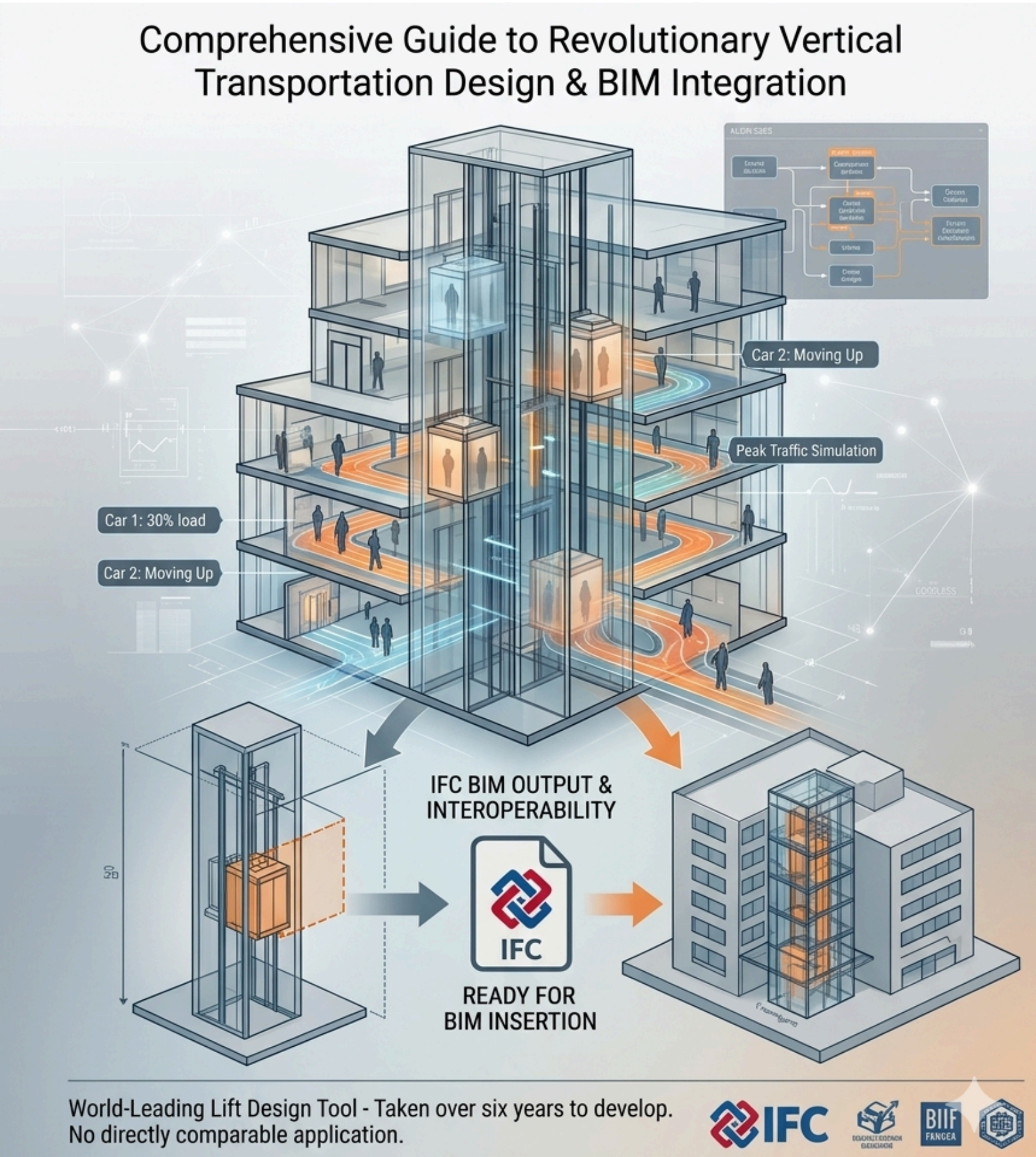
ADSIMULO

Basic Manual

Lift Traffic Analysis & Simulation Application



World-Leading Lift Design Tool - Taken over six years to develop.
No directly comparable application.

Table of Contents

Introducing AdSimulo

AdSimulo is a lift traffic analysis and simulation application for architects, lift (elevator) designers and consultants.

Main Features

- Online Design Application
- Expert System
- Visualisation
- Automated Reporting
- BIM Output

> *Please note: AdSimulo is an extremely powerful traffic analysis tool. However, it will not make the user an elevator traffic analysis expert. Before you use AdSimulo, please visit our AdSimulo University where you can view videos and tutorials to get yourself familiarised with our software.*

System Requirements

AdSimulo is a web application, so nearly any computer connected to the Internet should be capable of running our software. All intensive processing is performed on our servers, and results are sent directly to your browser.

For best results, always use the latest version of your HTML 5 compatible browser, for example Google Chrome, Microsoft Edge, Mozilla Firefox, or Safari (version 3.1 or higher).

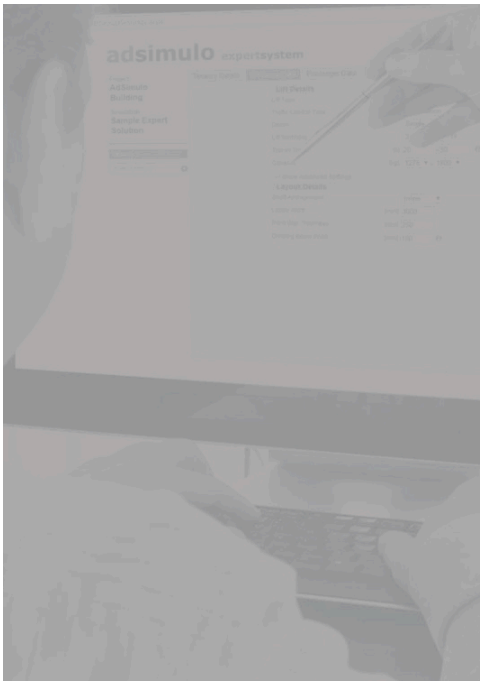
An internet connection with at least 10 Mbps capacity is recommended to view the online simulation and visualisation video. For all other system functions, standard connection speed will be sufficient.

AdSimulo supports all major web browsers — if you have a computer with an internet connection, you can use it without installing any additional software.

You may need other software packages in order to use the results of your simulations (which are downloaded from our servers). For example, you may need Microsoft Word to view and edit automatically generated simulation reports, or a 3D CAD viewer/program such as REVIT to use our BIM output.

Using AdSimulo

Login to AdSimulo and check out the home screen. You can start a new project by clicking the New Project button.

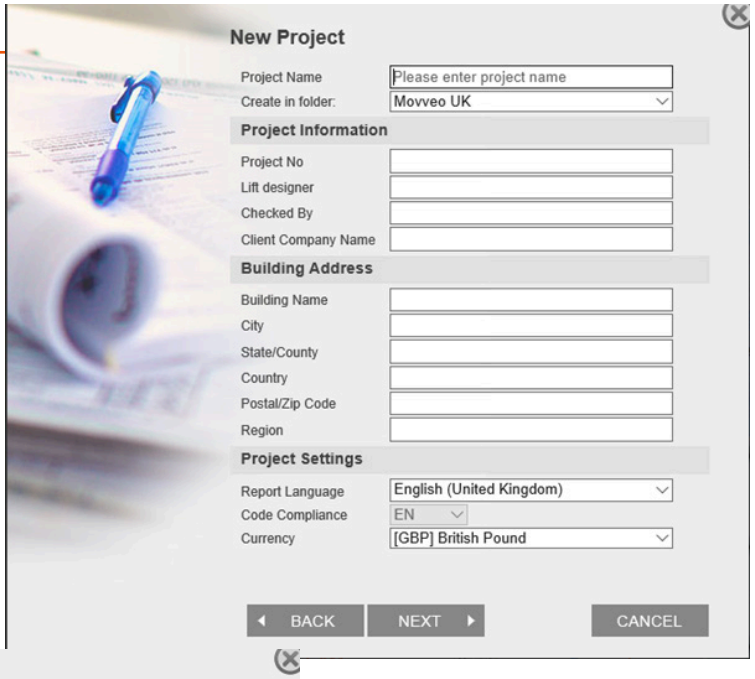


Entering New Project Data

New project data allows you to record details of the project and who has performed the calculations. This information, together with the building address, is included in the header of all analysis report output.

Please click on "Create in folder" and choose the correct company/folder name you would like your project to be created in.

Click on "NEXT" and continue to fill in the second page of new project data. Here you can give your simulation a name and add any comments needed.

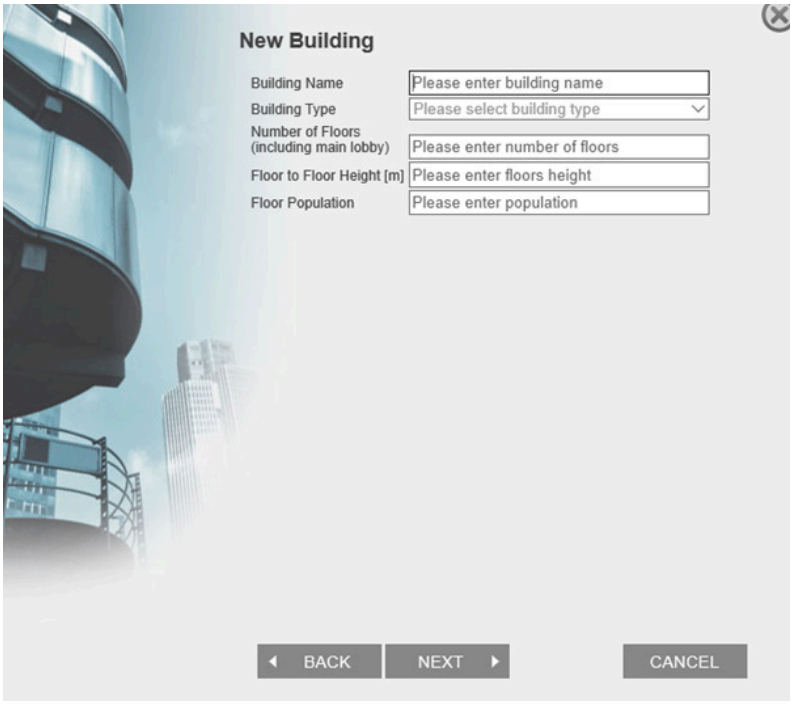


Enter Building Data

Enter the building name, then click on "Building Type" in the dropdown menu. Choose the correct building type to fit your building tenancy type.

Enter in the number of floors, floor height (in metres) and your estimated floor population per floor. Don't worry if some of your floors are higher than others and have a different population — you can adjust that later on.

When you finish, click the "NEXT" button.

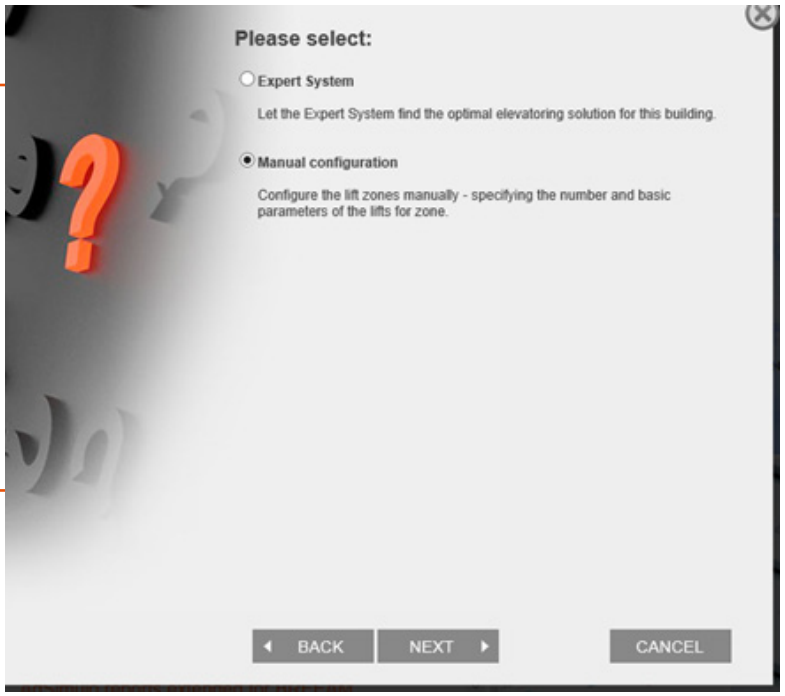


Expert Analysis

Let the expert system find the optimal solution for this building. Please bear in mind that this can take a bit longer than a manual simulation, as our system has to work out many solutions for you. You can start other projects while the expert system is running the calculations.

Manual Configuration

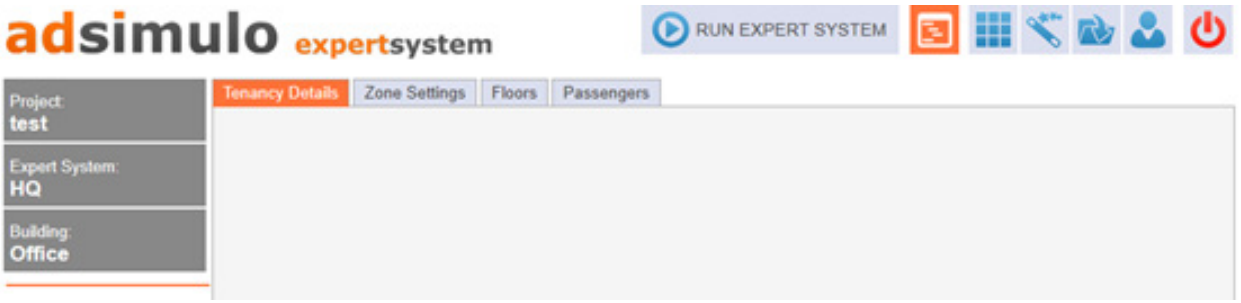
Configure the lifts and zones manually — specifying the number and basic parameters of the lifts for each zone.



Expert System Simulation Menu

Once the information is filled in, the building data will be configured into the following data sheet. If there is nothing to be edited, click "RUN EXPERT SYSTEM".

If you have any changes to make, click "Edit" and go through each data sheet making edits as you desire.



Tenancy Details Data

Default settings which can be adjusted will be shown according to building data.

Tenancy details include:

- Tenancy name
- Type
- Number of floors (including main lobby)
- Value of Space

Zone Setting Data

Default settings which can be adjusted will be shown according to building data.

Lift Details include:

- Lift Type
- Traffic control type
- Deck(s)
- Number of lifts per zone
- Transit time range
- Capacity range

Layout details include:

- Shaft arrangement
- Building tolerance
- Lobby width
- Front wall thickness
- Dividing beam width

Floor Data

Default settings which can be adjusted will be shown according to building data.

Floor data includes:

- Floor name
- Floor to floor height
- Floor population
- Entrance bias

Passenger Data

Default settings which can be adjusted will be shown according to building data.

Passenger data includes:

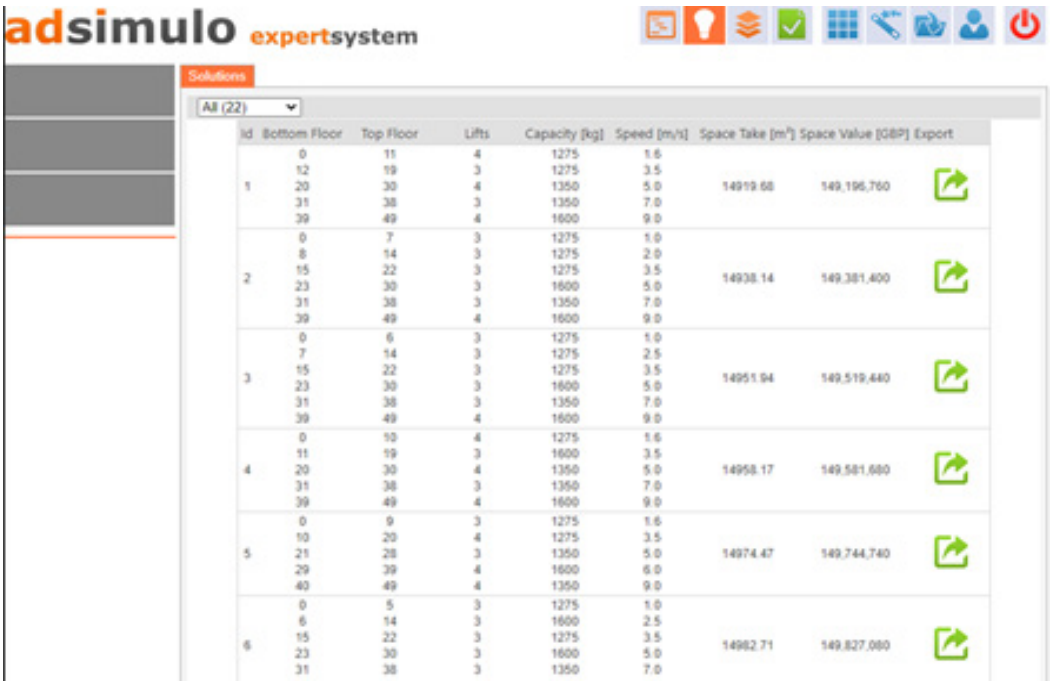
- Passenger generator details
- Capacity factor
- Passenger mass
- Show advanced settings
- Traffic scenarios

Expert Analysis Solution Table

The AdSimulo expert system enables thousands of potential solutions to be tested in minutes using cloud computing techniques. All you have to do is specify the number of floors, floor population and floor to floor height, as well as traffic design criteria.

"Optimal" solutions are those that meet all the design criteria specified whilst minimising the footprint (number of square metres of building space) taken out of the building. The "expert system" will only identify solutions that enable the correct levels of lift service in terms of "quality" and "quantity" of service.

Once you have picked the result that suits you, press the green export button next to the solution, then tick "open after export" and press Export

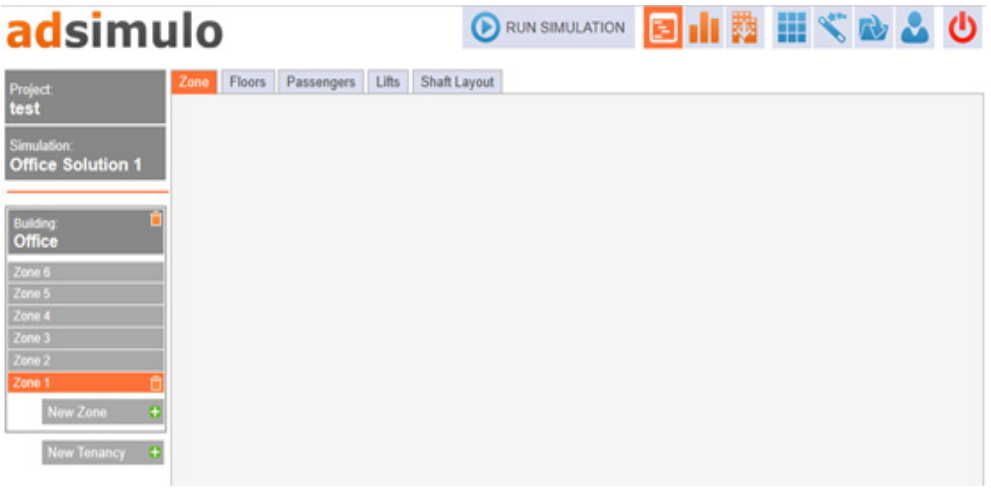


Expert Analysis Report

Click on the report button to prepare a full report in Microsoft DOCX format. Once the icon turns green, you can press it again to download the report. The same principle applies to get the BIM files and all other reports.

Manual Simulation Menu

The option you have selected via expert analysis will be configured into the following data sheet. If there is nothing to be edited, please click "RUN SIMULATION".



Otherwise, click "Edit" and go through each data sheet.

If you start your "Manual configuration" analysis, the parameters in each data sheet will need to be set up.

Zone Setting Data

Default settings which can be adjusted will be shown according to building data.

Zone Configuration includes:

- Zone name
- Lift settings
- Number of lifts
- Traffic Control type

Zone Layout includes:

- Lift Shaft arrangement
- Lobby arrangement
- Building tolerance
- Lobby width
- Front wall thickness
- Machine room slab thickness
- Lifting beam height

Floor Data

Default settings which can be adjusted will be shown according to building data.

Floor data includes: Floor name, floor to floor height, floor population, and entrance bias.
Floor stop colours are indicated as follows:

White	Non-stop
Blue	Stop
Red	Priority stop (double-click to set)

Passenger Data

Default settings which can be adjusted will be shown according to building data.

Passenger data includes:

- Passenger generator details
- Capacity factor
- Passenger mass

Click on "Show advanced settings" to edit entrance bias and traffic scenarios.

Lift Data

Default settings which can be adjusted will be shown according to building data. Click on each drop-down option to select desired parameters, or you can type in your desired parameters (values must still fit existing specifications).

Lift Data includes:

- Decks
- Car shape
- Lift Type
- Capacity
- Speed
- Acceleration
- Jerk
- Motor start delay
- Hall call dwell time
- Main floor dwell time
- Passenger loading time
- Passenger unloading time
- Door opening time
- Door closing time
- Pre-opening time
- Reopening

Shaft Layout Data

Default settings which can be adjusted will be shown according to building data. Click on each dropdown option to select the desired parameter.

Opening a Project

Open a project by clicking the "OPEN PROJECT" button on the home screen.

Viewing the Results

When viewing results, the following information is displayed:

Project	Name of the project
Simulation	Type of building (e.g. Office, Car Park, Hotel, Retail complex) and type of lift (e.g. Passenger Lift, Bicycle Passenger Lift, Service Lift for Hotel)
Date	Select date

Example: An office passenger lift with a car parking facility at basement level; main lobby is at ground floor.

Floor No.	Fl to Fl Height (mm)	Population (persons)				
8	3750	75.0	O	O	O	O
7	3750	78.0	O	O	O	O
6	3750	79.0	O	O	O	O
5	3750	82.0	O	O	O	O
4	3750	97.0	O	O	O	O
3	3750	97.0	O	O	O	O
2	3750	96.0	O	O	O	O
1	3750	98.0	O	O	O	O
0	5600	14.0	∏	∏	∏	∏
B1	3750	0.0	O	O	O	O
B2	3750	0.0	O	O	O	O
Total Population		716.0				

Diagram Key

	Lift Machine Room
	Lift Pit
O	Lift Entrance
∏	Lobby Lift Entrance

Traffic Scenarios and Lift Configuration Data

Traffic Scenarios

Traffic Control Type	There are two types: Destination or Conventional
Capacity Factor [%]	According to CIBSE 2015D, ≤80%
Passenger Mass [kg]	According to CIBSE it is 75 kg in the EU. Indian & Japanese code requires 65 kg.
Traffic Scenarios	As many as requested

> *See BCO 2014 and Chapter 4 for the office building design criteria.*

Lift Configuration Data

The Lift Configuration Data table displays the detailed parameters for each lift in the system, including decks, lift type, capacity, speed, acceleration, jerk, motor start delay, dwell times, door settings and reopenings.

Lift Number	1	2	3	4
Decks	Single	Single	Single	Single
Lift Type	MRL	MRL	MRL	MRL
Capacity [kg]	1600	1600	1600	1600
Speed [m/s]	1.6	1.6	1.6	1.6
Acceleration [m/s²]	0.8	0.8	0.8	0.8
Jerk [m/s³]	1.5	1.5	1.5	1.5
Motor Start Delay [s]	0.5	0.5	0.5	0.5
Hall Call Dwell Time [s]	2.0	2.0	2.0	2.0
Lobby Dwell Time [s]	3.0	3.0	3.0	3.0
Door Type	Centre Car	Centre Car	Centre Car	Side Left
Door Width [mm]	1200	1200	1200	1300
Loading Time [s]	0.8	0.8	0.8	1.1
Unloading Time [s]	0.8	0.8	0.8	1.1
Opening Time [s]	2.2	2.2	2.2	2.2
Closing Time [s]	2.6	2.6	2.6	2.6
Preopening Time [s]	0.0	0.0	0.0	0.0
Reopenings	1	1	1	1

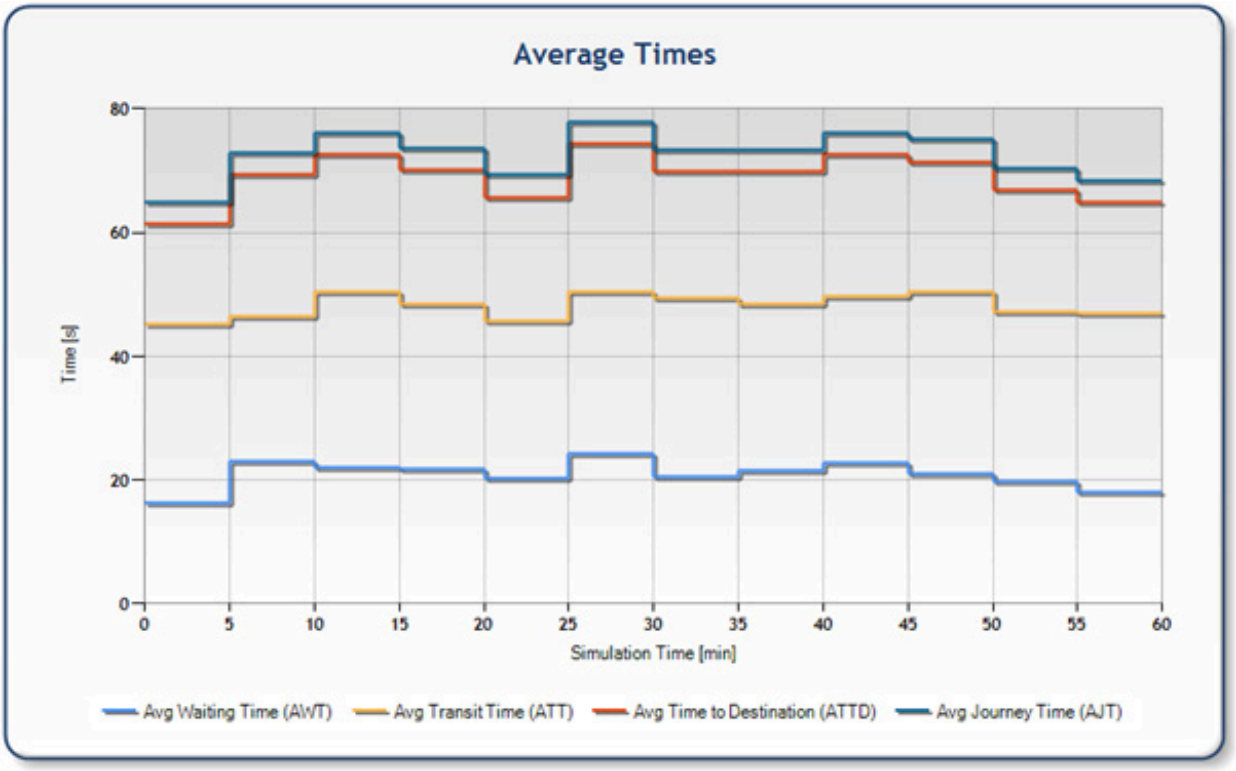
Example of Lift Configuration data for Office passenger lift car parking facility at basement level, main lobby is at ground floor. Passenger Loading Unloading time have been associated with Door width.

Simulation Results in Graphs

In this section, simulation results are presented as graphs. You can select which graphs to plot in the online app "report" option.

Average Waiting Time and Time to Destination

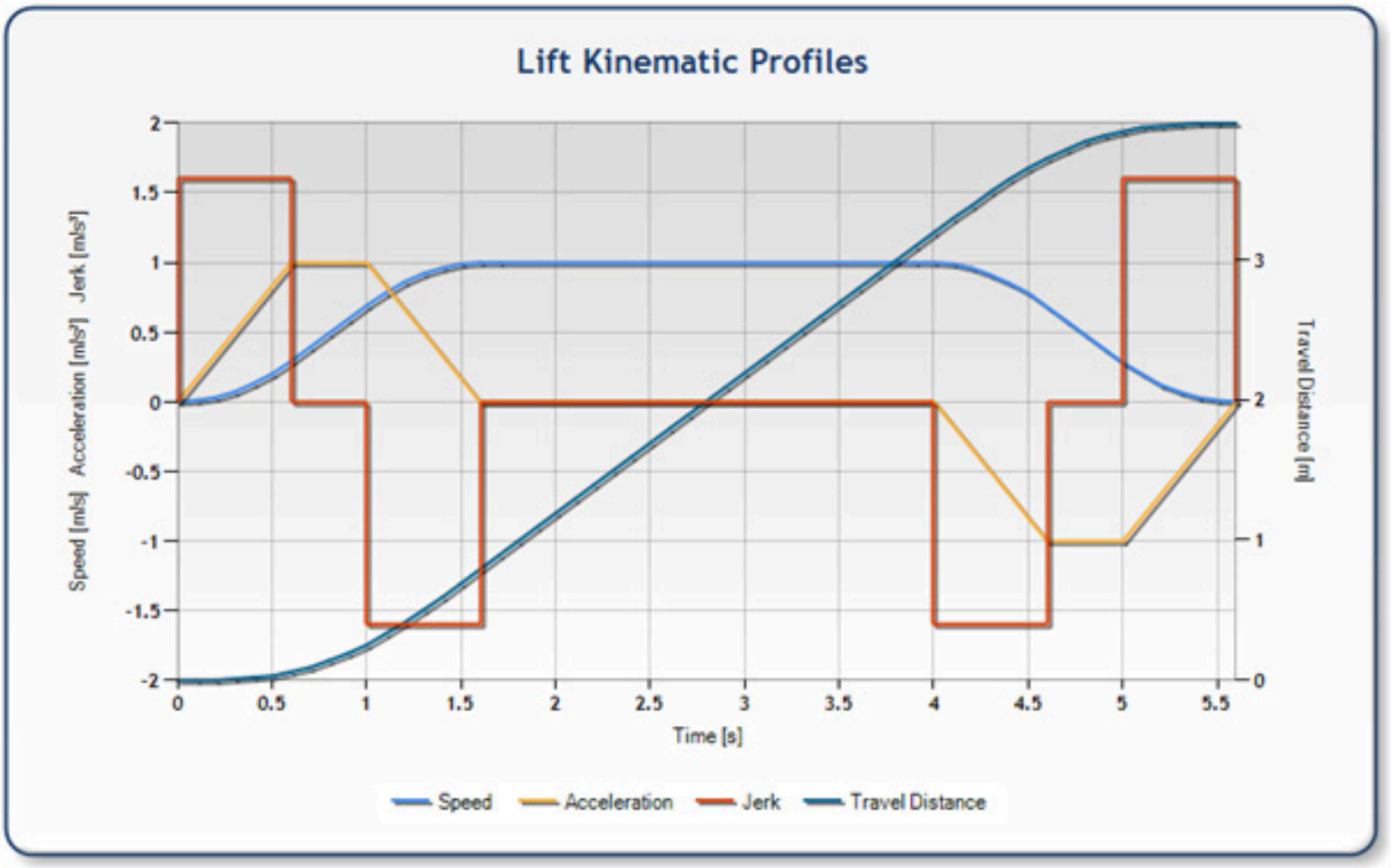
This graph displays Average Waiting Time (AWT), Average Transit Time (ATT), Average Time to Destination (ATTD) and Average Journey Time (AJT) across the simulation period.



Simulation Time [min]	AWT [s]	ATT [s]	ATTD [s]	AJT [s]
5 - 55	21.6	48.6	70.3	73.8
0 - 5	16.2	45.1	61.3	64.8
5 - 10	22.9	46.4	69.3	72.8
10 - 15	22.1	50.5	72.6	76.2
15 - 20	21.7	48.4	70.1	73.7
20 - 25	20.2	45.6	65.7	69.3
25 - 30	24.1	50.3	74.4	77.9
30 - 35	20.5	49.3	69.8	73.4
35 - 40	21.4	48.5	69.9	73.4
40 - 45	22.8	49.7	72.5	76.1
45 - 50	21	50.4	71.4	75
50 - 55	19.8	47.1	66.8	70.3
55 - 60	17.9	47	64.9	68.4

Lift Kinematic Profiles

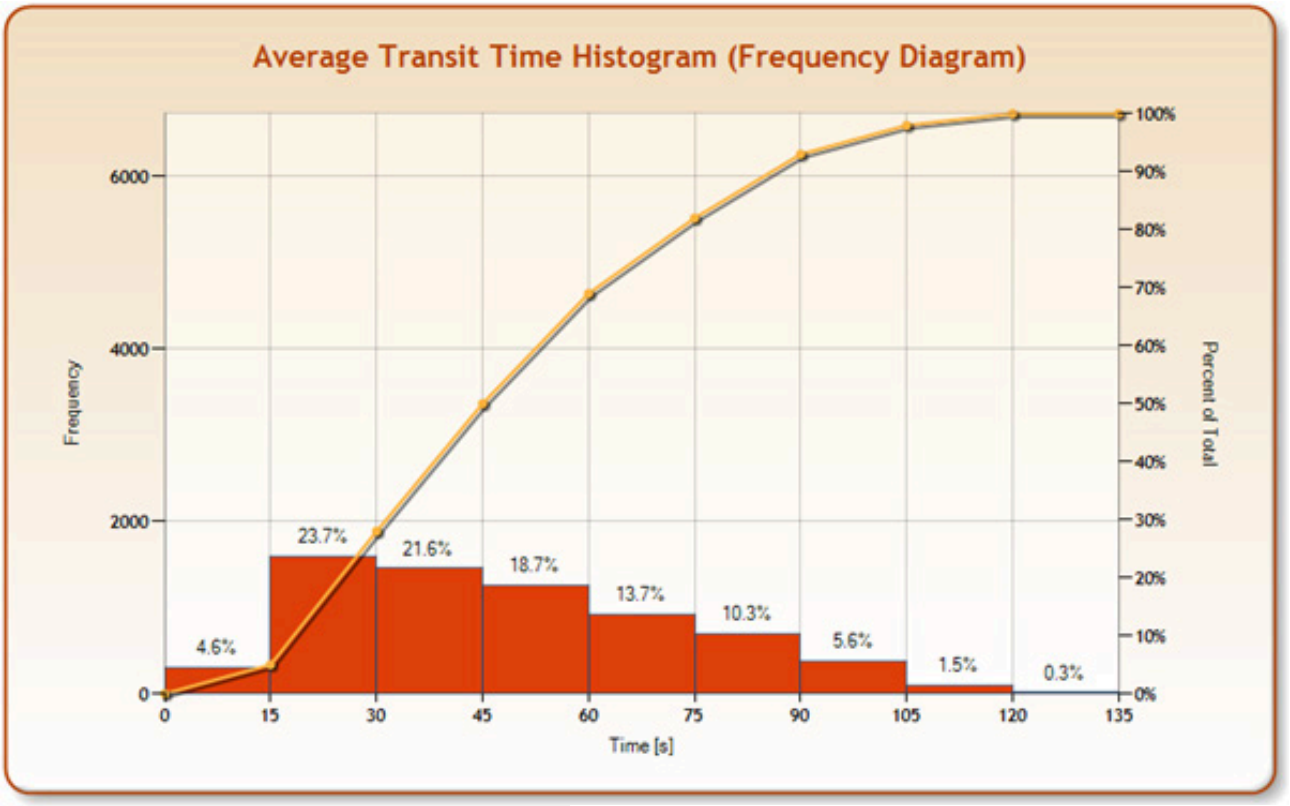
You can choose any departure floor and arrival floor. Lift flight time is the time the lift takes to travel from the main lobby to the first stopping floor.



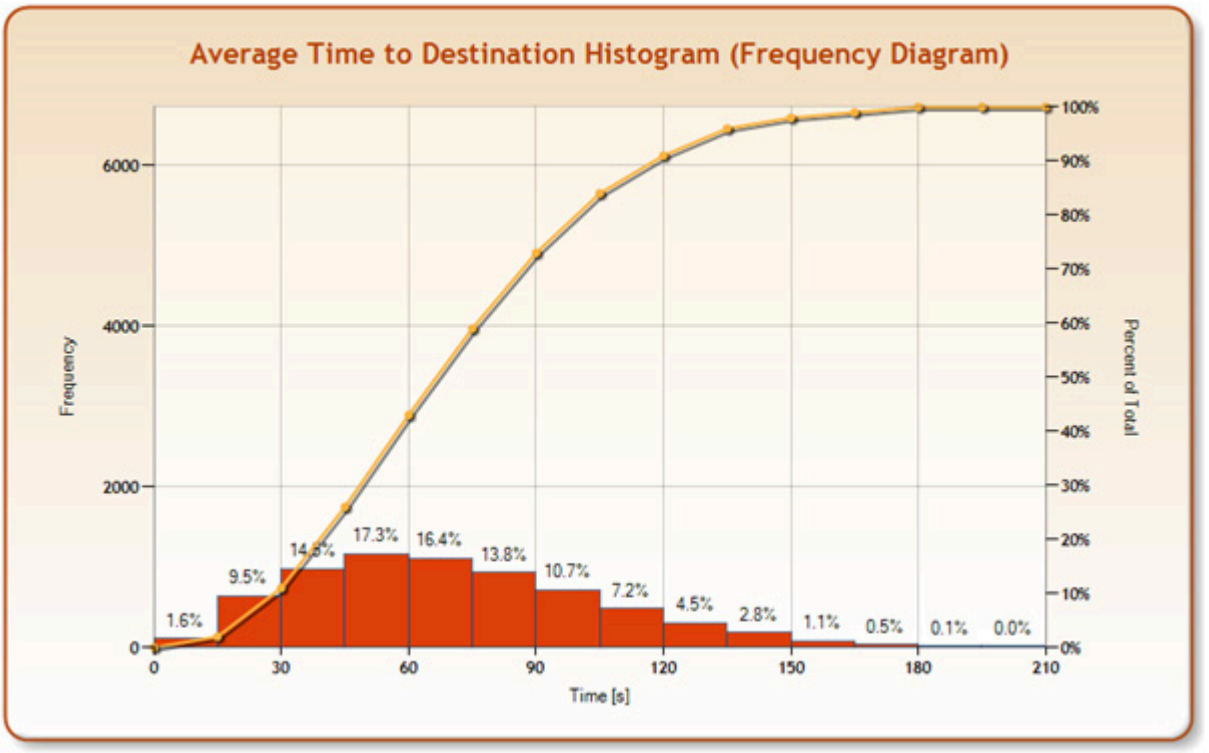
Time [s]	Persons	Percent of Total [%]	Cumulative Percentage [%]
0 - 15	3119	46.4	46.4
15 - 30	1580	23.5	69.9
30 - 45	1064	15.8	85.8
45 - 60	579	8.6	94.4
60 - 75	264	3.9	98.3
75 - 90	88	1.3	99.6
90 - 105	26	0.4	100

Histogram

The histogram frequency diagrams show the distribution of Average Transit Times and Average Times to Destination across the simulation, broken down into 15-second intervals, with both person counts and cumulative percentages.



Time [s]	Persons	Percent of Total [%]	Cumulative Percentage [%]
0 - 15	309	4.6	4.6
15 - 30	1594	23.7	28.3
30 - 45	1450	21.6	49.9
45 - 60	1257	18.7	68.6
60 - 75	918	13.7	82.3
75 - 90	694	10.3	92.6
90 - 105	379	5.6	98.2
105 - 120	101	1.5	99.7
120 - 135	18	0.3	100

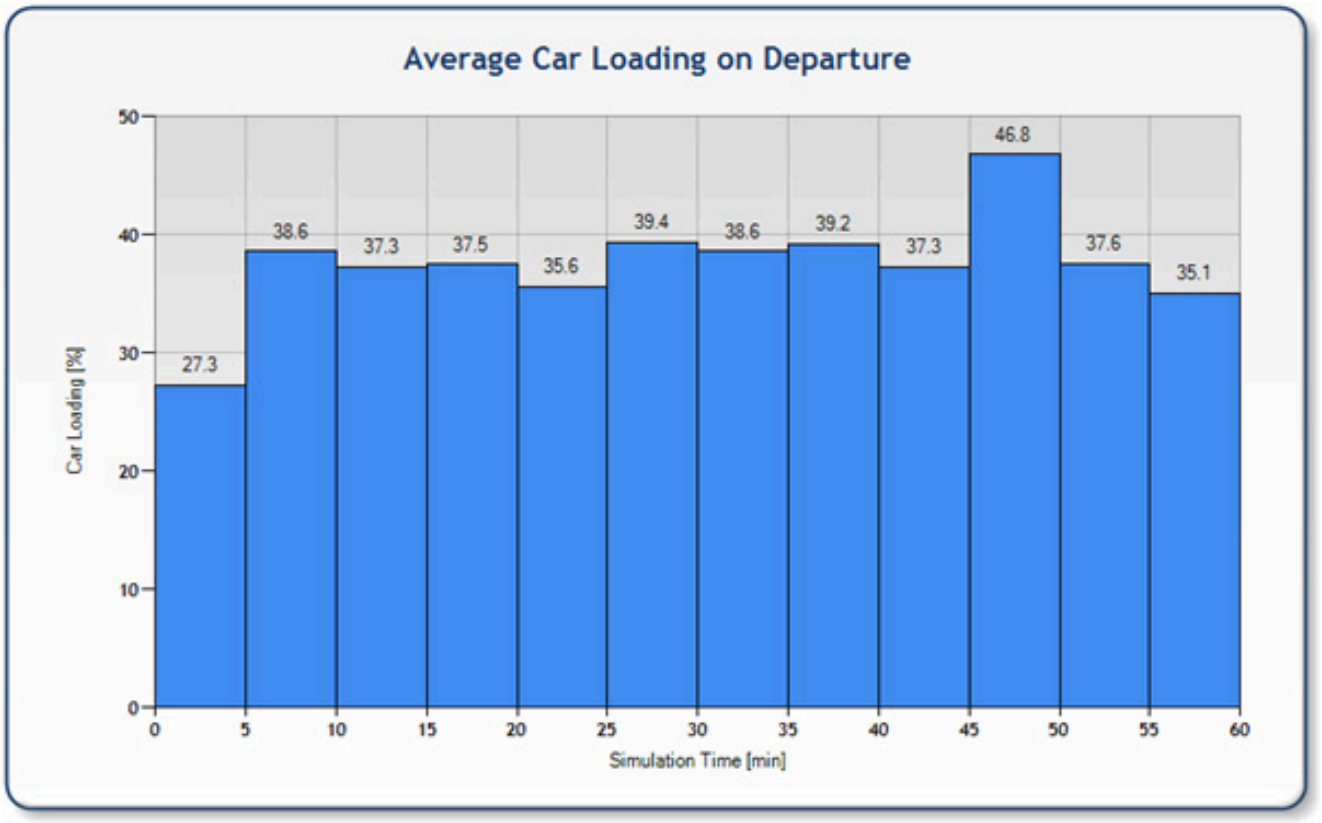


Time [s]	Persons	Percent of Total [%]	Cumulative Percentage [%]
0 - 15	108	1.6	1.6
15 - 30	637	9.5	11.1
30 - 45	974	14.5	25.6
45 - 60	1161	17.3	42.9
60 - 75	1103	16.4	59.3
75 - 90	930	13.8	73.1
90 - 105	718	10.7	83.8
105 - 120	483	7.2	91
120 - 135	304	4.5	95.5
135 - 150	185	2.8	98.3
150 - 165	76	1.1	99.4
165 - 180	33	0.5	99.9
180 - 195	6	0.1	100
195 - 210	2	0	100

Car Loading on Departure from Home Floor

Car Loading on Departure from Home Floor shows you how full the cars are at the beginning of a round trip. You can view this graph for any one run, or for an average of all runs.

For double deck cars, the plot refers to the loading of the lower car only.



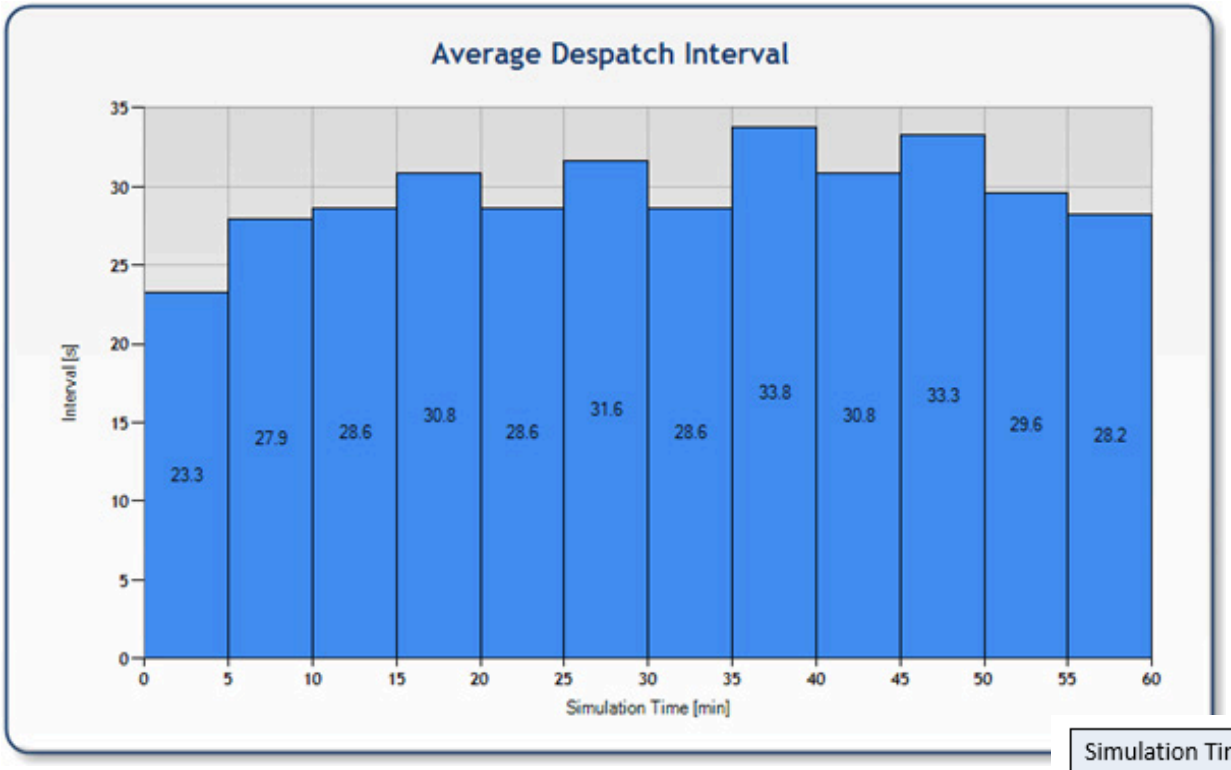
Simulation Time [min]	Car Loading [%]
5 - 55	38.7
0 - 5	27.3
5 - 10	38.6
10 - 15	37.3
15 - 20	37.5
20 - 25	35.6
25 - 30	39.4
30 - 35	38.6
35 - 40	39.2
40 - 45	37.3
45 - 50	46.8
50 - 55	37.6
55 - 60	35.1

Dispatch Interval from Home Floor

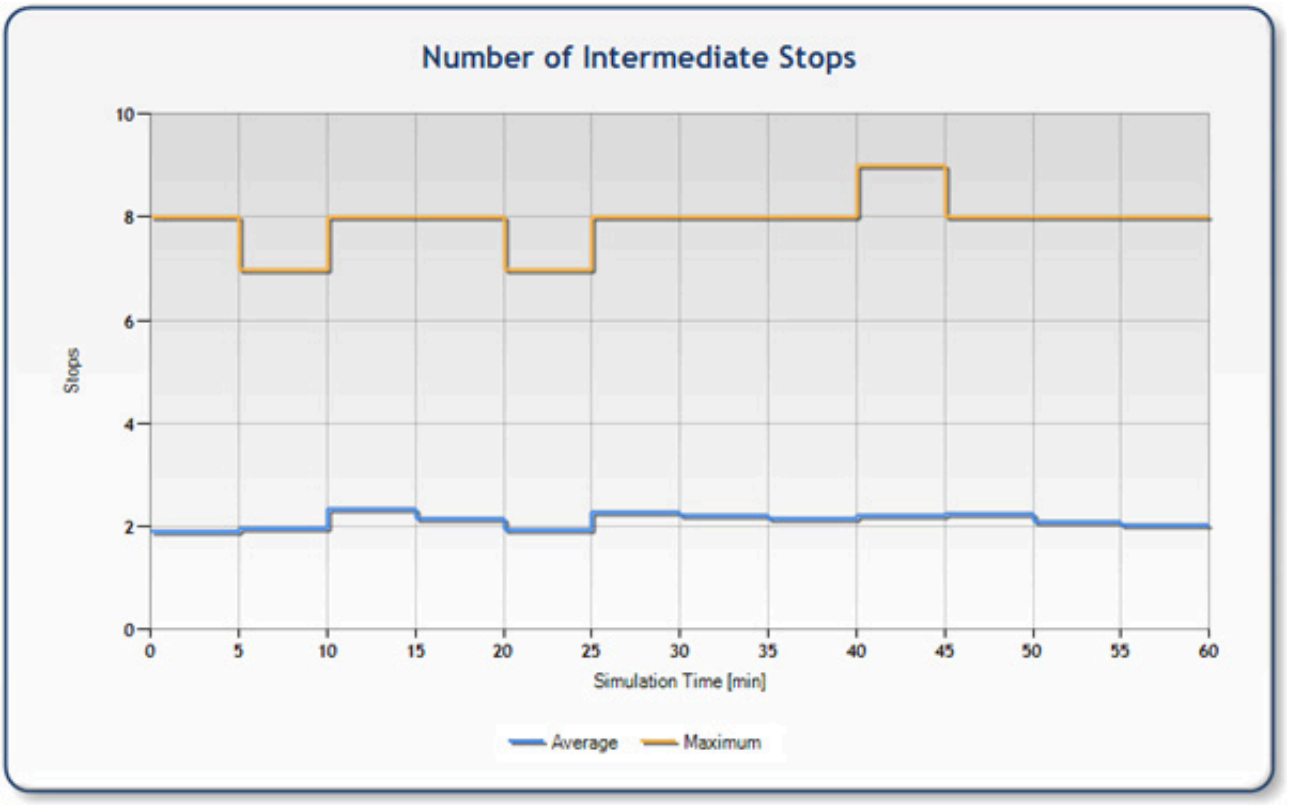
Dispatch Interval from Home Floor plots the interval in each five-minute period.

The dispatch interval is the average time between cars departing from the main home floor. This is calculated by counting the number of times a car is dispatched from the home floor in each five-minute period, then dividing this number by 300 seconds (5 minutes).

You can view this graph for any one run, or based on an average of all runs.



Simulation Time [min]	Interval [s]
5 - 55	30.23
0 - 5	23.3
5 - 10	27.9
10 - 15	28.6
15 - 20	30.8
20 - 25	28.6
25 - 30	31.6
30 - 35	28.6
35 - 40	33.8
40 - 45	30.8
45 - 50	33.3
50 - 55	29.6
55 - 60	28.2

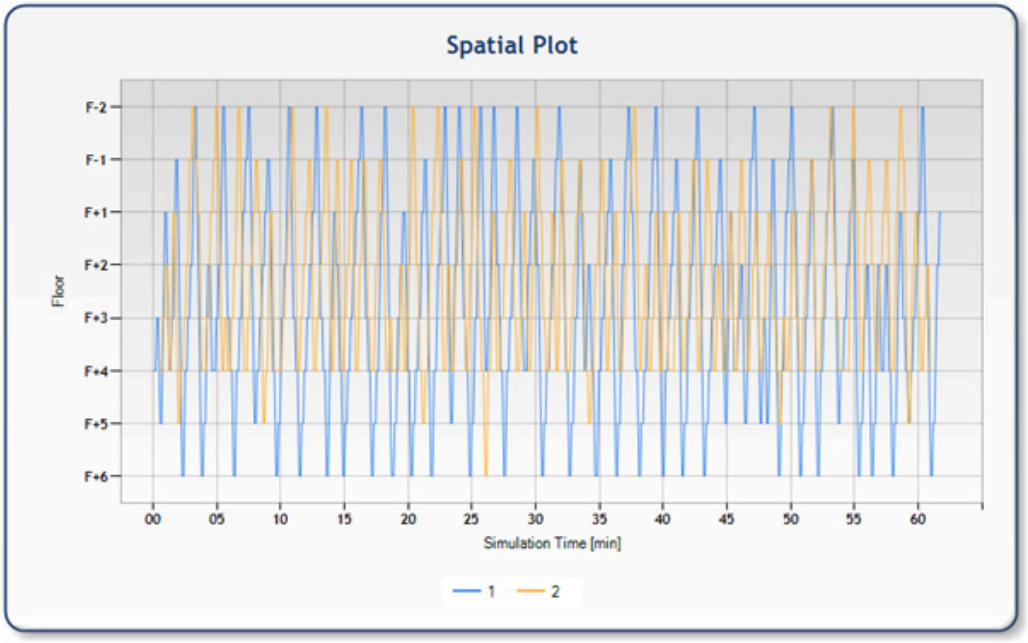


Simulation Time [min]	Stops Average	Stops Maximum
0 - 5	1.92	8
5 - 10	1.96	7
10 - 15	2.35	8
15 - 20	2.17	8
20 - 25	1.93	7
25 - 30	2.28	8
30 - 35	2.23	8
35 - 40	2.17	8
40 - 45	2.22	9
45 - 50	2.25	8
50 - 55	2.08	8
55 - 60	2.04	8

Spatial Plot

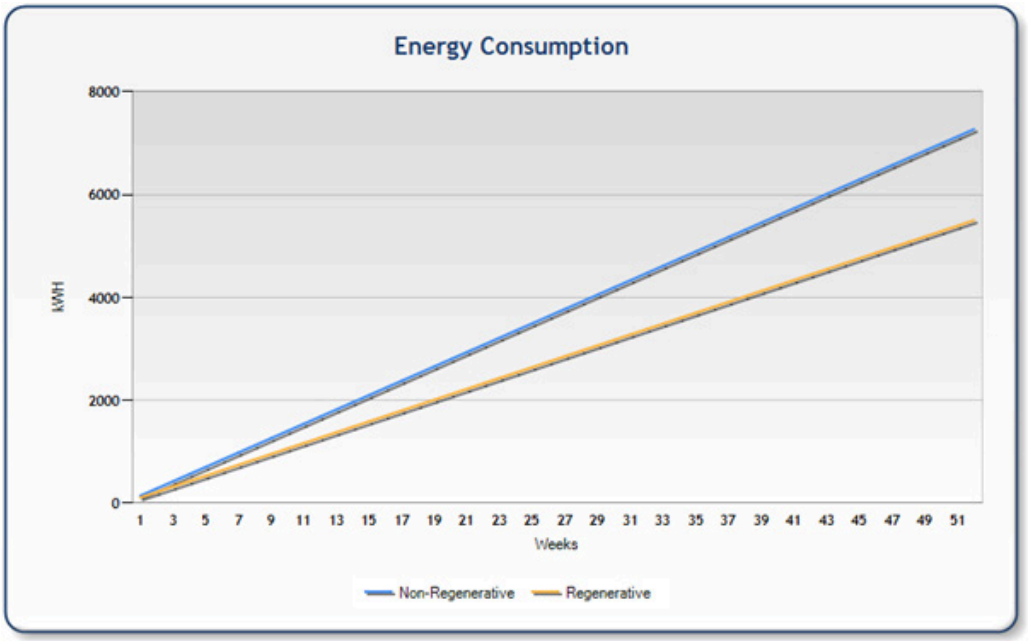
Spatial Plots draw a trace of each car's movement. Spatial plots can be selected for all cars, or for each car individually.

You can select the spatial plot for any single run.



Spatial Energy Consumption Plot

If the Energy Model has been turned on, this graph plots the cumulative energy consumption. The total energy consumption and cost is recorded below the graph.



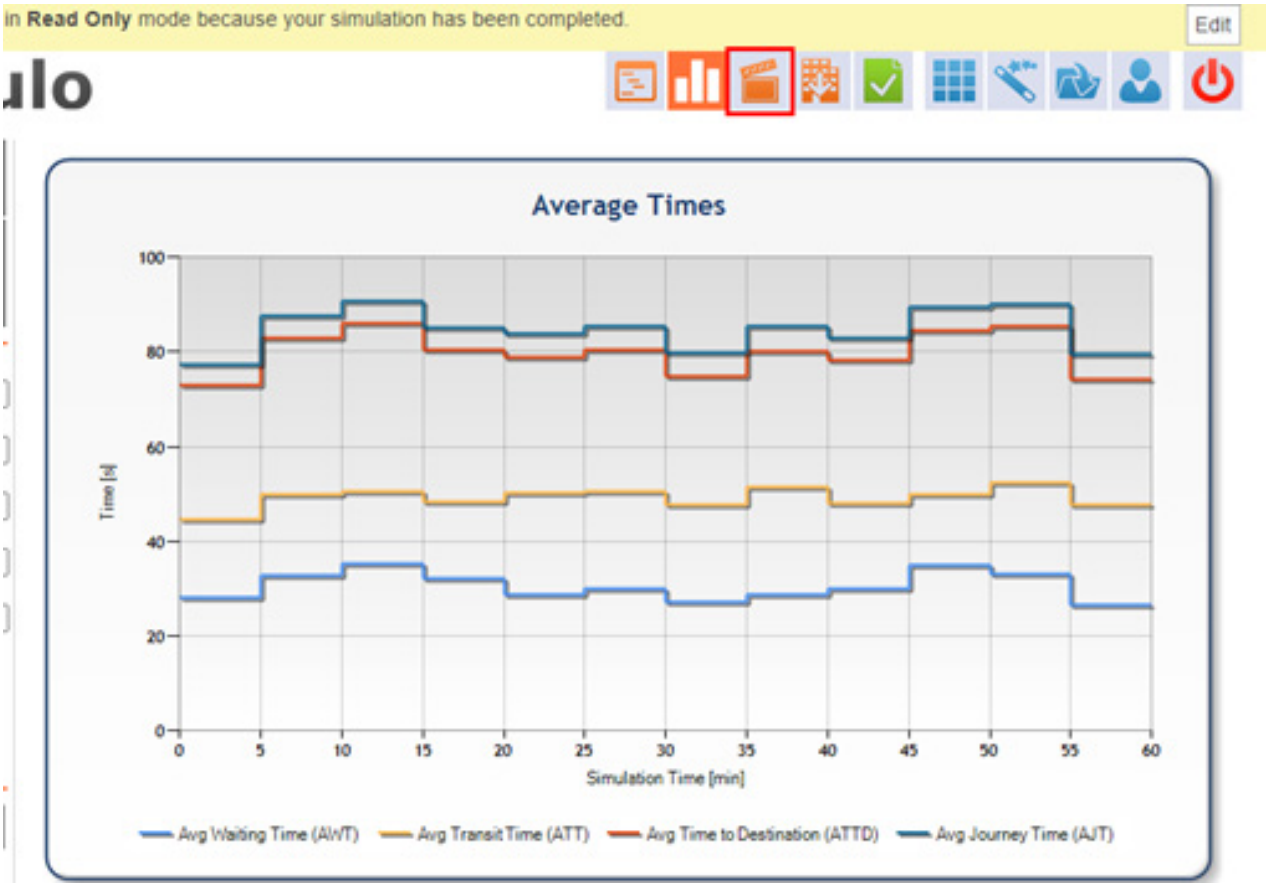
Lift	Speed [m/s]	Capacity [kg]	Decks	Rating [kW]	Travel Distance [m]	Running Current Flu [A]	Starting Current Flacc [A]	Heat Output [kW]	Non Regenerative [kWH]	Regenerative [kWH]
1	1.0	800	Single	6.3	24.6	15.8	47.2	2.8	3959.4	2992.4
2	1.0	900	Single	7	18.4	17.5	52.5	3.1	3309.5	2504.9

Visualisation

AdSimulo comes with an advanced visualisation option where you can render and view how people will interact with your lift system.

When viewing the video, you can see how long a person had to wait based on their colour:

Green	Not long
Yellow	A bit of a wait
Red	Too long



To create a visualisation video, press the Visualisation button. Once done, press "RENDER" to create a new video. On the left-hand side, choose from the following options:

- Zone number
- Traffic scenario
- Floor
- Start from
- Duration
- Pace
- Resolution

> *We recommend setting the pace to x2 or x4 for a faster video to save on viewing time.*