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Dataset of Occupant Stereotypes for Building Simulation

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1 Introduction

This document provides details on how to use the accompanying idf files in building simulations conducted in EnergyPlus. The creation of the occupant stereotypes contained in the idf files is explained in the DEEP Report DEEP Report 6.02 Occupant Stereotypes for Building Simulation which is available here:

https://assets.publishing.service.gov.uk/media/6717c03dd94d2c219a540596/6.02_DEEP_Occupant_Stereotypes_Report.pdf.

1.1 Document aim

The aim of this document is to provide the necessary information to allow other researchers to understand and use the dataset for their own research purposes.

2 Use of idf files

The provided idf files can be copied directly to any other idf file.

The user of these files however, should pay attention to the following points:

- The zone list object should contain the actual names of the thermal zones included to the user's model. For example, if there is a living room in the user's model named Living-room, the Zone 1 Name shown in Figure 1 should change accordingly.
- Furthermore, the user must ensure that the object shown in Figure 1 should include all the thermal zones contained in his/her model.

Field	Units	Obj1
Name		all_zones
Zone 1 Name		Lounge
Zone 2 Name		Kitchen
Zone 3 Name		Bedroom

Figure 1: ZoneList object in idf files.

- The same applies to People class shown in Figure 2; the zone names shown in the highlighted cells should be the same as in the Zone object shown in Figure 3.

Field	Units	Obj1	Obj2	Obj3
Name		People_Lounge	People_Kitchen	People_Bedroom
Zone or ZoneList Name		Lounge	Kitchen	Bedroom
Number of People Schedule Name		Single_person_Lou	Single_person_Kitch	Single_person_Bed
Number of People Calculation Method		People	People	People
Number of People		1	1	1
People per Zone Floor Area	person/m2			
Zone Floor Area per Person	m2/person			
Fraction Radiant		0.3	0.3	0.3
Sensible Heat Fraction		5.76923077E-01	5.76923077E-01	5.76923077E-01
Activity Level Schedule Name		Activity_Lounge	Activity_Kitchen	Activity_Bedroom

Figure 2: People objects in idf files.

Field	Units	Obj1
Name		Lounge
Direction of Relative North	deg	
X Origin	m	
Y Origin	m	
Z Origin	m	
Type		1
Multiplier		1
Ceiling Height	m	autocalculate
Volume	m3	autocalculate
Floor Area	m2	autocalculate
Zone Inside Convection Algorithm		
Zone Outside Convection Algorithm		
Part of Total Floor Area		Yes

Figure 3: Zone object in EnergyPlus.

- The ElectricEquipment class (Figure 4) contains convective (conv), radiant (rad) and latent (lat) gains for various spaces. Once more, the user must ensure that the zone names shown in the second row (Zone or ZoneList Name) are the same as in the Zone object.

Field	Units	Obj1	Obj2
Name		Lounge equip_Conv	Lounge equip_Rad
Zone or ZoneList Name		Lounge	Lounge
Schedule Name		Single_person_Lounge_Low_Conv_Equip	Single_person_Lounge_Low_Rad_Equip
Design Level Calculation Method		EquipmentLevel	EquipmentLevel
Design Level	W	1	1
Watts per Zone Floor Area	W/m2		
Watts per Person	W/person		
Fraction Latent			
Fraction Radiant			1
Fraction Lost			
End-Use Subcategory		General	General

Figure 4: ElectricEquipment objects in idf files

- In the same class, there are two objects named Loads_in_all_house_Conv and Loads_in_all_house_Rad. These contain internal loads as watts per floor area and should be ascribed to all zones (that's why the 'all zones' object in Figure 1 must include all the zones of the model).
- In some idf files gains are provided for utility rooms, study-rooms, play-rooms and conservatories; if such a space does not exist in the user's model, the gains in the utility rooms can be allocated to the kitchen, and the gains from the other rooms can be allocated to any bedroom.