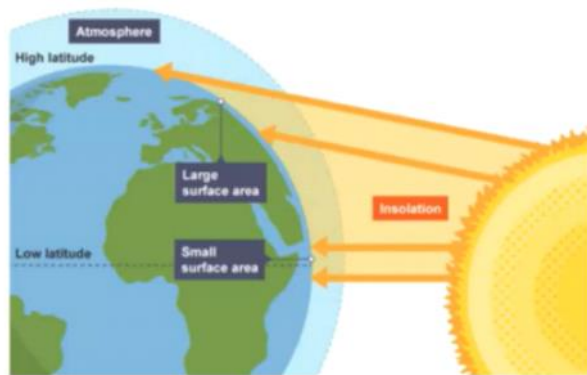


Week7 ZHOU YUHAN

Task1: Provide a summary of the main concepts that went through about solar radiation (formulas are not needed)

We have the direct solar radiation from the sun, Incoming solar radiation is the Earth's main source of energy and is dependent on season and latitude. The solar radiation is Electromagnetic energy emitted by Sun. On the outside the solar radiation is 1367W/m^2 , on the Earth's surface is 1000W/m^2 .

Solar radiation reaches through the atmosphere. That is due to dispersion and absorption phenomena.



The highest solar radiation per unit area is received at the equator and decreases toward the poles. The solar radiation received at a location on the Earth's surface varies seasonally.

Solar radiation reaches through the atmosphere Earth surface modified spectral distribution and total irradiance. That is due to dispersion and absorption phenomena.

Task2:Openstudio

1 Adding the climate data of Piacenza

Site Weather File & Design Days Life Cycle Costs Utility Bills

Weather File [Change Weather File](#)

Name:

Latitude: 44.92

Longitude: 9.73

Elevation: 134

Time Zone: 1

Download weather files at www.energyplus.gov

Measure Tags (Optional):

ASHRAE Climate Zone:

CBC Climate Zone:

Select Year by:

☐ Calendar Year

☒ First Day of Year

Daylight Savings Time: ☐ off

Starts

☐ Define by Day of The Week And Month

☐ Define by Date

Ends

☐ Define by Day of The Week And Month

☐ Define by Date

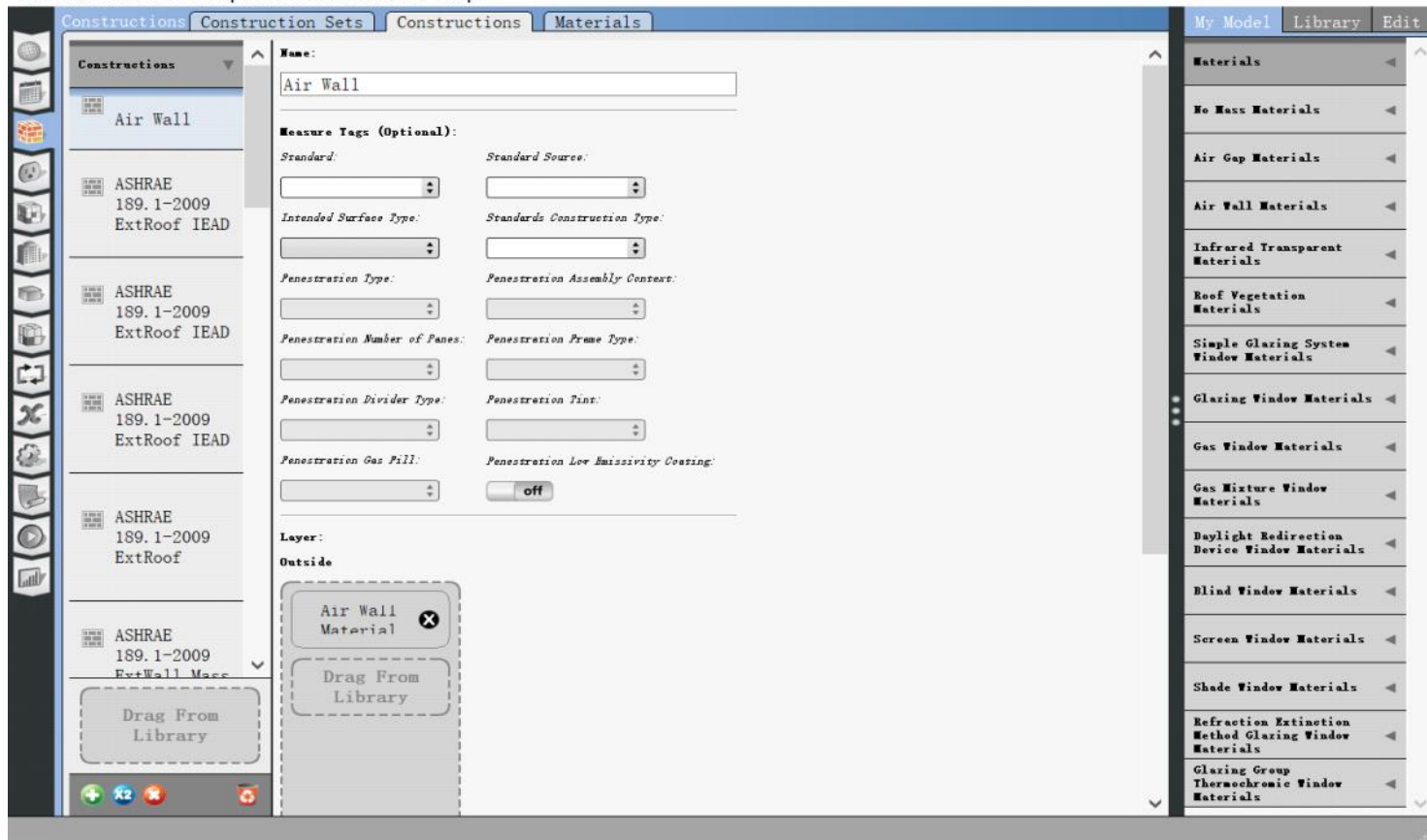
Design Days [Import From DDY](#)

Design Days

Date	Temperature	Humidity	Pressure Wind Precipitation	Solar	Custom
Design Day Name	All	Day Of Month	Month	Day Type	Daylight Saving Time Indicator
<input type="checkbox"/>	<input type="text" value="Apply to Selected"/>	<input type="text" value="Apply to Selected"/>	<input type="text" value="Apply to Selected"/>	<input type="text" value="Apply to Selected"/>	<input type="text" value="Apply to Selected"/>

2 Rename it

3 Rename it



4 Change materials

Constructions Construction Sets Constructions Materials My Model Library Edit

Materials

No Mass Materials

Air Gap Materials

Simple Glazing System Window Materials

Glazing Window Materials

Gas Window Materials

Gas Mixture Window Materials

Blind Window Materials

Daylight Redirection Device Window Materials

Screen Window Materials

Shade Window Materials

Air Wall Materials

Infrared Transparent Materials

Drag From Library

Name: 1/2IN Gypsum

Measure Tags (Optional):

Standard: Standard Source:

Standards Category: Standards Identifier:

Composite Framing Material: Composite Framing Configuration:

Composite Framing Depth: Composite Framing Size:

Composite Cavity Insulation:

Roughness: Thickness:

Smooth 0.012700 m

Conductivity: Density:

0.160000 W/m · K 84.900000 kg/m³

Specific Heat: Thermal Absorptance:

30.000000 J/kg · K 0.900000

Solar Absorptance: Visible Absorptance:

0.400000 0.400000

5 Applying it to the whole building.

Spaces Properties Loads Surfaces Subsurfaces Interior Partitions Shading

General Airflow Custom

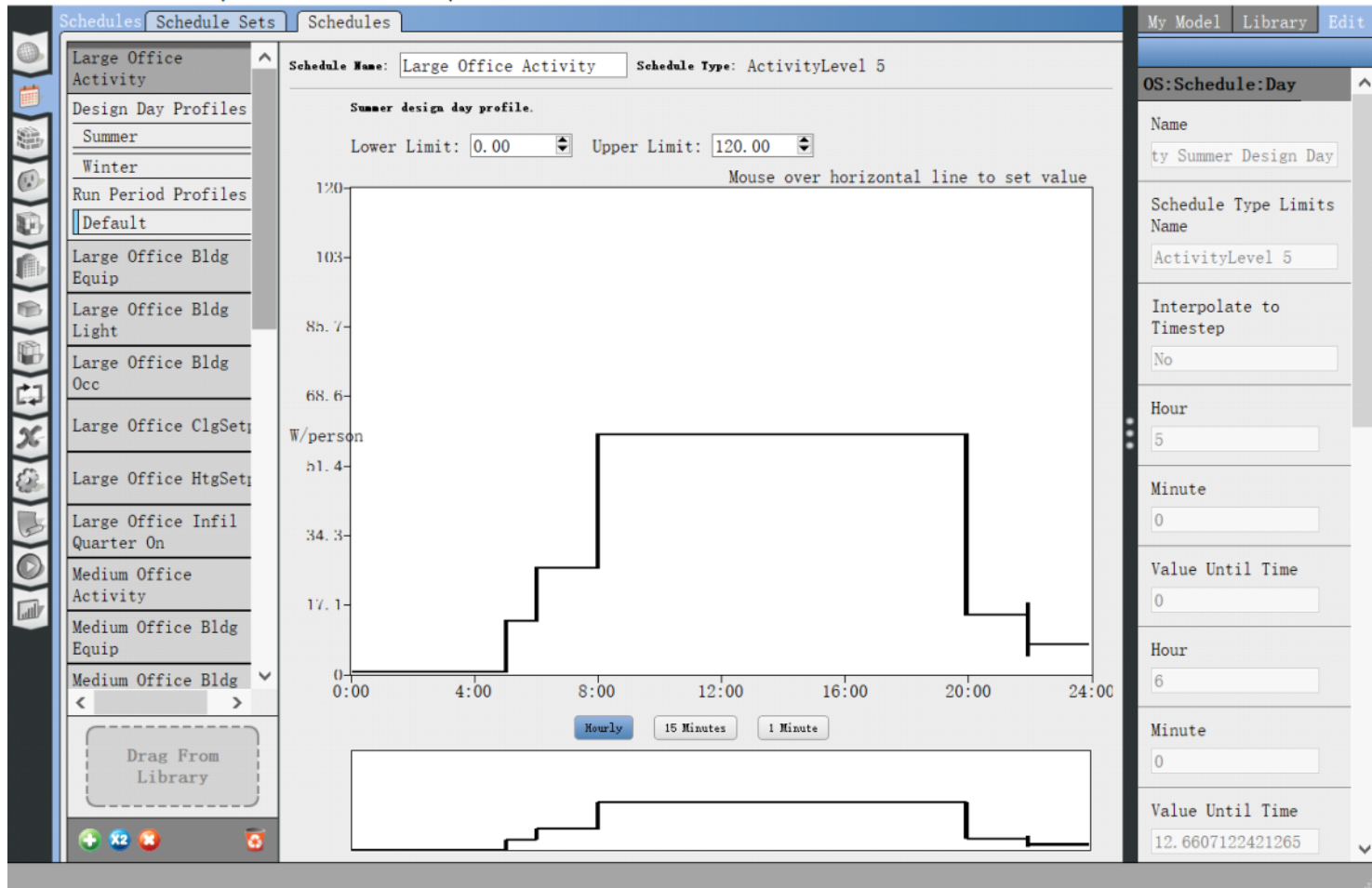
Filters: Story Thermal Zone Space Type
 All All All

Space Name	All	Story	Thermal Zone	Space Type	Default Construction Set	Default Schedule Set
	<input checked="" type="checkbox"/>	Apply to Selected	Apply to Selected	Apply to Selected	Apply to Selected	Apply to Selected
Space 101	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Off	Interior Door	
Space 102	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Off	Interior Door	
Space 103	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Off	Interior Door	
Space 104	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 4	189.1-2009 - Off	Interior Wall	
Space 105	<input checked="" type="checkbox"/>	Building Story 1	Thermal Zone 1	189.1-2009 - Off	Interior Door	
Space 201	<input checked="" type="checkbox"/>	Building Story 4	Thermal Zone 2	189.1-2009 - Off	Interior Floor	
Space 202	<input checked="" type="checkbox"/>	Building Story 4	Thermal Zone 2	189.1-2009 - Off	Interior Floor	
Space 203	<input checked="" type="checkbox"/>	Building Story 4	Thermal Zone 2	189.1-2009 - Off	Interior Floor	
Space 204	<input checked="" type="checkbox"/>	Building Story 4	Thermal Zone 4	189.1-2009 - Off	Interior Wall	
Space 205	<input checked="" type="checkbox"/>	Building Story 2		189.1-2009 - Off		
Space 301	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	Space Type 1	Interior Partiti	
Space 302	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 3	Space Type 1	Interior Partiti	
Space 303	<input checked="" type="checkbox"/>	Building Story 3	Thermal Zone 2	Space Type 1	Interior Partiti	

My Model Library Edit

- Interior Partition Surface
- Building Stories
- Thermal Zones
- Space Types
- Default Construction Sets
- Default Schedule Sets
- Design Specification Outdoor Air
- People Definitions
- Lights Definitions
- Luminaire Definitions
- Electric Equipment Definitions
- Gas Equipment Definitions
- Water Use Equipment Definitions
- Heat Pump Water Heater
- Hot Water Equipment Definitions
- Steam Equipment Definitions

6 According to the activities to change the line.



6 Change the "Energy Per Space Floor Area"

Loads

My Model Library Edit

People Definitions

Lights Definitions

Luminaire Definitions

Electric Equipment Definitions

189.1-2009 - Office - BreakRoom - CZ1-3

189.1-2009 - Office - BreakRoom - CZ4-8

189.1-2009 - Office - ClosedOffice - CZ1-3

Drag From Library

Name: Office - BreakRoom - CZ4-8 Electric Equipment Definition

Design Level: Energy Per Space Floor Area: Energy Per Person:

W 48.007040 W/m² W/person

Fraction Latent: Fraction Radiant:

0.000000 0.000000

Fraction Lost:

0.000000

+

x2

✖

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