

UK Building Regulations

2010 Edition

HM Government

The Building Regulations 2000

Conservation of fuel and power

L2A

APPROVED DOCUMENT

L2A Conservation of fuel and power in new buildings other than dwellings

Coming into effect 1 October 2010

2010 edition

HM Government

The Building Regulations 2000

Conservation of fuel and power

L2B

APPROVED DOCUMENT

L2B Conservation of fuel and power in existing buildings other than dwellings

Coming into effect 1 October 2010

2010 edition

HM Government

Non-Domestic Building Services Compliance Guide

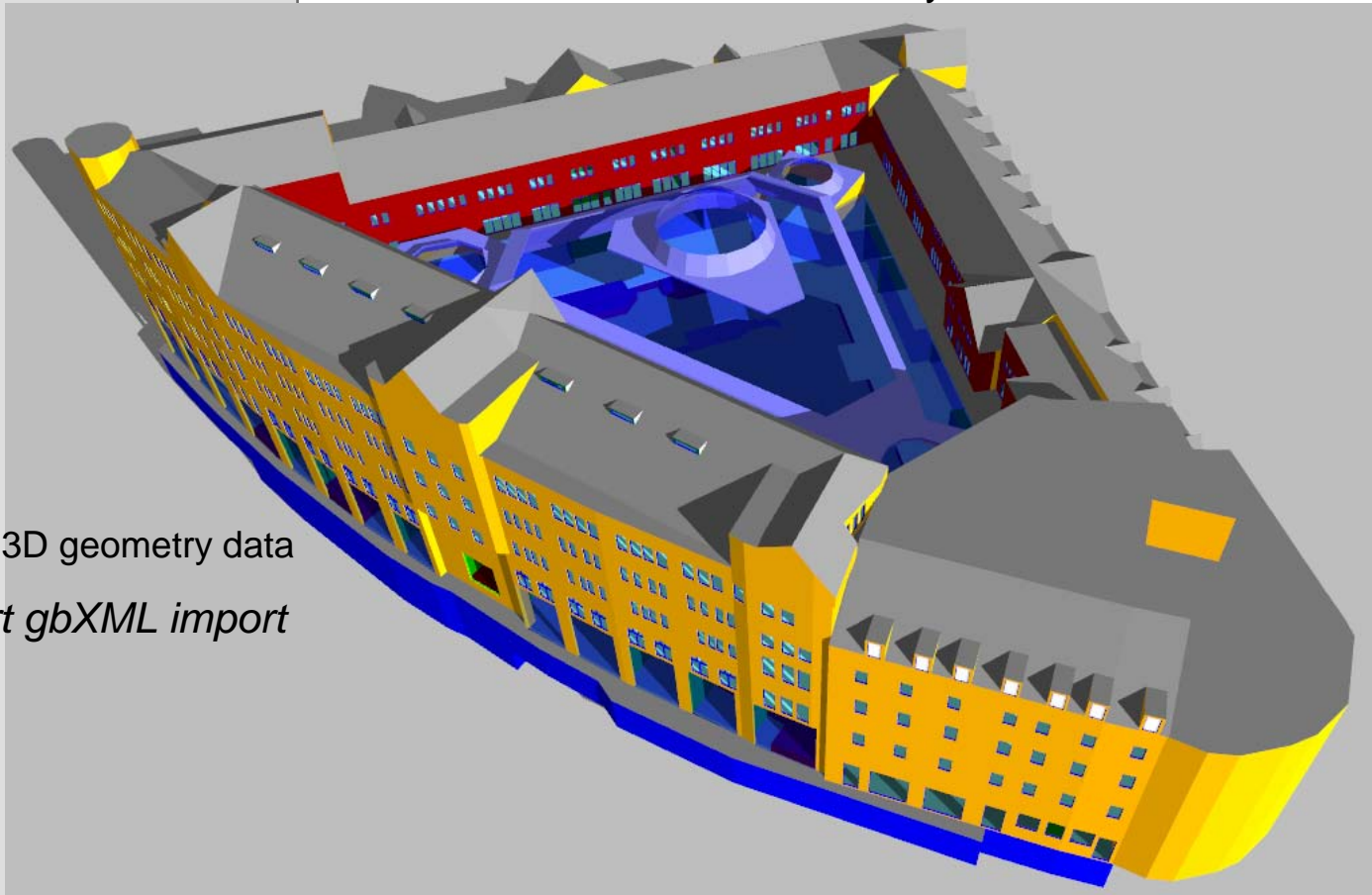
2010 Edition

Part L2 2010



Part L2 2010

Geometry model with full solar analysis

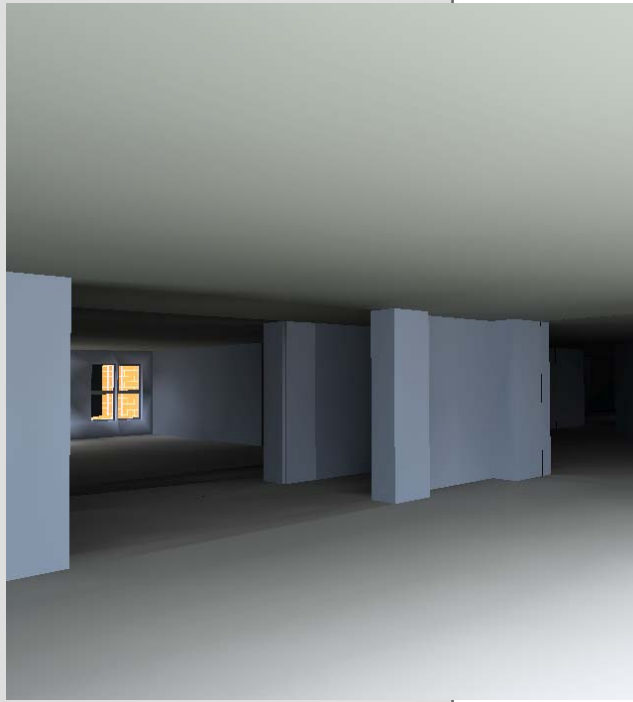
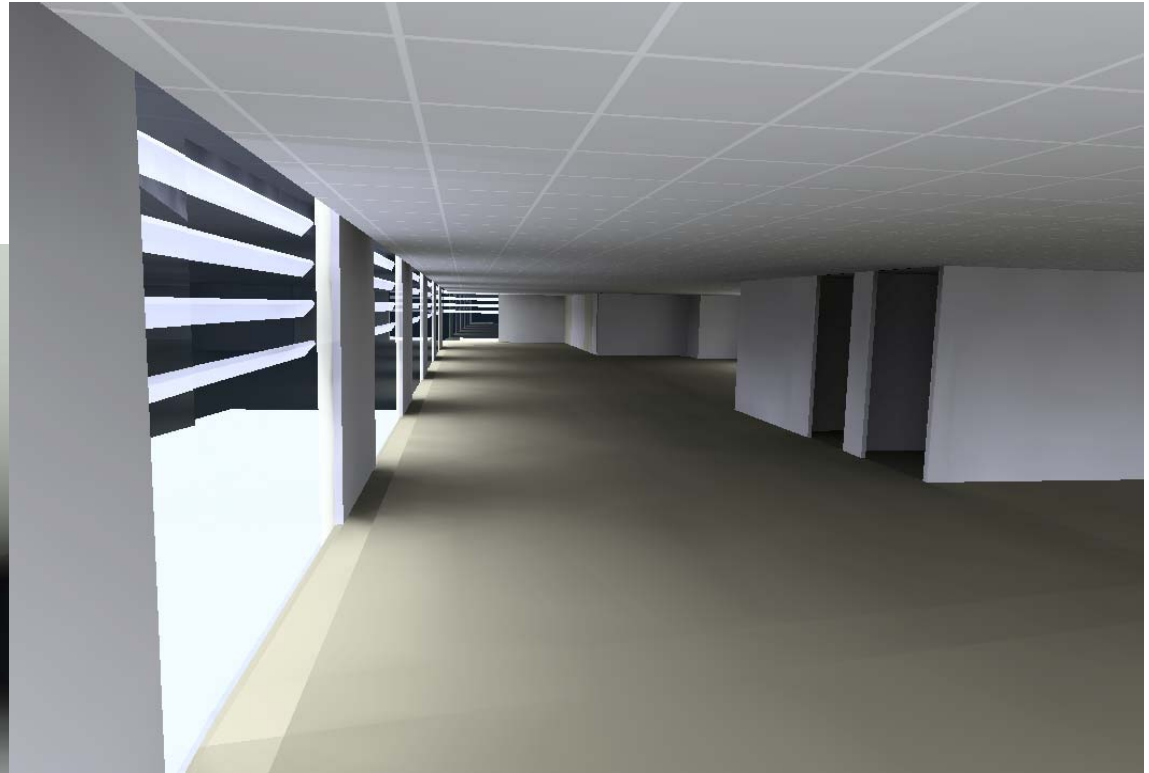


Use REVIT 3D geometry data
using *smart gbXML import*

Part L2 2010

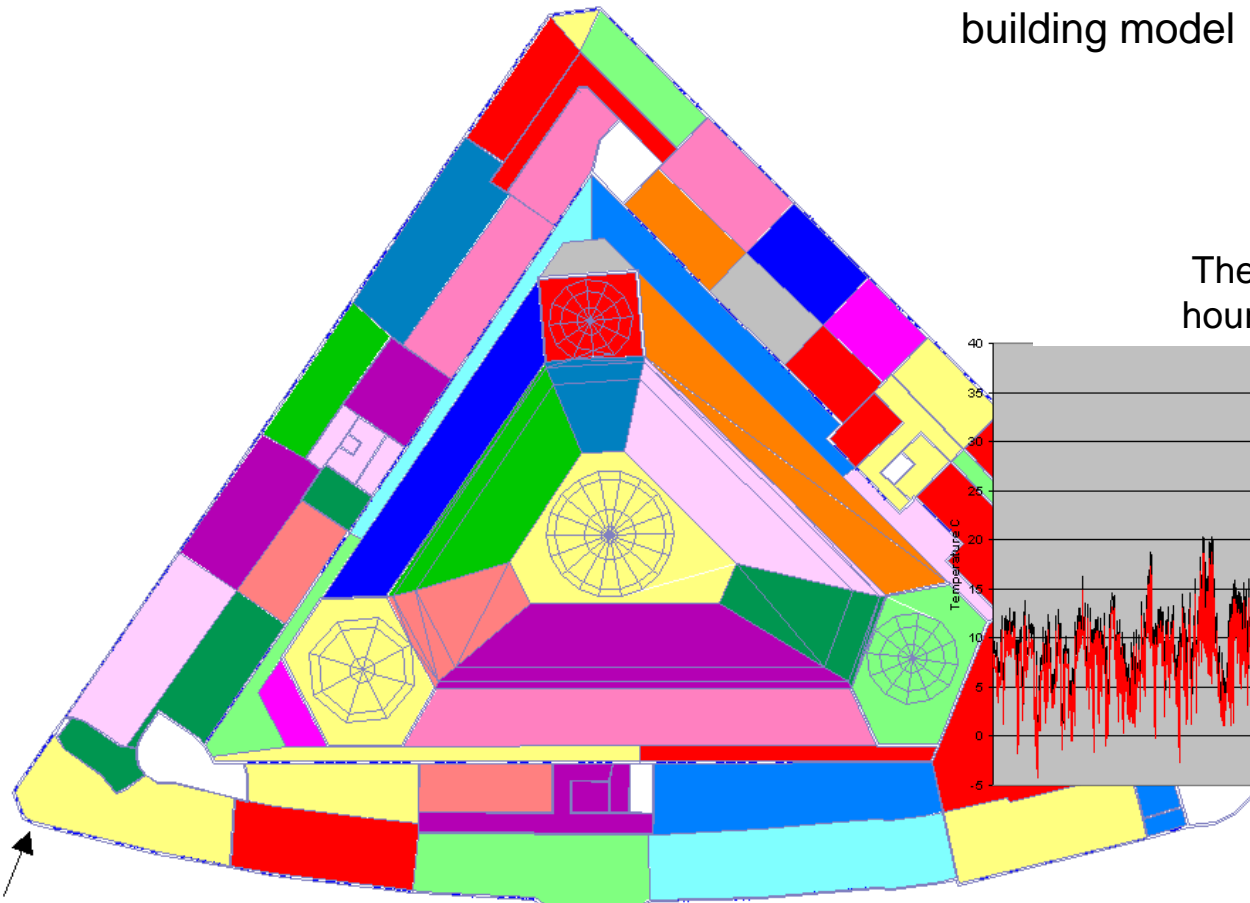
Fast and detailed daylight simulation

Comprehensive
daylight harvesting
control logic

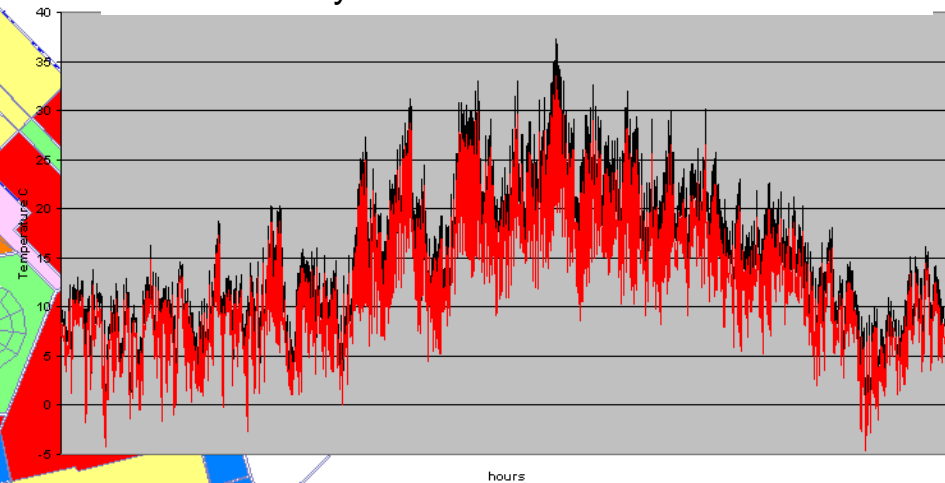


Part L2 2010

Analysis zones with occupation schedules and construction details complete the building model



The building model is driven by hourly weather data from CIBSE



Part L2 2010

Component based plant analysis with control logic detail

Components are able to accept manufacturers' Part load performance data

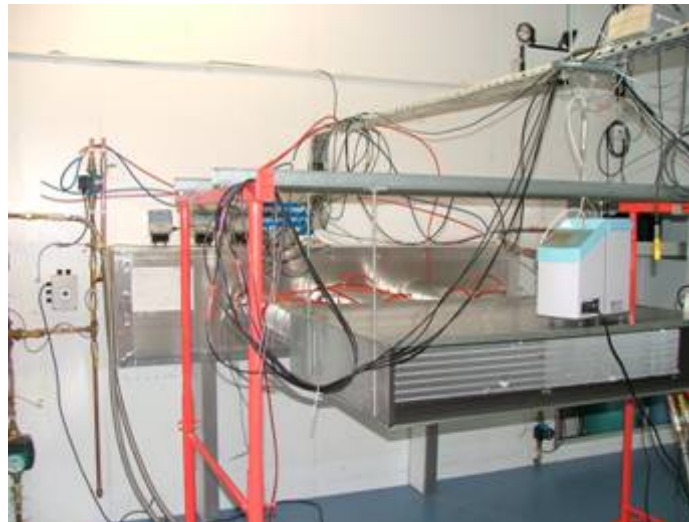
The screenshot displays the EDSL software interface. On the left is the 'Project Explorer' showing a hierarchical tree of the simulation model, including 'Energy Centre', 'Plant Room 1', and various system groups. The main workspace shows a detailed schematic of a plant system with pumps, pipes, and control valves. On the right is the 'Component Library' with categories like 'Basic Components', 'Heat Recovery', and 'Zones'. At the bottom, a 'Graph' window plots performance metrics over a 24-hour period. The graph shows 'Flow Rate In' (green triangles), 'Flow Rate Out' (green inverted triangles), 'Sensible Load' (blue circles), and 'Latent Load' (yellow circles). The flow rates peak around 12:00, while the sensible load peaks around 14:00.

Hour	Flow Rate In (L/s)	Flow Rate Out (L/s)	Sensible Load (kW)	Latent Load (kW)
10	0	0	0	0
11	14000	14000	10000	0
12	15000	15000	12000	0
13	15000	15000	12000	0
14	15000	15000	12000	0
15	15000	15000	12000	0
16	15000	15000	12000	0
17	15000	15000	12000	0
18	15000	15000	12000	0
19	15000	15000	12000	0
20	15000	15000	12000	0
21	15000	15000	12000	0
22	0	0	0	0

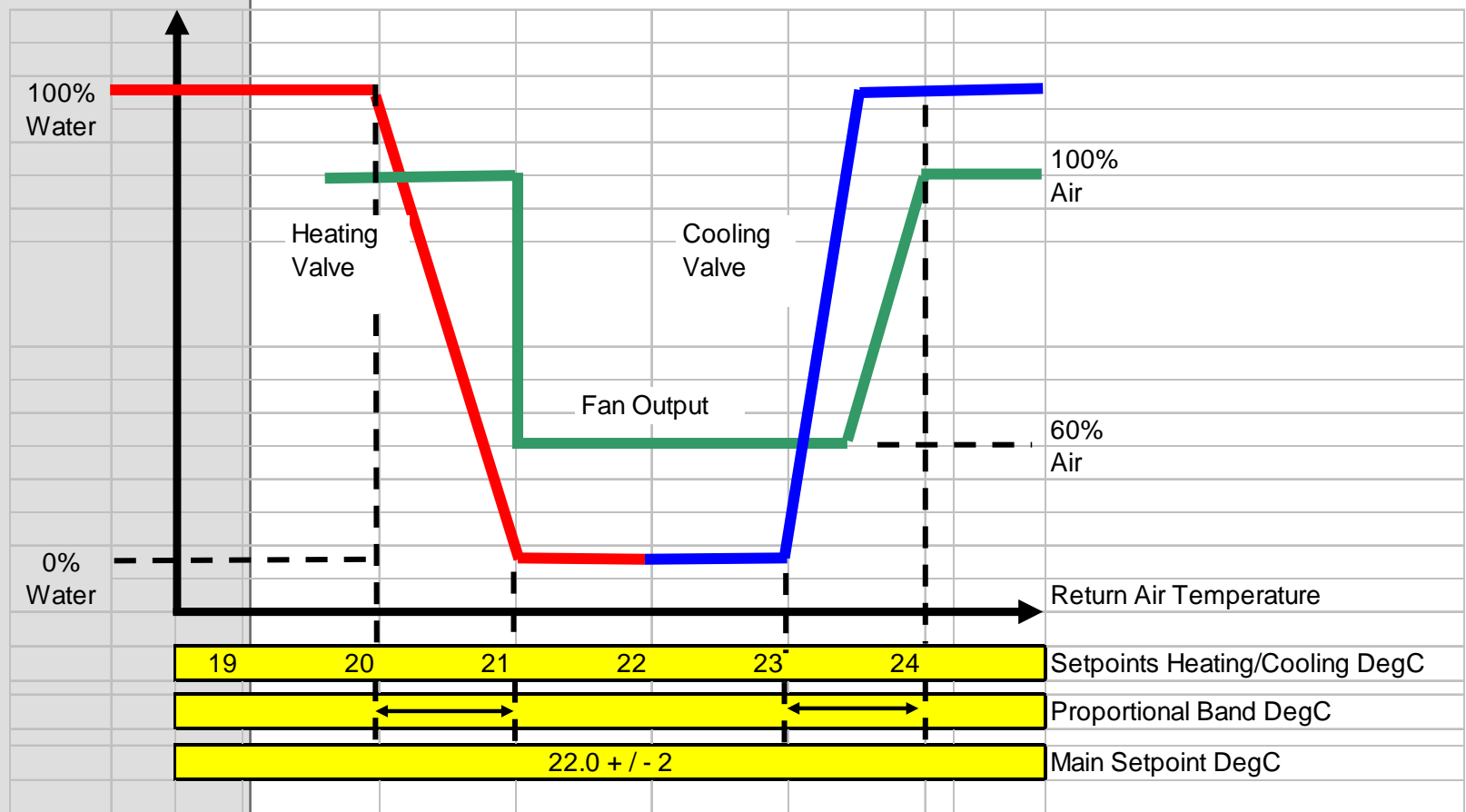


Trox performance data

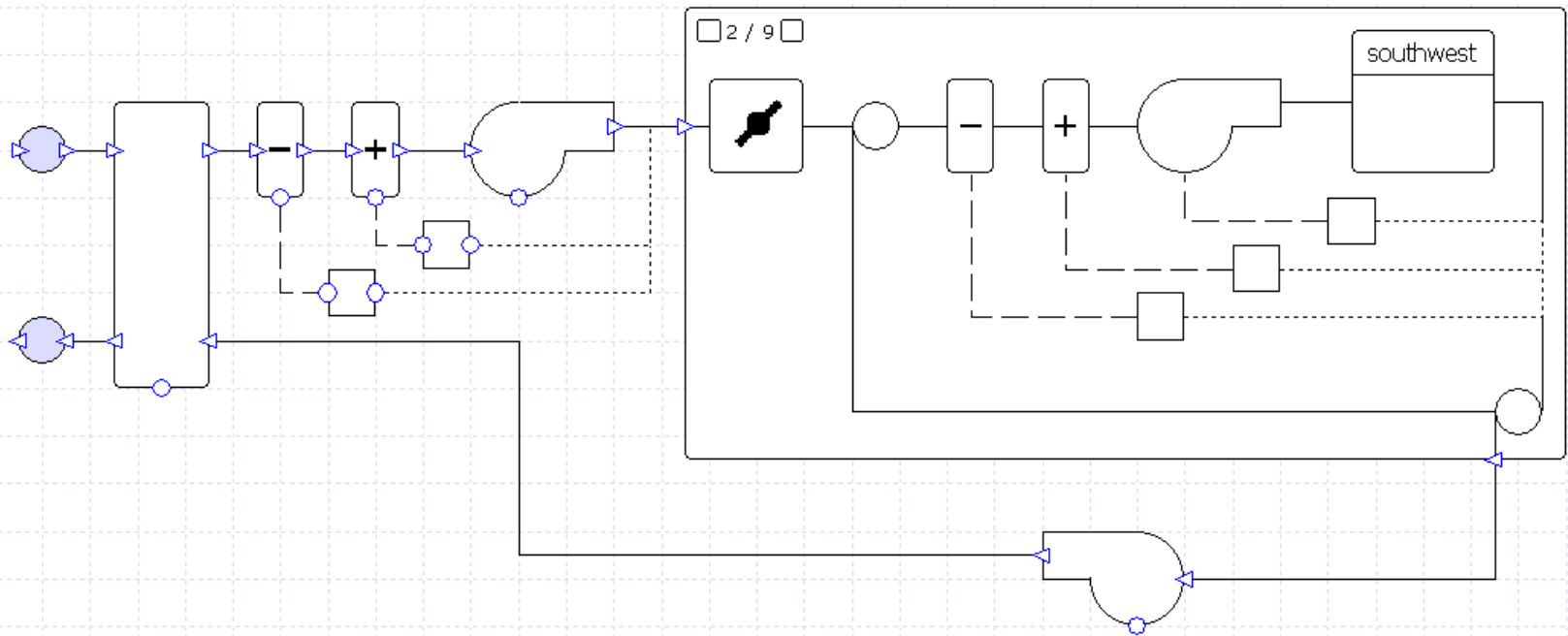
VAV FCU ec motor fan curve and SFP
with contact factor for variable air flow rates



Control Sequence for VAV FCU



System schematic for ec motor VAV CFU



CO2 emissions for AC CAV FCU

BRUKL Output Document



Compliance with England and Wales Building Regulations Part L 2010

Project name

Example Project

As designed

Date: Mon Oct 04 16:17:03 2010

Administrative information

Building Details

Address: x, x, x

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.2.0"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.2.0

BRUKL compliance check version: v4.0.c.0

Owner Details

Name: x

Telephone number: x

Address: x, x, x

Certifier details

Name: x

Telephone number: x

Address: x, x, x

Criterion 1: Predicted CO₂ emission from proposed building does not exceed the target

The building does not comply with England and Wales Building Regulations Part L 2010

1.1	CO ₂ emission rate from notional building, kgCO ₂ /m ² .annum	27
1.2	Target CO ₂ Emission Rate (TER), kgCO ₂ /m ² .annum	27
1.3	Building CO ₂ Emission Rate (BER), kgCO ₂ /m ² .annum	29.1
1.4	Are emissions from building less than or equal to the target?	BER > TER
1.5	Are as built details the same as used in BER calculations?	Separate submission

FAIL

CO2 emissions for ec VAV FCU

BRUKL Output Document  HM Government
Compliance with England and Wales Building Regulations Part L 2010

Project name
Example Project As designed
Date: Mon Oct 04 16:24:41 2010

Administrative information

Building Details
Address: x, x, x

Certification tool
Calculation engine: TAS
Calculation engine version: "v9.2.0"
Interface to calculation engine: TAS
Interface to calculation engine version: v9.2.0
BRUKL compliance check version: v4.0.c.0

Owner Details
Name: x
Telephone number: x
Address: x, x, x

Certifier details
Name: x
Telephone number: x
Address: x, x, x

Criterion 1: Predicted CO₂ emission from proposed building does not exceed the target

1.1	CO ₂ emission rate from notional building, kgCO ₂ /m ² .annum	27
1.2	Target CO ₂ Emission Rate (TER), kgCO ₂ /m ² .annum	27
1.3	Building CO ₂ Emission Rate (BER), kgCO ₂ /m ² .annum	25.8
1.4	Are emissions from building less than or equal to the target?	BER <= TER
1.5	Are as built details the same as used in BER calculations?	Separate submission

PASS

CO2 emissions for chilled beam

BRUKL Output Document



Compliance with England and Wales Building Regulations Part L 2010

Project name

Example Project

As designed

Date: Mon Oct 04 16:18:43 2010

Administrative information

Building Details

Address: x, x, x

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.2.0"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.2.0

BRUKL compliance check version: v4.0.c.0

Owner Details

Name: x

Telephone number: x

Address: x, x, x

Certifier details

Name: x

Telephone number: x

Address: x, x, x

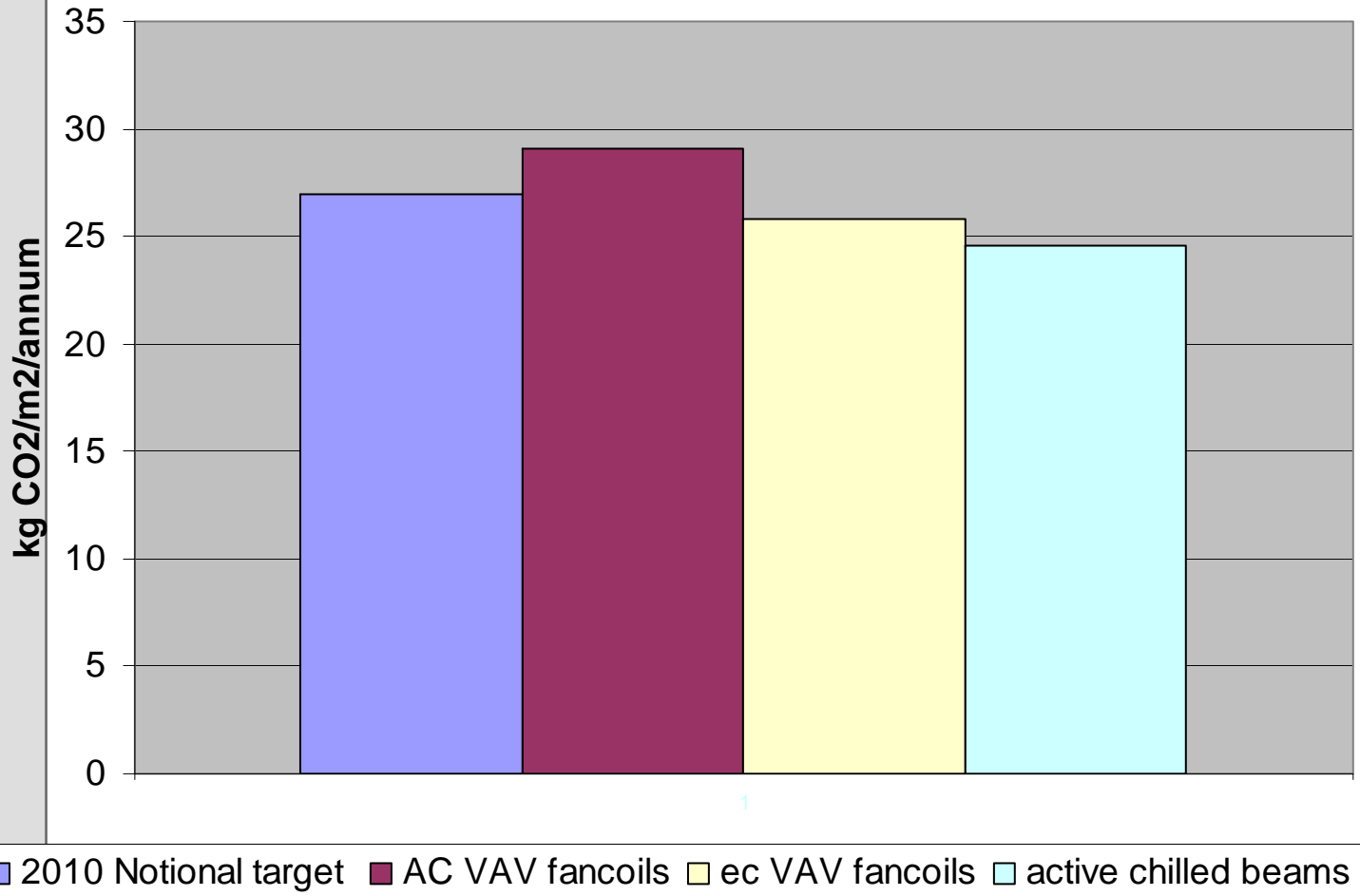
Criterion 1: Predicted CO₂ emission from proposed building does not exceed the target

1.1	CO ₂ emission rate from notional building, kgCO ₂ /m ² .annum	27
1.2	Target CO ₂ Emission Rate (TER), kgCO ₂ /m ² .annum	27
1.3	Building CO ₂ Emission Rate (BER), kgCO ₂ /m ² .annum	24.6
1.4	Are emissions from building less than or equal to the target?	BER =< TER
1.5	Are as built details the same as used in BER calculations?	Separate submission

PASS

2010 compliance kg CO2/m2/annum

CO2 emissions for ec VAV fancoils are 11.5% lower than AC CAV fancoils



Manufacturers' performance data

Innovative equipment part load performance
and control logic not modelled by SBEM

TROX[®] TECHNIK
The art of handling air

 **Carrier**
A United Technologies Company


SAINT-GOBAIN

 **MITSUBISHI
ELECTRIC**

 **DU PONT[®]**


biddle
CLIMATE SOLUTIONS

 **passivent**

ARMSTRONG 
EXPERIENCE BUILDING...

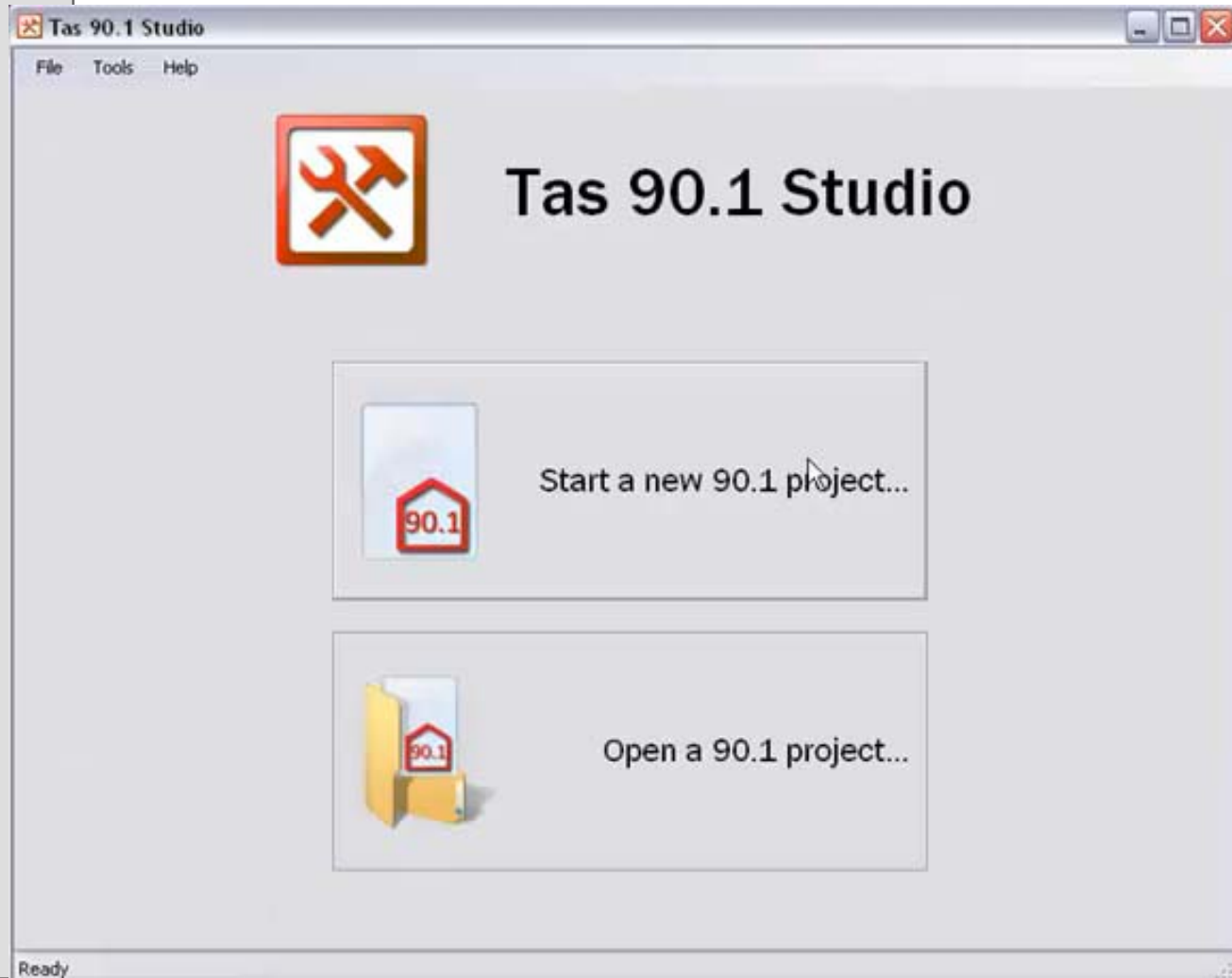
 **Monodraught**


Weatherite

 **BASF**
The Chemical Company

Hoval

ASHRAE 90.1 Studio



Automatic baseline systems and building generation

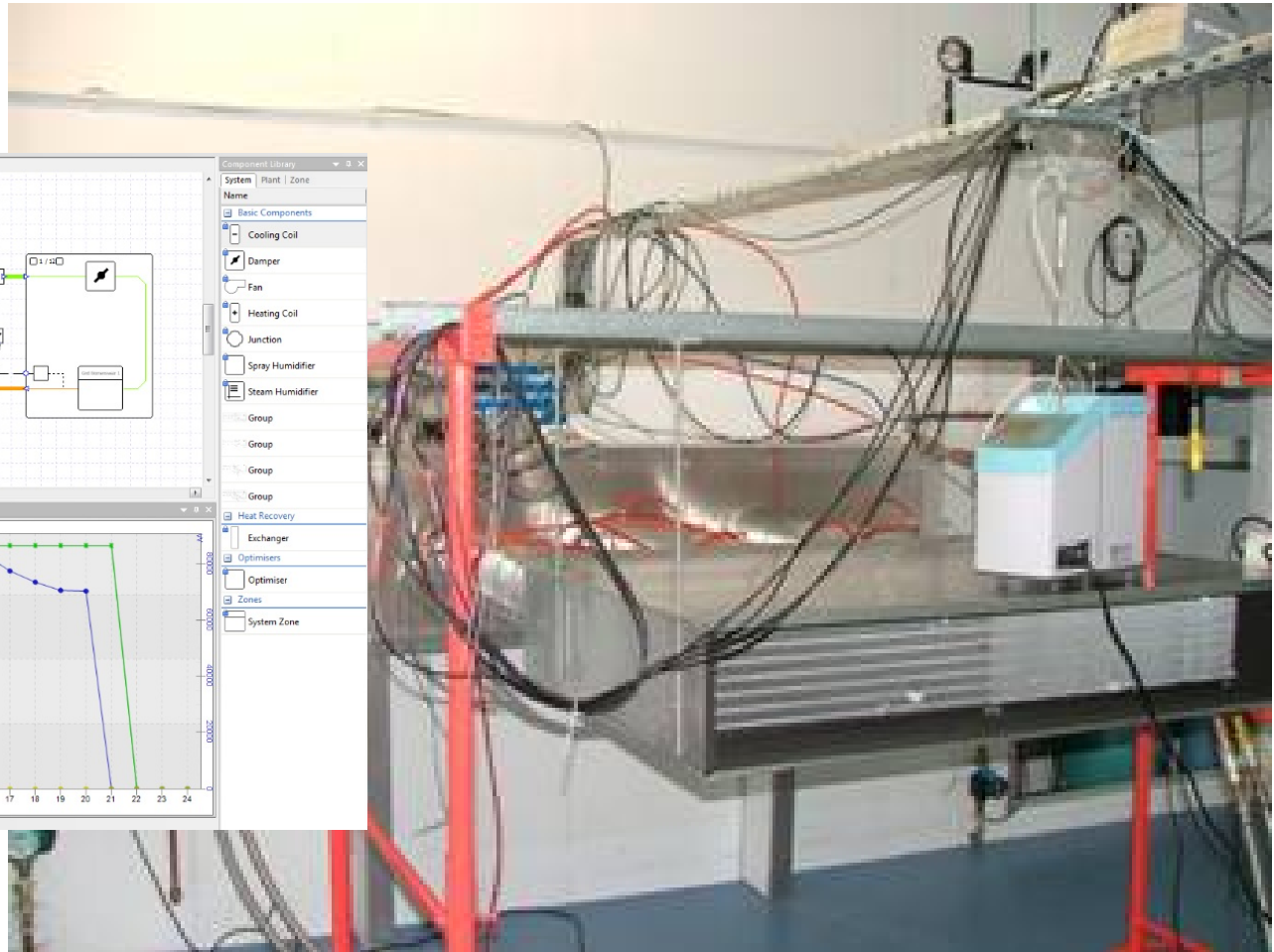
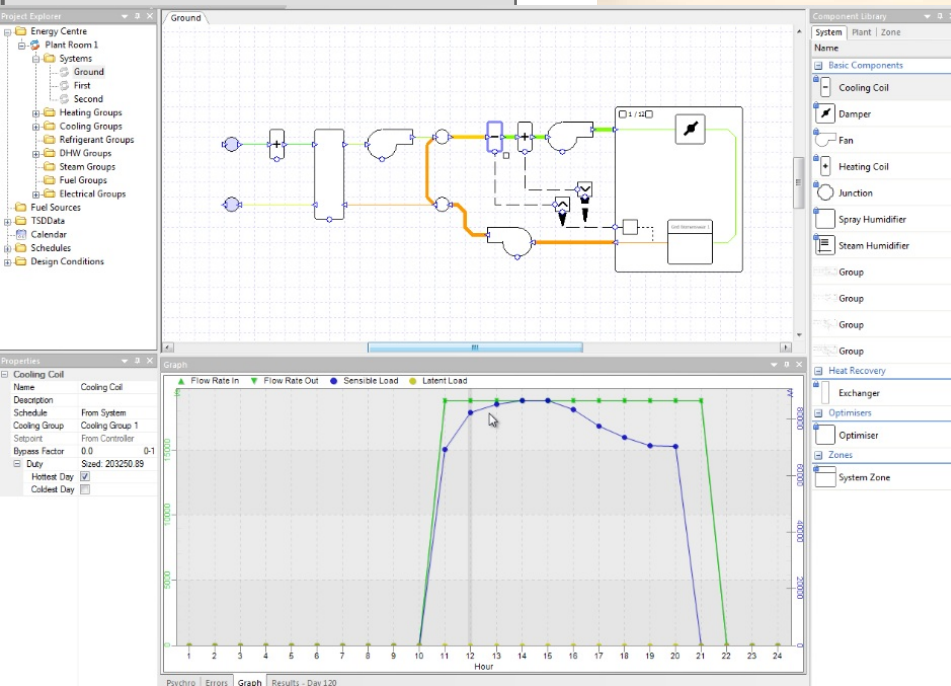
The screenshot displays the Tas 90.1 Studio interface for a project named 'example.npf'. The interface is divided into several key areas:

- Left Panel:** A vertical navigation menu with icons and labels for 'Project', 'Building Elements', 'Lighting', 'HVAC', and 'HVAC 2'.
- System Tree:** A hierarchical tree view showing the project structure. It includes:
 - Offices:** East Office2, East Office1, West Office2, West Office1.
 - Occupied:** Atrium - Ground, Toilet - Ground, Toilet - First, Stairs - Ground, Stairs - First, Lifts - Ground, Lifts - First.
- System Table:** A table listing system components:

System	Type	Setup
Offices	FATVAV	
Occupied	CAV (Terminal)	
- Schematic Diagram:** A central area displaying a detailed HVAC schematic with various components like pumps, valves, and coils connected by pipes.
- Group Components Panel:** A table on the right showing settings for selected components:

Group Components	Value
Optional	...
Required	
Terminal Damper	
Terminal Heating Coil	
Duty	Max Heating Load From TBD
Schedule	From System
Setback	Lower Setback From Internal Co
Setback Schedule	From Internal Condition
Setpoint	Lower Limit From Internal Condi
Zone	
- Schedule Section:** A small box at the bottom right of the components panel containing the text: 'Schedule The schedule applied to the component.' Below it are 'Back' and 'Next' navigation buttons.

The way to cost effective compliance- modelling real performance data and control logic



Project Explorer

- Energy Centre
 - Plant Room 1
 - Systems
 - System 1
 - Heating Circuits
 - Cooling Circuits
 - Refrigerant Circuits
 - DHW Circuits
 - Steam Circuits
 - Fuel Circuits
 - Electrical Circuits
- Fuel Sources
- TSDData
- Calendar
- Schedules
- Design Conditions

Properties

System 1

Component Library

System | Plant | Zone | Fuel Sources

Name

- Basic Components
 - Cooling Coil
 - Damper
 - DX Coil
 - Fan
 - Heating Coil
 - Junction
 - Spray Humidifier
 - Steam Humidifier
 - Heat Recovery
 - Exchanger
- Optimisers
 - Optimiser
- Zones
 - Zone

