

Technical Teaching Equipment

This Computer Aided Learning Software (Results Calculation and Analysis) "CAL" is a Windows based software, simple and very easy to use, specifically developed by EDIBON. It has been designed to cover different technical areas such as: Electronics, Communications, Electricity, Energy, Mechatronics & Automation, Mechanics & Materials, Fluid Mechanics & Aerodynamics, Thermodynamics & Thermotechnics, Process Control, Chemical Engineering, Food & Water Technologies and Environment.

CAL is a class assistant that helps in doing the necessary calculations to extract the right conclusions from data obtained during the experimental practices. With a single click, CAL computes the value of all the variables involved and performs the calculations.

Also, CAL allows to plot and print the results. Within the plotting options, any variable can be represented against any other.

Available different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.

COMPUTER AIDED LEARNING

FME13
Centrifugal Pump Characteristics
Hydraulic Efficiency

Constants

g (m/s ²)	DisDia (m)	AdmDia (m)	DeltaZ (m)	SpWeight (kg/(ms))
9,8	0,024	0,024	0,018	9800

Buttons: COMPUTE, LOAD FILE, PLOT, SAVE, CLEAR TABLE, MAIN MENU, ADDITIONAL HELP, QUIT CAL

Torque (Nm)	Speed (rpm)	Flow (l/min)	Padm (bar)	Pdis (bar)	Ht (m)	Nh (Watts)	Nm (Watts)	Eff (%)
50	280	80	1	10	91,854735	1199,935145	1466,075333	81,846759
40	250	70	1	9	81,650653	933,805898	1047,196667	89,171966
30	240	60	1	8	71,446571	700,176396	753,981600	92,863857
25	235	50	1	7	61,242490	499,946943	615,228042	81,252054
20	230	45	1	6	51,038408	375,132299	481,710467	77,875057

On a table, we introduce data obtained during the development of the exercise.

Above this table, it is shown "Constants" theoretically involved with the field of study. The values of these "Constants" may be modified to our convenience, assigning the appropriate values.

Simply, by clicking on "COMPUTE", CAL performs the calculations of the desired variables.

We can save and print the data of the experiment or calculations.

Also we can load any data file saved previously.

With the calculated variables, CAL gives the option of plotting the results. It is possible to represent any variable against any other. It has the option of representing the graph with different layouts. Screens below give an example of the multiple choices.

COMPUTER AIDED LEARNING

Axis: Flow (l/min) | Yaxis: Eff (%)

Buttons: PRINT TO FILE, PRINT TO SCREEN

Graph options menu: Common Plots, Color, Line Style, Line Width, Anti-Aliased, Bar Plots, Fill Base Line, Interpolation, Point Style, X Scale, Y Scale

Graph showing Eff (%) vs Flow (l/min) with a green filled area under the curve.

We can save or print the graphs.

CAL has a wide range of help information. By clicking the button "ADDITIONAL HELP" opens a window where we have information about typical Constants, International System Units, Conversion Factors, and Table of Main Integrals and Derivatives (General), and there is other specific help for the particular unit.

General

CONSTANTS I.S. UNITS CONV. FACTORS MAIN INTEGRALS DERIVATES

SI base units

Name	Symbol	Quantity
metre	m	Length
kilogram	kg	Mass
second	s	Time
ampere	A	Electrical current
kelvin	K	Thermodynamic temperature
mole	mol	Amount of substance
candela	cd	Luminous intensity

SI-Prefixes

Name	yotta	zetta	exa	peta	tera	giga	mega	kilo	hecto	deca
Symbol	Y	Z	E	P	T	G	M	k	h	da
Factor	10^{24}	10^{21}	10^{18}	10^{15}	10^{12}	10^9	10^6	10^3	10^2	10^1
Name	deci	centi	milli	micro	nano	pico	femto	atto	zepto	yocto

NON-INVERTING AMPLIFIER

$$V_{out} = V_{in} \left(1 + \frac{R_2}{R_1} \right)$$

ADDER AMPLIFIER

$$V_{out} = -V_{in} \frac{R_2}{R_1}$$

DIFFERENTIAL AMPLIFIER

*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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REPRESENTATIVE:

