil (Freq.of Coil)
Len of Wire AND Freq. of Coil (Len of Wire)
Motor calculation ( Fan - compressor motors )
Motor calculation ( Lifts, elevators and cranes )
Motor calculation ( Pump motor )
Motor Estimators ( Find Amps )
Motor Estimators ( Find HP )
Motor Estimators ( Kva ( 3 Phase ) )
Non-inverting Amplifier
Operation Amplifier ( Differential

Parabola Surface Area
Parallelogram Surface Area
Peak Torque RPM
Piston Speed
Post Trip Fuel Remaining
Potential Driving Time
Potential Speed
Propane Fumigation
Pump Pounds Per Square Inch
Pyramid Surface Area
Ramp Travel Index (RTI)
Rectangle Surface Area
Rectangular Prism Surface Area
Refrigerant Pressure Temperature
Regular Polygon Surface Area
Regular Triangle Surface Area
Rhombus Surface Area
RPM
Speed Potential
Sphere Surface Area
Spring Rate for Indep. Suspension
Spring rate for steel coil springs
Square Surface Area
Tire Height
Total Fuel Weight
Trapezoid Surface Area
Two-Stroke Premix Ratio1
Two-Stroke Premix Ratio2
US Fuel Mileage
Vehicle Stopping Distance
Vertical Change
Weight and Percentage
Wheel And Tire Motion

### Engineering Financial

Annual Compound Interest
Direct/Distributor Commission
Distributor Gross Profit Margin
Loan Amortization
Sales Price Discount and Profit
Special Distributor Discounts

### Heat and Mass Transfer

Avg FlatPlate Nusselt(laminar)
Black Body Radiation
Contact Heat Xfer Coeff
Convection-Conduction Network
Critical Radius of Insulation

Amplifier )
Operation Amplifier ( Inverting Amplifier )
Operation Amplifier ( Non-inverting Amplifier )
Parallel Capacitance
Parallel Inductance
Parallel Resistance
PCB Trace Width ( External Layer Results )
PCB Trace Width ( Internal Layer Results )
Plate Capacitor
Plate Type or Rolled Capacitor
Potential Divider (R1)
Potential Divider (R2)
Potential Divider (Resistors)
Potential Divider (Voltage Out)
Power Calculation
Power Calculation-Current
Power Calculation-Power
Power Calculation-Voltage
Power Factor from Power Factor Angle
Power Factor from Real Power
RC Transient
Reactance of Capacitor
Res-Freq-Cap (Capacitance)
Res-Freq-Cap (Frequency)
Res-Freq-Cap (Resistance)
Resistivity
Resonant LC Freq
RL Transient
RMS Calculations (Pulse Waveform)
RMS Calculations (Trapezoidal Waveform)
RMS Calculations (Triangle Waveform)
Series Capacitance
Series Inductance
Series Resistance
Solenoid Magnetic Field
Speaker 70 Volt Powered Line
Star/Delta Transformation ( Delta to Star )
Star/Delta Transformation ( Star to Delta )
Straight Wire Magnetic Field
Temperature Coefficient
Toroid Magnetic Field
T-Pad Resistance
Transformer Impedance
Transformer KVA Quick Calc ( 1 ph )

Entropy Exchange in HeatXfer
Film Temperature
Gray-body Radiation
Heat Conduction in Hollow Cylinder
Heat conduction in hollow sphere
Heat conduction in plane wall
Heat convection
Local FlatPlate Nusselt(laminar)
Nusselt for cylinder in cross-flow
Single-lump transient temperature evolution
Tube Flow Nusselt (turbulent)

### Heat Exchanger

Effectiveness of CounterFlow Double Pipe Exchanger
Effectiveness of Parallel Flow Double Pipe Exchanger
Fouling Factor
Heat Capacity Rate
Heat Capacity Rate Ratio
Heat Exchange-LMTD Relation (Dbl Pipe Exchanger)
Heat exchange-LMTD Relation (Non-Double Pipe Exch)
Heat Exchanger Enthalpy Flow
Heat Xfer Coeff Inside Smooth Tube Laminar Flow
Heat Xfer Coeff Inside Smooth Tube Turbulent Flow
LMTD (Log-mean Temp Difference)
no. of Xfer Units
Plate Heat Exchanger OHT Coeff
Thermal Effectiveness
Thermal Efficiency
Thermal efficiency-F-NTU Relation (R equal to 1)
Thermal Efficiency-F-NTU-R Relation (R not equal to 1)

### HVAC

Humidity Ratio
Mixture Density
Moist Air Density
Moist Air Enthalpy
Relative Humidity
Water Vapor Density

Transformer KVA Quick Calc( 3 ph)
Wheatstone Bridge

### Fluid Mechanics

Andrades equation
Atm Press variation in troposphere
Bernouillis equation
Biot
Capillary Pressure in Liquid Drop
Cavitation
Circular Disk in Normal, Creeping Flow Cd
Circular Disk in Parallel, Creeping Flow Cd
Critical pressure ratio
Drag Coefficient
Eckert
Fourier heat Xfer
Fourier mass Xfer
Froude
Grashof
Hydrostatic Pressure
Isentropic density-Mach relation
Isentropic pressure-Mach relation
Isentropic Temp-Mach relation
Isothermal Gas Layer Press-Elevation Relation
Kinematic Viscosity
Laminar b.l. displacement thickness
Laminar b.l. momentum thickness
Laminar b.l. thickness
Laminar BL Friction Drag Coeffi
Laminar BL Local Friction Coeff
Lewis
Lift Coefficient
Linear Thermal Expansion
Mach
Newtons Viscosity Law
Nusselt
Peclet heat Xfer
Peclet Mass Xfer
Prandtl
Pressure Coefficient
Reynolds
Roughness Ratio
Schmidt
Sherwood
Specific Heat Ratio
Speed of Sound
Stanton

## Hydraulic Engineering

BHP Req. to Pump any Fluid
Centrifugal Pump Head
Concrete Pipe (Gravity Flow Through Pipe)
Discharge From Open Horizontal Pipes
Discharge Time between Communicating Vessels
Flow Rate of Steam
Flow Rate of Water
Fluid Pressure on a Piston
Friction Head Loss in Pipes
Full Flow in Round Pipes
Horse Power
Hydraulic Flow Through Tubes
Hydraulic Systems
Ind. Waste Water Flow Rates (Parshall Flume)
Ind. Waste Water Flow Rates (Rectangular Weirs)
Ind. Waste Water Flow Rates (Triangular Weirs)
Liq. Vol. in Conical Bott. Vessels (Liq. Depth > Cone Depth)
Liquid Vol. in Conical Bottomed Vessels
Min. Req. Flow through Pumps
Pipe Size Requirements (For Dia. Of Pipe)
Pressure Loss Through Valves
Pumping Cost (Ductile Iron pipe)
Relative Capacities of Pipes
Reynolds Number and Laminar Flow
Speed
Speed of an Actuator
Tank Capacity, Surface Area and Metal Wt.
Tank Overflow and Vent Nozzle Sizes
Time Req. to Empty a Cone (Rounded Orifice)
Time Req. to Empty a Cone (Sharp Edged Orifice)
Time Req. to Empty a Cone (Short Flush-Mounted Tube)
Time Req. to Empty a Horiz. Cyl. (Rounded Orifice)
Time Req. to Empty a Horiz. Cyl. (Sharp Edged Orifice)
Time Req. to Empty a Horiz. Cyl. (Short Flush-Mounted Tube)
Time Req. to Empty a Sphere (Rounded Orifice)
Time Req. to Empty a Sphere (Sharp Edged Orifice)
Time Req. to Empty a Sphere (Short Flush-

Strouhal
Sutherlands Equation
Temp Ratio
Tensile Pipe Stress
Tensile Stress in Spherical Vessel
Transitional BL Friction Drag Coefficient
Weber

## Machine Design

Bridge Brakes
Capacities of Apron and Pan Conveyors
Capacity of Flat Belt
Capacity of Troughed Belts
Convert Belt Speed into RPM
Conveyor Capacity of a Screw Conveyor
Developed Length of Pipe Bends
Discharge Angle for Belt Leaving Pulley
Force on Chain or Belt
Gear Outside Diameter
Gravity Roller Capacity
Helical Gear Forces
HP of a Screw Conveyor
Length of a Helix
Length of a Spiral
Power Requirements in Turning
Presswork Force for Bending Material
Sizing Drive Pulleys Driven Pulley Speed
Sizing Drive Pulleys Driven Pulley Speed
Sizing Drive Pulleys Pitch Dia.
Sizing Drive Pulleys Speed
Spiral Wire Weight
Three Gear Drives
V-Belt Length
Worm Lead

## Mathematical

Area of a Circle
Area of a Fillet
Area of a Parabola
Area of a Parallelogram
Area of a Rectangle
Area of a Square
Area of a Trapezium
Area of an Ellipse (0.12)
Area of an Ellipse (0.36)

Mounted Tube)
Time Req. to Empty a Vert. Cyl. (Rounded Orifice)
Time Req. to Empty a Vert. Cyl. (Sharp Edged Orifice)
Time Req. to Empty a Vert. Cyl. (Short Flush-Mounted Tube)
Torque
Vertical Pipe Discharge
Water Flow
Work and Power

### Mechanical Engineering

Angular Motion
Avg Concrete Pipe Weight
Bevel Gear Forces
Blanking (Capacity of Press)
Blanking (material thickness < 0.25)
Capacity of Conical Storage Piles
Capacity of Triangular Storage Piles
Centrifugal force
Centrifugal Tension (Belt Or Chain)
Classical Kinetic Energy
Curling Punches for Rivets
Damped Sinusoidal Motion
Drums and Reels (Completely Filled)
Drums and Reels (Partially Filled)
Earth's Escape Velocity
Earths Gravitational Attraction
Estimating Air Consumption
Freq of Conical Pendulum
Frequency of mass-spring oscillator
Frustum of a Cone
Gravitational Free Fall
HeatLoss From Insulated Piping
Hollow Sphere OutsideRadius
Impact Force of Drop Hammer
Inclined plane
Linear Motion
Moment of Inertia
Newton's Second Law
Pipe Setback Length
Power Requirements of Drilling
Power Requirements of Milling
Rect. Duct Circular Equiv
Relativistic Energy
Sheet Metal Bend Allowance
SheetMetal BendAllowance(Radius < 2 * thickness)

Area of an Triangle
Calculate Dia. of Circle,Given side of a square
Calculate side of a square ,Given Dia. of Circle
Hollow Circle Sector
Quadratic Equation
Trigonometric Functions
Vol of a Cone
Vol of a Cube
Vol of a Cylinder
Vol of a Pyramid
Vol of a sphere
Vol of a Sphere Segment
Vol of a Torus
Vol of Annulus
Vol of Triangular Prism

### Pipe Flow

Darcy Equation
Darcy pipe flow
Flow from Side Orifice of a Tank
Flow Over a Rectangular Weir
Flow Over a Triangular Weir
Flow Under a Sluice Gate
Fluid flow with friction
Hagen-Poiseuille Equation
HeadLoss in Sudden Pipe Expansion
Laminar pipe flow friction factor
NPSH
Pipe Discharge
Pressure Drop
Swamee-Jain Equation

### Pneumatic Engineering

Air Compressor Input Power (Eff 50 %)
Air Cylinder Cushioning
Air Receiver Sizing
Air Valve Sizing, Cv
Pneumatic Valve Sizing, CV Method
Valve CV, Gases

### Pulp and Paper

Bond's Correlation - WaterVapor Pressure in Paper
Conversion Efficiency
Dewatering Ratio

SheetMetal BendAllowance(Radius $\geq 2 * \text{thickness}$ )
Simple Harmonic Motion
Speed
Sphere weight reduction by drilling a hole
Tonnage Req. for Dbl Right Angle Bends
Tubing Wall Thickness(Barlow's)
Tubing Wall Thickness(Clavarino's)
U-Bent Tubes Min. Allowable Thickness
Universal Gravitation
Velocity and Time (Freely Falling Body)
Volume
Volume and Surface Area of a Circular Ring
Volume and Weight of Pipe Insulation
Weight
Weight of Round Tubing

### Thermodynamics

Antoine Vapor Pressure
Black Body Radiation
Celsius-to-Kelvin conversion
Coeff of Performance
Efficiency of Carnot Cycle
Energy Conversion Efficiency
Enthalpy
Enthalpy-temp relation
Entropy of Liquid-Vapor Mixture
Entropy-temp-pressure relation
Entropy-temp-volume relation
Entropy-volume-pressure relation
Exergy
Flow Work
Gibbs Free Energy
Internal energy-temperature relation
Isentropic Efficiency
Liquid-Vapor Mixture (Enthalpy)
Liquid-Vapor Mixture (Internal Energy)
Liquid-Vapor Mixture (Specific Vol.)
Perfect gas isentropic transformation
Perfect gas isobaric transformation
Perfect gas isochoric transformation
Perfect gas isothermal transformation
Perfect gas law

Drying Rate
Permeability Coeff
Permeability Factor
Pressing Equation
Reduced Time
Residence Time
Unsteady-state Integration Constant
Unsteady-state solution
WaterVapor Pressure in Paper - Moisture $< 0.07$
WaterVapor Pressure in Paper - Moisture $> 0.07$

### Structural Engineering

Average Pipe Weight
Cantilever with End Load
Cantilever with End Moment
Cantilever with Intermediate Load ( $x < a$ )
Cantilever with Triangular Load Distribution
Cantilever with Uniform Load Distribution
Mixed Support with Uniform Load
Mixed Supported with Intermediate Load ( $x \leq a$ )
Mixed Supported with Intermediate Load ( $x > a$ )
React., Mom, Defl for Cantilever (load at free end)
React., Mom, Defl for Cantilever (uniform Load)
React., Mom, Defl for fixed beam (conc. center load)
React., Mom, Defl for fixed beam (uniform load)
React., Mom, Defl for one end fixed beam (uniform load)
React., Mom, Defl for supported beam (center load)
React., Mom, Defl for supported beam (uniform load)
Simply Supported with Center Load( $x \leq L/2$ )
Simply Supported with Center Load( $x > L/2$ )
Simply Supported with Two Equidistant Loads( $a < x \leq L-a$ )
Simply Supported with Two Equidistant Loads( $x \leq a$ )

Perfect gas polytropic transformation
Plancks Spectral Distribution Law
Pressure
Specific HeatCapacity Relationship
Thermal Capacity
Van der Waals
Wiens displacement law

Simply Supported with Two Equidistant Loads( $x>L-a$ )
Simply Supported With Uniform Load Distribution
Torsion Bars(Steel Torsion)
Torsional Stress on a Shaft

## 2.2 List of Property Tables

<b>Electrical Properties Table</b>	<b>Structural Properties Table</b>
IEC Frame Dimensions-AC Motors	Association Channels(AI)
IEC vs. NEMA Frame Comparison	Association I (AI)-Beams
Motor Ampere Rating	Std. Channels(AI) (Met)
NEMA Standard Frame size For AC Motors	Std. Channels(AI) (US)
NEMA Starter Sizes For AC Motors	Std. W(AI) - Beams
Ohm's Law	Steel Channels (Met)
Properties Of Bare Aluminum Wire(Met)	Steel Channels (US)
Properties Of Bare Aluminum Wire(US)	Steel I – Beams (S Section) (Met)
Properties Of Bare Copper Wire(Met)	Steel I – Beams (S Section) (US)
Properties Of Bare Aluminum Wire(US)	Steel I – Beams (W Section) (Met)
Resistor Color Codes	Steel I – Beams (W Section) (US)
Three – Phase AC Motors	
Three – Phase AC Motors – 50 Hz	

HVAC Properties Table	Material Properties Table
Air Flow Through DN Pipe- Pressure Drop	Aluminum Temper Designation
Air Flow Through Schedule 40 Pipe Clean Room Standard – BS- 5259	Box Nails
Clean Room Standard – FS- 209 - D	Coefficient of Fiction
Clean Room Standard – FS- 209 - E	Common Nails – Ring Barb Shank
Natural Gas Flow through SCH 40 Pipe-Properties of Air	Common Nails – Smooth Shank
Properties Of Saturated Steam Liquid	Cryogen Data
Saturation Properties Of Water Liquid	Dielectric Constants
Saturation Properties Of Water Vapor	Emissivity (Typical Values)
Saturation Properties Of Water vapor	Fishing Nails
Solar radiation Data	Fuel Gases
Std. Atmosphere Table (Met)	Galvanic List(Sea Water)
Std Atmosphere Table (US)	Index of Refraction
Vapor Pressure-Auto AC Type (Met)	Mechanical Properties Metals (Met)
Vapor Pressure-Auto AC Type (US)	Mechanical Properties Metals (US)
Vapor Pressure-Centrifugal AC Type (Met)	Mechanical Properties Non Metals (Met)
Vapor Pressure-Centrifugal AC Type (US)	Mechanical Properties Non Metals (US)
Vapor Pressure – R-12 Type(Met)	NPS to BSP Pipe Size Comparison
Vapor Pressure – R-12 Type(US)	NPS to DN Pipe Size Comparison
Vapor Pressure – R-22 Type(Met)	O-Ring Standard Sizes
	Periodic Chart
	Physical Properties – Metals(US)
	Plastic Properties (Met)
	Plastic Properties (US)
	Roofing Nails – Ring Barb Shank

Vapor Pressure – R-22 Type(US)	Roofing Nails – Smooth Shank
Vapor Pressure – R-502 Type(Met)	Standard Sheet Gauges (Met)
Vapor Pressure – R-502 Type(US)	Standard Sheet Gauges M
Vapor Pressure – Ultra Low Temp(Met)	Standard Wire Gauges (Met)
Vapor Pressure –Ultra Low Temp(US)	Standard Wire Gauges M
<b>Mechanical Properties Table</b>	Thermal Conductivity
Drill Sizes	Thermal Properties – Gases(Met)
Fiber Ropes-Braided(Met)	Thermal Properties – Gases(US)
Fiber Ropes-Braided(US)	Thermal Properties – Liquids(Met)
Fiber Ropes-Twisted(Met)	Thermal Properties – Liquids(US)
Fiber Ropes-Twisted(US)	Thermal Properties – Metals(Met)
Key and Keyways	Thermal Properties – Metals(US)
Roller Chain Dimensions – e	Thermal Properties – Non Metallic Solids(Met)
Roller Chain Dimensions – m	Thermal Properties –Non Metallic Solids(US)
Sleeve Bearing PV Limits	
Typical Breaking Strength of 6*19 Wire	
Wire Ropes 6*19 Fiber Core –IPS	
Wire Ropes 6*37 Fiber Core-IPS	
Wire Ropes 6*37 IWRC-XIPS	
Wire Ropes 6*37 IWRC-XXIPS	
Wire Ropes 8*19 Spin Resistant-Fiber Core	
Wood Screw Pilot Holes	

## Property Tables:

### Sample 1: Mechanical Properties Metals (Met):-

Main Menu - EngC 11:34

**Materials Properties**

**Mechanical Properties Metals (Met)**

- Galvanic List (Sea Water)
- Index of Refraction
- Mechanical Properties Metals (Met)**
- Mechanical Properties Metals (US)
- Mechanical Properties Non Metals (Met)
- Mechanical Properties Non Metals (US)
- NPS to BSP Pipe Size Comparison
- NPS to DN Pipe Size Comparison
- O-Ring Standard Sizes

**Launch Calculator**

MxCalc | Options | Help

Mechanical Prope 11:33

Type = Malleable (ASTM A-47)

Chem Name: Cast Iron

Type: Malleable (ASTM A)

PropertyName	PropertyValue
Density (kg/m3)	7308
Ultimate Tension (MPa)	345
Ultimate Compression	621
Ultimate Shear (MPa)	331
Yield Tension (MPa)	228
Yield Shear (MPa)	
Elastic Modulus (GPa)	166
Shear Modulus (GPa)	64
Thermal Expansion	12.1
Ductility % Elongation	10

### Sample 2: Periodic Chart:-

Main Menu - EngC 11:39

**Materials Properties**

**Periodic Chart**

- Mechanical Properties Non Metals (US)
- NPS to BSP Pipe Size Comparison
- NPS to DN Pipe Size Comparison
- O-Ring Standard Sizes
- Periodic Chart**
- Physical Properties - Metals (US)
- Plastic Properties (Met)
- Plastic Properties (US)
- Roofing Nails - Ring Barb Shank

**Launch Calculator**

MxCalc | Options | Help

Periodic Chart 11:40

CHEMICAL NAME = Hydrogen

CHEMICAL NAME: Hydrogen

SYMBOL: H

ATOMIC WT: 1.0079

BP (Deg.C): -252.87

MP (Deg.C): -259.14

THERMAL CONDUCTIVITY (W/cm-DENSITY (g/cc): 0.001815

VALENCE: +1

Page1 Page2

Periodic Chart 11:47 ok

Field1	Field2	Field3	Field4	Field5
CHEMICAL	SYMBOL	ATOMIC	BP	MP
Hydrogen	H	1.0079	-252.87	-259
Helium	He	4.0026	-268.6	-272
Lithium	Li	6.94	1347	180.5
Beryllium	Be	9.01218	2970	1278
Boron	B	10.81	2550	2300
Carbon	C	12.011	4827	3500
Nitrogen	N	14.0067	-195.8	-209
Oxygen	O	15.9994	-183	-218
Fluorine	F	18.99840	-188.14	-219
Neon	Ne	20.17	-246.1	-248
Sodium	Na	22.98977	882.9	97.8
Magnesium	Mg	24.305	1090	638.2

Page1 Page2

### Sample 3: Plastic Properties:-

Main Menu - EngC 11:51 ok



**Materials Properties**

**Plastic Properties (US)**

- Mechanical Properties Non Metals (US)
- NPS to BSP Pipe Size Comparison
- NPS to DN Pipe Size Comparison
- O-Ring Standard Sizes
- Periodic Chart
- Physical Properties - Metals (US)
- Plastic Properties (Met)
- Plastic Properties (US)**
- Roofing Nails - Ring Barb Shank

**Launch Calculator**

MxCalc | Options | Help

Plastic Properties 11:53 ok

PROPERTY = Specific Gravity

PROPERTY: Specific Grav

ASTM Test: D-792

Acetron GP: 1.41

ABS: 1.08

Acetron NS: 1.44

Delrin: 1.41

Delrin AF 100: 1.54

Nylon 66: 1.15

Page1 Page2

Field1	Field2	Field3	Field4	Field5
PROPERT	ASTM	Acetron	ABS	Acet
Specific	D-792	1.41	1.08	1.44
Tensile	D-638	10000	6500	7500
Tensile	D-638	400000	320000	4000
Elongator	D-638	30	20	10
Flexural	D-790	12000	11000	1500
Flexural	D-790	400000	330000	4000
Shear	D-732	8000		6000
Compress	D-695	15000	6750	1500
Compress	D-695	400000		3150
Impact	D-256	1	2	0.7
Coefficier		0.25		0.2
Wear		216		23

Sample 4: Aluminum Temper Designation:-

Main Menu - EngC 11:58

**Materials Properties**

**Aluminum Temper Designation**

- Aluminum Temper Designation
- Box Nails
- Coefficient of Friction
- Common Nails - Ring Barb Shank
- Common Nails - Smooth Shank
- Cryogen Data
- Dielectric Constants
- Emissivity (Typical Values)
- Finishing Nails

**Launch Calculator**

MxCalc | Options | Help

Field1	Field2
--	Aluminum is specified
--	For example: 5052-
--	strain hardened and
-H	Strain hardened (cold
-H1	Strain hardened
-H2	Strain hardened and
-H3	Strain hardened and
2nd Digit	A second digit
--	-Hx2 = 1/4 hard.
--	-Hx4 = 1/2 hard.
--	-Hx6 = 3/4 hard.
--	-Hx8 = full hard.
-O	Full Soft (annealed).
-T	Heat treated to
-T1	Partially solution heat

Sample 5: Galvanic List:-



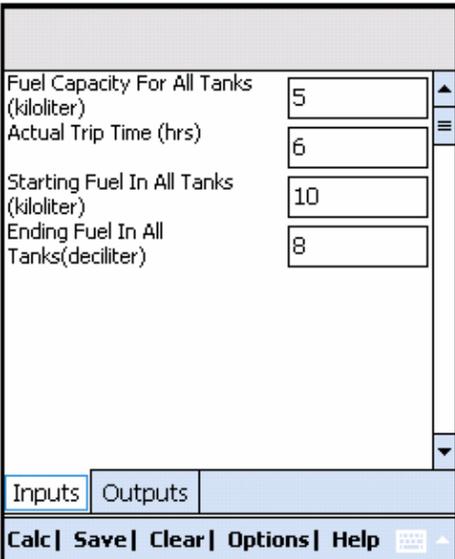
## 2.3 To Start with Calculator Functions:

- The Calculator consists of Inputs and Outputs.
- For Ex: Name of the Calculator: Fuel Consumption.

**Inputs:** Fuel Capacity For All Tanks (kiloliter), Actual Trip Time (hrs), Starting Fuel In All Tanks (kiloliter), Ending Fuel In All Tanks (deciliter)

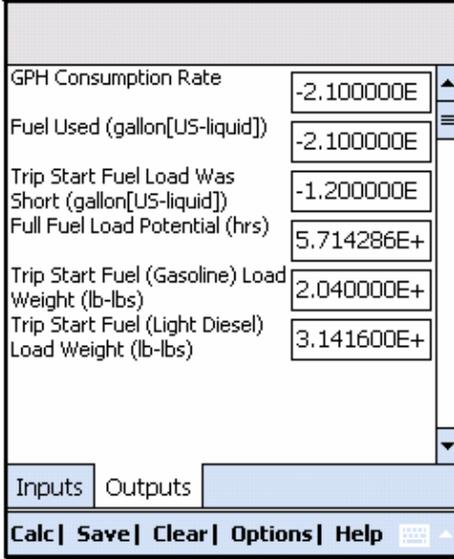
**Outputs:** GPH Consumption Rate, Fuel Used(gallon[US-liquid]), Trip Start Fuel Load Was Short(gallon[US-liquid]), Full Fuel Load Potential(hrs), Trip Start Fuel(Gasoline) Load Weight(lb-lbs), Trip Start Fuel(Light Diesel), Load Weight(lb-lbs)

**Calculator Inputs**





**Calculator Outputs**



- After entering values in the Inputs, Tap on **Calc** button at the bottom of the screen, the output will be displayed.
- Tap on the Output value to view the complete output at the top of the screen.
- Tap on **Save** to save the Calculation.
- Tap **clear** to clear values.
- Tap on **ok** to return to the main screen.

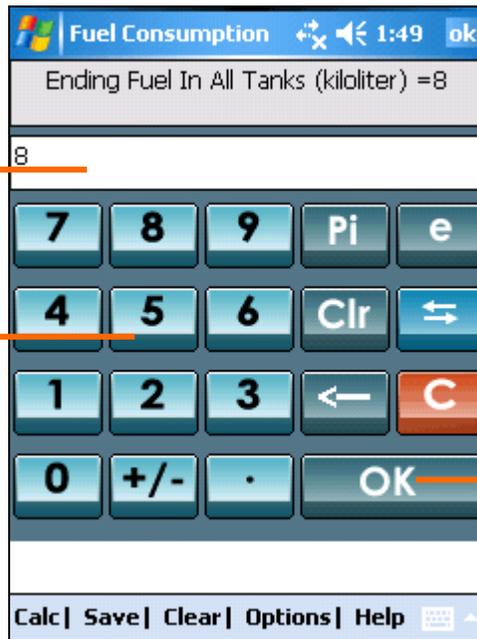
### 3. Input Panel: -

- Input Panel will pop-up as soon as you tap on the input Area. You can see the complete input at the top of the screen.
- It is used to enter values for inputs.
- Tap on any Input Box and tap on any number pad item to enter the data

**Input Box where you have to enter the values**

**Number Pad**

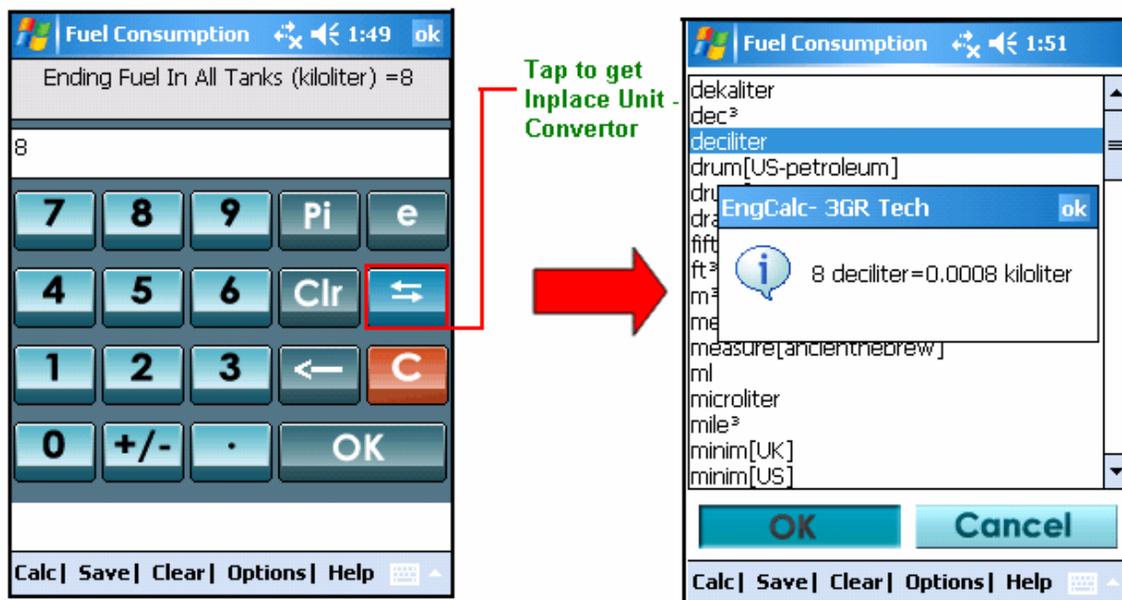
**Tap this button after entering the**



## 4. In-Place Unit Converter: -

You can now convert units with the help of In-Place unit converter utility which is strongly integrated with calculator in a manner by which you can enter the inputs in the Unit you have acquired the value. This is useful at the time of changing between US-Metric units. To select the Unit click on the small button next to each & every Input Box. Before tapping on the conversion button you will need to enter the value in the Inputs Box.

**For example if you have the acquired the value in Centimeters & the Inputs requires in Inches, in such case you need to select Centimeters from the list of Units that you see after tapping on the Conversion button.**



- If you want to calculate the input entered in the given textbox with another unit, Tap to get In-place Unit Converter as shown in the figure.
- After clicking In-Place Unit Converter you will get the screen as above.
- Select the unit in which you want to convert.

## 5. Preferences:-

### 5.1 Customize

#### You can hide the Groups or properties.

- Select an option from top of the screen. Selecting a Group or Property will display the Formulas or Units respectively
- Select items from the list (**multiple selection supported**) and then tap on '->' Button to hide or '<-' Button to show. Tapping on '=>' Button will make all the items in the Left list Hidden and tapping on '<=' Button will make all the items in the Right list Visible

#### **Note: Properties and Groups marked, as Hidden will not be displayed in the List**

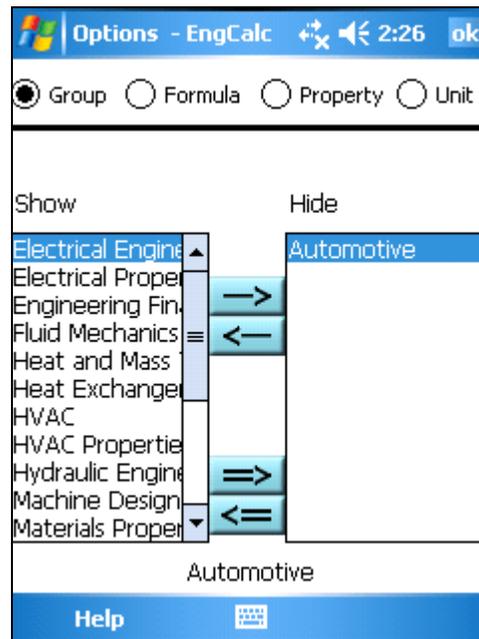
The options module allows you to hide/show items in the list of Groups, Properties, and Formulas & Units. The items which are very rarely used can be hidden. Those items which are marked as hidden are not populated in the list and hence making the list short and easy to scroll.

#### Following are the steps for Hiding/Showing any Group or Property:-

- Select an option from Menu. This will load the lists with visible items (**left**) and Hidden items (**right**).
- Select items from the list (**multiple selection supported**) and then tap on '->' Button to hide or '<-' Button to show. Tapping on '=>' Button will make all the items in the Left list Hidden and tapping on '<=' Button will make all the items in the Right list Visible

#### Following are the steps for Hiding/Showing any Formula or Unit:-

- Select an option from Menu. Selecting a Group or Property will display the Formulas or Units respectively.
- Select items from the list (**multiple selection supported**) and then tap on '->' Button to hide or '<-' Button to show. Tapping on '=>' Button will make all the items in the Left list Hidden and tapping on '<=' Button will make all the items in the Right list Visible

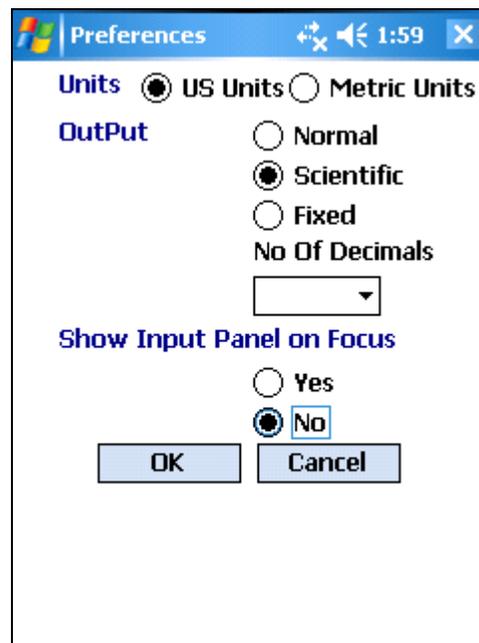
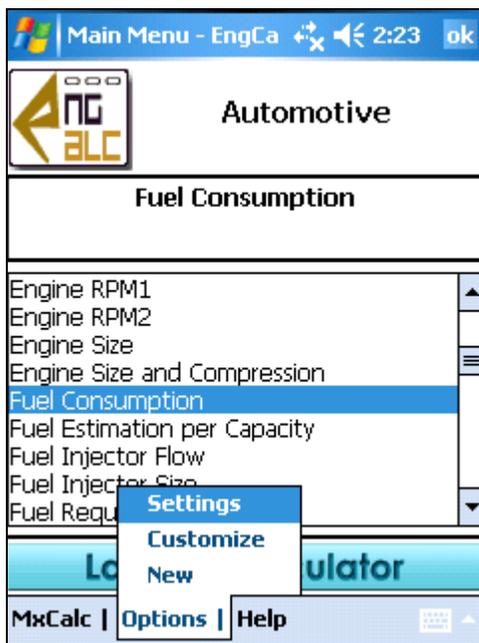


#### **Note: Properties and Groups marked as Hidden will not be displayed in the List.**

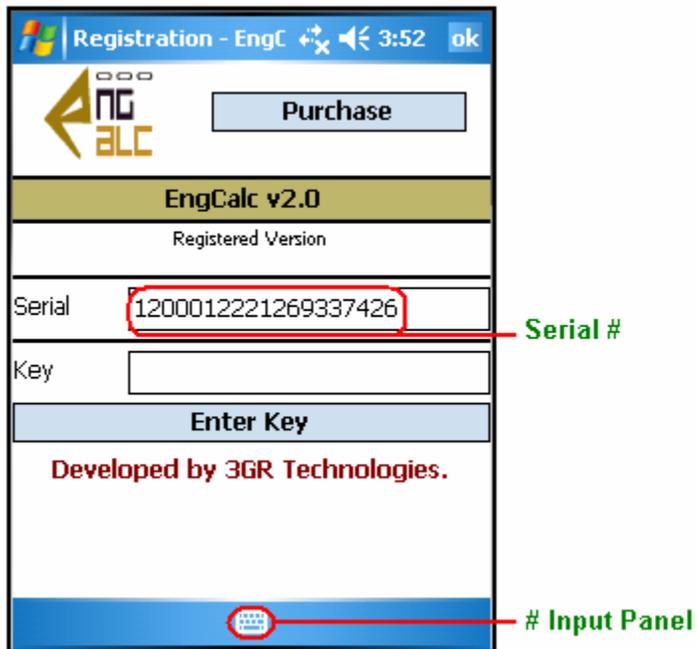
## 5.2 Settings

Two settings are there.

1. Us Unit.
2. Metric Unit.
  - Select US or Metric unit standard. This will become the units standard across all the calculators.
  - You can also change the units from the calculator with the help of In-Place unit conversion which is discussed in this document as a separate topic.
  - You can set the output to Normal, Scientific or Fixed mode.
  - You can set the No. Of Decimals.
  - Also you can show or hide the Input Panel on Focus

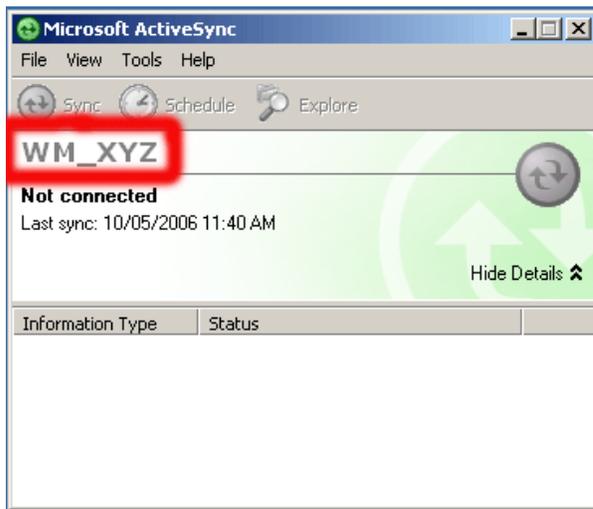


## 6. How to Register.....



Trial version of EngCalc is available. You can use the trial this version up to 15 uses. After that you will have to register the product. Registration process is simple.

- Tap on **Help** → **Register** in menu
- Enter Serial number.
- Enter key using input panel.
- Tap 'Enter Key' button.



- To register you will need the ActiveSync ID. You can locate the ActiveSync ID as shown.
- In the example given 'WM\_XYZ' is the ActiveSync ID.
- Enter the serial # and tap on **Enter Key** button.