

LCA/LCC Program for Buildings (V2.0 3-2009) Quick User Guide

Life cycle assessment (LCA) is a quantitative method for assessing the environmental impacts of products, from cradle-to-grave. While the use of life cycle costing (LCC) is a quantitative method for assessing the economic or financial viability of investments, to inform selection of the most worthwhile design options. This Quick User Guide highlights the program characteristics and main functions of the LCA/LCC program developed by EMSD.

System Requirement

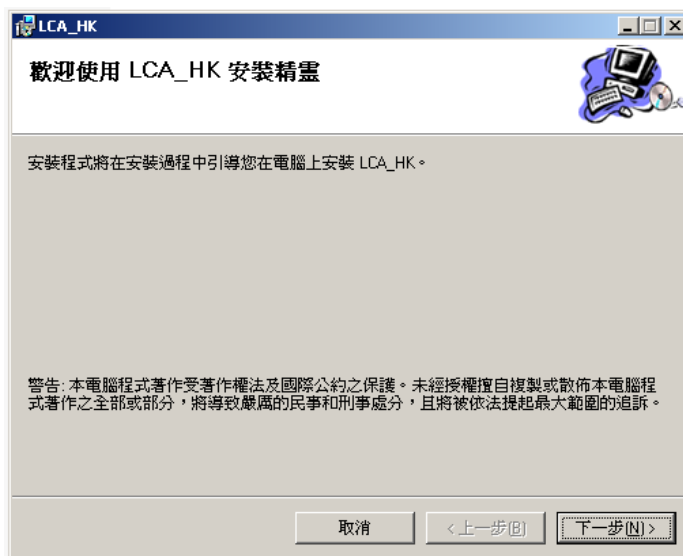
Microsoft Windows 2000

Microsoft Windows XP / XP Professional

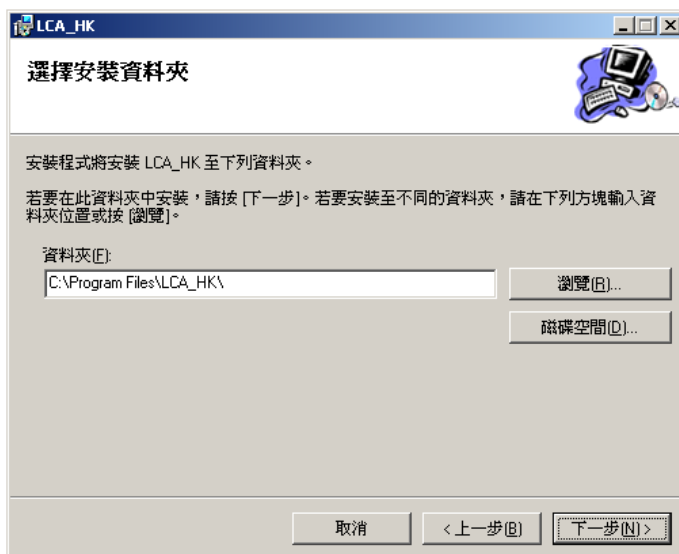
Microsoft Windows Vista

Installation Procedure

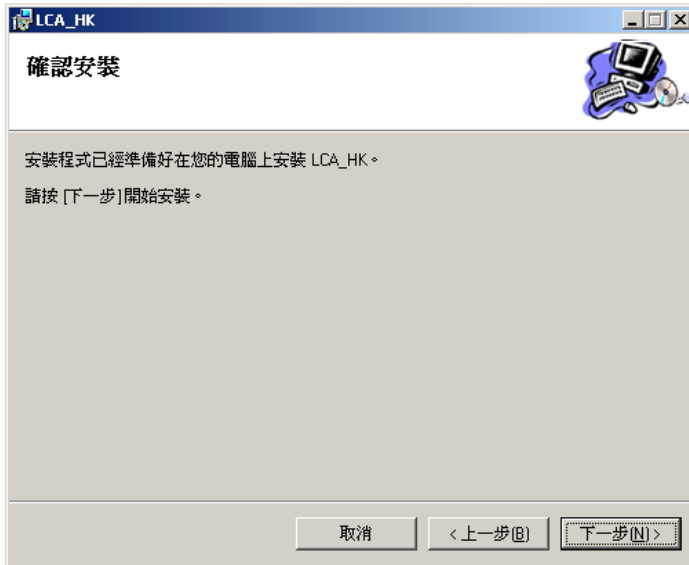
1. Double click "setup.exe" file
2. Follow setup wizard to continue installation procedure.



3. Identify location for program installation



4. Click "Next" (下一步) to start program installation



5. Installation complete

Main Input Interfaces

[Detail data input procedure can be referred to the demonstration video and the corresponding tutorial notes.]

1. Building and system input for material consumption and life cycle environmental impact assessment.

Building and System

Project Name: Model Office Building CFA (sqm): 51840 Return

Foundation Name No. in Building: 1 Comp(s) to be Assessed: All

Floor Name No. in Building: 39 Comp(s) to be Assessed: All

Services Name No. in Building: 1 Comp(s) to be Assessed: All

Floor Component and Elements

Floor Name: MBTypF Floor Component Name: Beams No. in this Floor: 1

Component Type: Frame Elements in this Component (Max. No. 20): Beam5400, Beam5600, Beam5675, Beam5750, Beam10100

Element Name: Beam5600 Element Type: RC 45 Beam

Item	Unit	Value	Remark
Width	m	0.25	
Depth	m	0.5	
Span	m	89.6	
Steel	kg/m ³	80	
Plywood thickness	m	0.019	
Times of use of Formwork	no.	12	

2. Input for energy calculation

Inputs for Energy Calculation

Zone Characteristics

Total No. of Unique Zones in Building (Max. 20): 2 Enter

of Identical Zones: 1 40th Floor Zone Name

No. of Unique Rooms in Zone (Max. 12): 5 Enter

Room Characteristics

Room Name: N40 Room Type: Office # of Identical Rms: 1

Area (sqm): 144.44 Height (m): 3.2 # of Occupants: 16 Vent. Rate (l/s/p): 10

Rm Temp (C): 25.5 Rm RH (%): 54 Lgt Ld (W/sqm): 25 Eqp Ld (W/sqm): 25

No. of Fabric Components (Max. 10): 7 Enter

Fabric Component Characteristics

Component Name: N40ExtWall Component Type: External Wall Area (sqm): 57.6

Construction: Sel ExtWall Orientation: N

Shading Mask: Sel Enter

Central BS Plants

Type of Central AC Plant

Type of heat rejection system: Air-cooled

Type of chilled water pumping system: Single-loop

Characteristics of Plant

Item	Unit	Value
Plant Start Hour (0-23)		8
Plant Stop Hour (1-24)		19
Design air temp. entering condenser	Deg.C	35

Air Side Air Conditioning System in Selected Zone

Zone Name: 40th Floor

Type of Air-conditioning System: VAV System with Inlet Guide Vane Control

Type of Fresh Air Supply System: Central Pretreated

Design Sensible Cooling Load of the Zone (kW): 102

Design Total Cooling Load of the Zone (kW): 112

Design Supply Air Flow Rate for the Zone (cu.m/s): 8.8

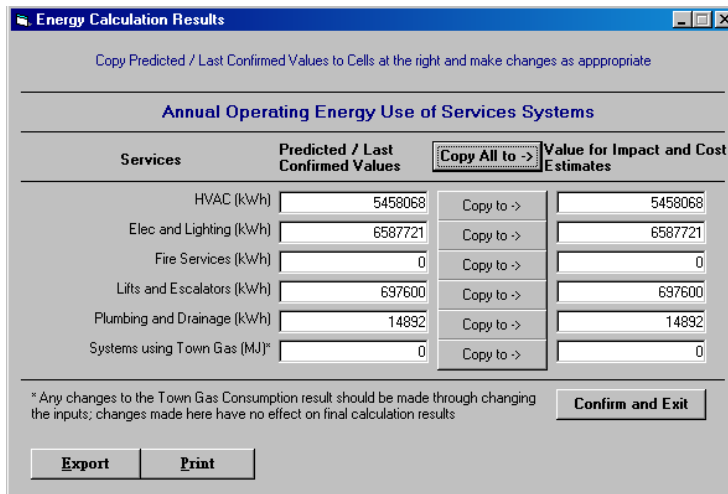
Design Supply Air Fan Pressure (Pa): 1125

Design Supply Air Fan Power (kW): 18

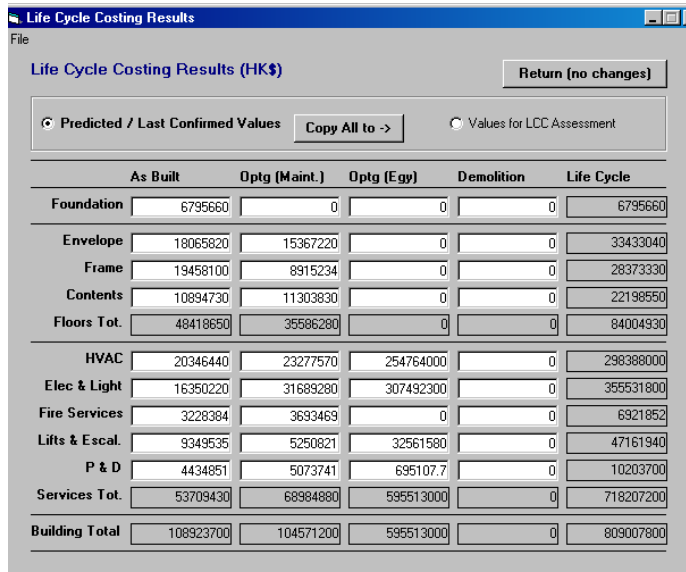
Design Chilled Water Flow Rate (kg/s): 5.01

Results generated from the Program

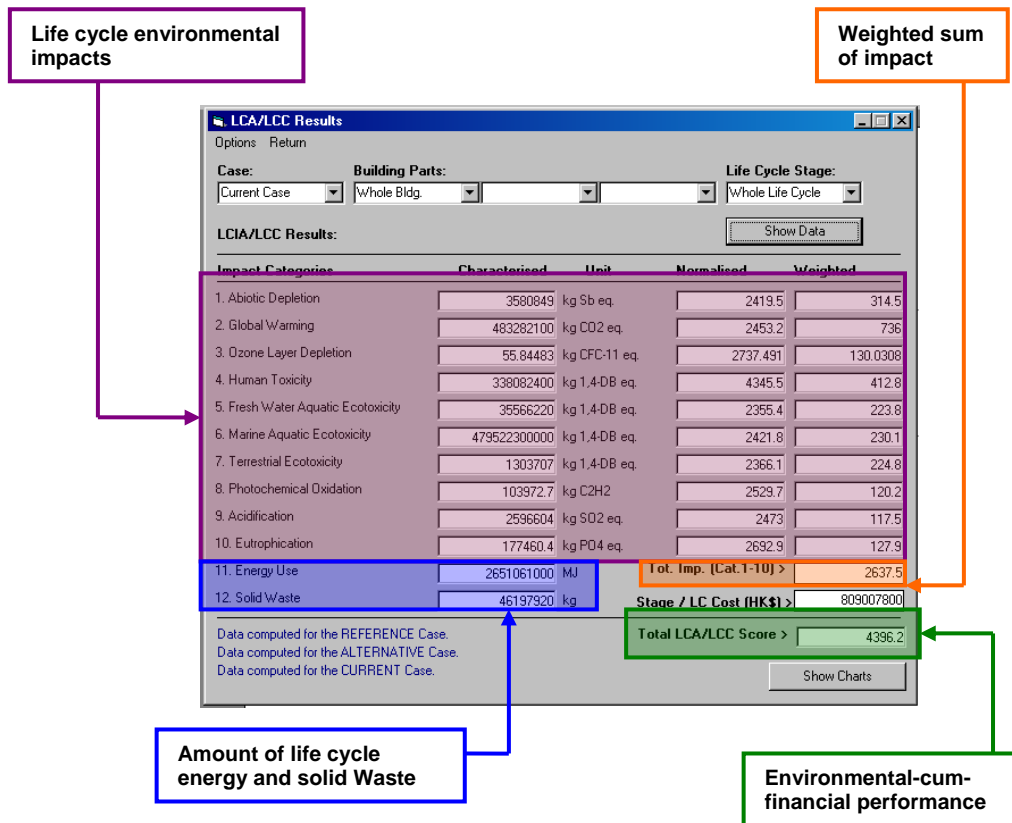
1. The annual operating energy use of a building for running the major building services systems in the building, which include air-conditioning and mechanical ventilation systems, lighting installations and other electric appliances, lifts and escalators, fire services, plumbing and drainage installations, and where applicable, gas consuming equipment in the building.



2. Life cycle cost due to consumption of materials and energy for construction, operation, maintenance and demolition of a building.



3. The life cycle environmental impacts of the assessed building, quantified by a set of 10 impact indicators, one for each of the 10 impact categories embraced by the adopted life cycle impact assessment (LCIA) method. All results calculated after the characterization, normalization and weighting steps of the LCIA process will be shown.
4. The weighted sum of the impacts of the 10 impact categories, as an all-embracing environmental impact indicator.
5. The amount of life cycle energy and solid wastes that will be produced during the construction and demolition of the building and due to replacement of components throughout the operating stage of the building.
6. An overall performance indicator that represents the environmental-cum-financial performance of the assessed building



7. Breakdowns of the life cycle impact, cost, energy use and solid waste production of the assessed building by different composing parts of the building and by different stages in the life cycle of the building.

