UTICAJ NAČINA DEFINISANJA RASPOREDA PRISUSTVA LJUDI NA TOPLOTNE DOBITKE OD LJUDI U OKVIRU JEDNOG STUDENTSKOG DOMA

IMPACT OF THE METHODS OF OCCUPANCY SCHEDULE DEFINING ON PEOPLE HEAT GAINS WITHIN A STUDENT DORMITORY

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U ovom radu analiziran je uticaj načina definisanja rasporeda prisustva ljudi na toplotne dobitke od ljudi u okviru jednog studentskog doma u gradu Kragujevcu (Srbija). Razmatran je uticaj godišnjeg rasporeda definisanog prema jednom danu u godini i uticaj detaljno definisanog godišnjeg rasporeda prisustva, na toplotne dobitke ljudi, uz pomoć softvera EnergyPlus. Rasporedi prisustva uključuju prisustvo ljudi u domu tokom nedelja (dana) održavanja predavanja na fakultetima, prisustvo tokom nedelja odmora, kao i prisustvo ljudi tokom državnih praznika Republike Srbije za 2017. godinu. Rezultati ukazuju na značajnu razliku toplotnih dobitaka od ljudi za dva analizirana načina definisanja rasporeda prisustva. Srednja vrednost procentualne razlike toplotnih dobitaka iznosi 27%. Najveća razlika iznosi 63% (avgust), a najmanja 11% (jun). Ovim radom ukazano je na značaj i potrebu pravilnog i detaljnog definisanja prisustva ljudi u okviru simulacionog softvera s ciljem dobijanja što realnijih podataka vezanih za toplotne dobitke odnosno gubitke simuliranog objekta.

Ključne reči: *prisustvo ljudi; toplotni dobici; EnergyPlus*

In this paper the impact of the methods of occupancy schedule defining on people heat gains within a student dormitory in the city of Kragujevac (Serbia) was analyzed. The impact of the yearly schedule defined according to the occupancy for a single day of the year and the impact of the detailed yearly occupancy schedule, on the people heat gains, by using the EnergyPlus software, was considered. The occupancy schedules include people occupancy in the dormitory during the weeks (days) of lectures at faculties, the occupancy during the weeks of vacation, as well as the student occupancy in the dormitory during National holidays of the Republic of Serbia for 2017. The results indicate a significant difference in people heat gains for two analyzed methods of occupancy schedule defining. The average percentage difference of heat gains is 27%. The highest difference amounts 63% (August) and the lowest amounts 11% (June). This paper outlines the importance and the need for a proper and detailed definition of the people occupancy within the simulation software with the aim of obtaining as real as possible data related to the heat gains or losses of the simulated building.

Key words: *people occupancy; heat gains; EnergyPlus*

1 Introduction

The people occupancy within the room of an building is the information that significantly influences energy consumption as well as the quality of indoor environment of the same room (building). People releasing sensible and latent heat influence the temperature and humidity of the air in the room which they occupy. On the other side, the occupant behavior defined through the frequency and time of window and door opening, operation of lighting and electrical appliances also affects the heat gains and losses of the building. One of the major problems when using a software for simulation the energy and environmental behavior of a buildings is the fact that the people occupancy is most often defined using the fixed and unrealistic schedules. As a consequence, the obtained values of the estimated energy consumption significantly deviate from the values of the real energy consumption. In relation with that, this paper outlines the importance and the need for proper definition of the people occupancy within the simulation software with the aim of obtaining as real as possible data related to the energy consumption of the simulated building. Precise and proper definition of the people occupancy is a precondition for precise prediction of the energy consumption of the building [1-4]. In this paper the impact of the methods of occupancy schedule defining on people heat gains within a student dormitory in the city of Kragujevac (Serbia) was analyzed. The schedules are defined for rooms which students and janitors occupy (bedrooms, toilets, bathrooms and a restaurant). The impact of the yearly schedule defined according to the occupancy for a single day of the year (fixed schedule) and the impact of the detailed yearly occupancy schedule (variable schedule), on the people heat gains, by using the EnergyPlus software, was considered. Basic text should be tagged as Normal style.

2 Description of the analyzed building

The analyzed student dormitory (Fig. 1) has 23 rooms for students and teachers arranged on 3 levels (Table 1). The floor area of the levels is the same. Most of the rooms on the second and third level are identical in shape and floor

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area, with the difference in the number of rooms per level. On the second level there are 10 rooms for students and one room for janitors, while on the third level there are 11 rooms for students and 1 room for janitors. The energy behavior of the building was simulated by using the EnergyPlus software (version 8.4.0) [5]. The EnergyPlus software takes into account all factors that influence heat losses and loads in the building, such as electrical appliances, lighting, people occupancy, solar radiation, wind, infiltration and shading [6, 7]. The simulation was conducted for real weather data for the city of Kragujevac (Serbia).
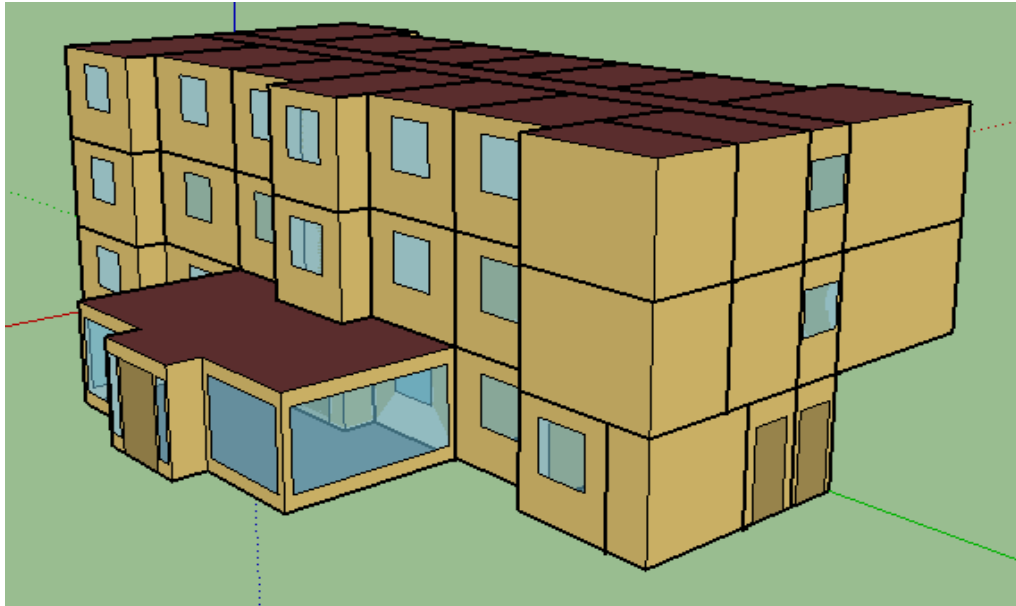
Fig. 1. Isometric view of the analyzed student dormitory

Table 1. Names of the rooms with accommodation capacities

Name (2nd level)	Accommodation capacity	Name (3rd level)	Accommodation capacity
Restaurant (1st level)	75	Bathroom	4
Bathroom	4	Toilet	4
Toilet	4	Room 1	Three bed room
Room 1	Three bed room	Room 2	Three bed room
Room 2	Three bed room	Room 4	Three bed room
Room 4	Three bed room	Room 5	Three bed room
Room 5	Three bed room	Room 6	Four bed room
Room 6	Four bed room	Room 7	Four bed room
Room 7	Four bed room	Room 8	Four bed room
Room 8	Four bed room	Room 9	Four bed room
Room 9	Four bed room	Room 10	Three bed room
Room 10	Three bed room	Room 11	Four bed room
Room 11	Four bed room	Room 12	Three bed room
Janitor's room	One bed room	Janitor's room	One bed room

It was assumed that the heat gain per person amounts 99 W, which is related to the activity of reading (seated) [8].

3 Detailed people occupancy for entire year

The student dormitory has rooms of various purposes: bedrooms (with three or four beds), janitor's room, restaurant, toilets and bathrooms. The maximum number of people in the three bed room is 3, and in the four bed room 4. The janitor's room is for one person. The maximum seating capacity of the restaurant is 75 people. Bathrooms and toilets can be used by 4 persons at the same time. The occupancy schedules include people occupancy in the dormitory during

the weeks (days) of lectures at faculties, the occupancy during the weeks of vacation, as well as the student occupancy in the dormitory during National holidays of the Republic of Serbia for 2017 (Table 2).

Table 2. National holidays of the Republic of Serbia (in 2017)

Date	Holyday
01-05.01.	New Year holidays
05-08.01.	Christmas holidays
15.02. and 16.02.	National Day
14-17.04.	Easter holidays
01.05. and 02.05.	Labor Day
11.11.	The Day of Armistice in the First World War

The schedules of the people occupancy are defined by using fractions. The value of fraction 1 denotes the maximum people occupancy, while the total absence of people from a certain room is denoted by a value of 0. First, the schedules of the student occupancy during the weeks of lectures at faculties are defined (Tables 3 - 8).

Table 3. People occupancy for Monday

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 14 h	14 – 17 h	17 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	0	0	1	0	1	0	1	0	0	1
Four bed room	1	0	0	0	0	1	0	1	0	1	0	0	1
Janitor's room	1	0	0	1	0	0	1	0	0	0	1	0	1
Restaurant	0	0	1	0	1	0	0	0	1	0	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	0	0	1	0
Bathroom	0	1	0	0	0	0	0	0	0	0	0	1	0

In the period from 00:00 to 06:00 h all students are in the bedrooms. From 06:00 to 07:00 h, the students use bathrooms and toilets, while from 07:00 to 08:00 h they are at breakfast in the restaurant. From 08:00 to 12:00 h, the students have lectures, while janitors are in their rooms. Lunch at the restaurant runs from 12:00 to 13:00 h, after which students rest in their rooms. The afternoon lectures are from 14:00 to 17:00 h. Preparation for dinner, study and rest, according to the house rules, is from 17:00 - 18:00 h. Dinner at the restaurant runs from 18:00 - 19:00 h. Students from 20:00 to 22:00 h are spending their time in their rooms. Preparations for sleep take from 23:00 - 24:00 h. All students are in their rooms from 00:00 h. The same schedule is valid for Tuesday (Table 3).

The schedule defined for Wednesday (Table 4) differs from the schedule for Monday and Tuesday in that lectures begin at 14:00 h and last until 18:00 h. After lectures, students go to the restaurant at 18:00 h for dinner.

Table 4. People occupancy for Wednesday

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 14 h	14 – 18 h	18 – 19 h	19 – 20 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	0	0	1	0	0	1	0	1
Four bed room	1	0	0	0	0	1	0	0	1	0	1
Janitor's room	1	0	0	1	0	0	1	0	1	0	1
Restaurant	0	0	1	0	1	0	0	1	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	1	0
Bathroom	0	1	0	0	0	0	0	0	0	1	0

Unlike other working days, the lectures on Thursday are held from 14:00 to 16:00 h (Table 5).

Table 5. People occupancy for Thursday

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 14 h	14 – 16 h	16 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	0	0	1	0	1	0	1	0	0	1
Four bed room	1	0	0	0	0	1	0	1	0	1	0	0	1
Janitor's room	1	0	0	1	0	0	1	0	0	0	1	0	1
Restaurant	0	0	1	0	1	0	0	0	1	0	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	0	0	1	0
Bathroom	0	1	0	0	0	0	0	0	0	0	0	1	0

The schedule of student occupancy in dormitory for Friday is the same as for the previous days until 17:00 h, when a certain number of students go to their homes on weekends. The number of students remaining in the student dormitory is 42, which is shown by the fractions in Table 6.

Table 6. People occupancy for Friday

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 14 h	14 – 16 h	16 – 17 h	17 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	0	0	1	0	1	0,66	0	0,66	0	0	0,66
Four bed room	1	0	0	0	0	1	0	1	0,5	0	0,5	0	0	0,5
Janitor's room	1	0	0	1	0	0	1	0	0	0	0	1	0	1
Restaurant	0	0	1	0	1	0	0	0	0	0,58	0	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	0	0	0	0,5	0
Bathroom	0	1	0	0	0	0	0	0	0	0	0	0	0,5	0

There are no lectures on weekends. The schedules of people occupancy for Saturday and Sunday are defined according to the following tables (Tables 7 and 8), respectively. The students who are returning to dormitory on Sunday due to the start of a new working week are taken into account when defining the fractions in Table 8.

Table 7. People occupancy for Saturday

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 14 h	16 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0,66	0	0	0,66	0	0,66	0	0	0,66
Four bed room	0,5	0	0	0,5	0	0	0,5	0	0,5	0	0	0,5
Janitor's room	1	0	0	1	0	1	0	0	0	1	0	1
Restaurant	0	0	0,58	0	0,58	0	0	0,58	0	0	0	0
Toilet	0	0,5	0	0	0	0	0	0	0	0	0,5	0
Bathroom	0	0,5	0	0	0	0	0	0	0	0	0,5	0

One of the characteristic days is the day when the students arrive to the dormitory after holidays. The schedule for that day is given in Table 9.

Table 8. People occupancy for Sunday

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 16 h	16 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0,66	0	0	1	0	1	0	0	1
Four bed room	0,5	0	0	0,5	0	0	1	0	1	0	0	1
Janitor's room	1	0	0	1	0	1	0	0	0	1	0	1
Restaurant	0	0	0,58	0	0,58	0	0	1	0	0	0	0
Toilet	0	0,5	0	0	0	0	0	0	0	0	1	0
Bathroom	0	0,5	0	0	0	0	0	0	0	0	1	0

Table 9. People occupancy for student arrival day

	00 – 16 h	16 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0	1	0	1	0	0	1
Four bed room	0	1	0	1	0	0	1
Janitor's room	0	1	0	0	1	0	1
Restaurant	0	0	1	0	0	0	0
Toilet	0	0	0	0	0	1	0
Bathroom	0	0	0	0	0	1	0

Analogously to Table 1, the schedule of student occupancy in the dormitory during National holidays is defined (Tables 10 - 12). The schedules for the Day of Armistice in the First World War are not defined because on 11th of November 2017. it was Saturday. The schedule according to Table 7 was used for this day.

Table 10. People occupancy for National Day

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 15 h	15 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	1	0	0	1	0	0	0	1
Four bed room	1	0	0	1	0	0	1	0	0	0	1
Janitor's room	1	0	0	1	0	1	0	0	1	0	1
Restaurant	0	0	1	0	1	0	0	1	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	1	0
Bathroom	0	1	0	0	0	0	0	0	0	1	0

Table 11 shows the schedule of people occupancy for 13th of April, when students go to their homes for Easter holidays. The student dormitory, according to the schedule in Table 2, remains empty for the next three days. For the fourth day the schedule defined by the Table 9 is valid.

Table 11. People occupancy for 13th of April

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 16 h	16 – 24 h
Three bed room	1	0	0	0	0	1	0
Four bed room	1	0	0	0	0	1	0
Janitor's room	1	0	0	1	0	1	0
Restaurant	0	0	1	0	1	0	0
Toilet	0	1	0	0	0	0	0
Bathroom	0	1	0	0	0	0	0

Table 12 shows the schedule of people occupancy for 28th of April, when students go to their homes for the upcoming Labor Day (1st and 2nd of May).

Table 12. People occupancy for 28th of April

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 14 h	14 – 16 h	16 – 17 h	17 – 24 h
Three bed room	1	0	0	1	0	1	0	1	0
Four bed room	1	0	0	1	0	1	0	1	0
Janitor's room	1	0	0	1	0	0	1	0	0
Restaurant	0	0	1	0	1	0	0	0	0
Toilet	0	1	0	0	0	0	0	0	0
Bathroom	0	1	0	0	0	0	0	0	0

Also, this investigation takes into account the student occupancy during the exam weeks (in June, August and September). It should be noted that the student dormitory does not work in the period from 15th of July to 15th of August (there is no presence of students).

The schedule of student occupancy during the June examination period corresponds to the schedule during the August and September examination periods, but there is a difference in the number of students. The number of students during the August and September examination period is lower, due to the assumption that approximately 25% of students passed all the exams in the June examination period.

The occupancy schedules for one week (Tables 13 - 19), during the examination period in August (September is completely identical, while for June the fractions are increased by 25%) are given below.

Table 13. People occupancy for Monday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 14 h	14 – 17 h	17 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0	0	0,66	0	0,66	0	0,66	0	0,66
Four bed room	0,75	0	0	0	0	0,75	0	0,75	0	0,75	0	0,75
Janitor's room	1	0	0	1	0	0	1	0	0	1	0	1
Restaurant	0	0	0,72	0	0,72	0	0	0	0,72	0	0	0
Toilet	0	0,75	0	0	0	0	0	0	0	0	0,75	0
Bathroom	0	0,75	0	0	0	0	0	0	0	0	0,75	0

Table 14. People occupancy for Tuesday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 16 h	16 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0	0	0	0,66	0	0	0,66	0	0,66
Four bed room	0,75	0	0	0	0	0	0,75	0	0	0,75	0	0,75
Janitor's room	1	0	0	1	0	1	0	0	1	1	0	1
Restaurant	0	0	0,72	0	0,72	0	0	0,72	0	0	0	0
Toilet	0	0,75	0	0	0	0	0	0	0	0	0,75	0
Bathroom	0	0,75	0	0	0	0	0	0	0	0	0,75	0

Table 15. People occupancy for Wednesday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 15 h	15 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0	0	0,66	0	0	0	0,66	0	0,66
Four bed room	0,75	0	0	0	0	0,75	0	0	0	0,75	0	0,75
Janitor's room	1	0	0	1	0	0	1	0	1	1	0	1
Restaurant	0	0	0,72	0	0,72	0	0	0,72	0	0	0	0
Toilet	0	0,75	0	0	0	0	0	0	0	0	0,75	0
Bathroom	0	0,75	0	0	0	0	0	0	0	0	0,75	0

Table 16. People occupancy for Thursday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 14 h	14 – 17 h	17 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0	0	0,66	0	0,66	0	0,66	0	0,66
Four bed room	0,75	0	0	0	0	0,75	0	0,75	0	0,75	0	0,75
Janitor's room	1	0	0	1	0	0	1	0	0	1	0	1
Restaurant	0	0	0,72	0	0,72	0	0	0	0,72	0	0	0
Toilet	0	0,75	0	0	0	0	0	0	0	0	0,75	0
Bathroom	0	0,75	0	0	0	0	0	0	0	0	0,75	0

Table 17. People occupancy for Friday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 14 h	14 – 17 h	17 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0	0	0,66	0	0,66	0	0	0	0,66
Four bed room	0,75	0	0	0	0	0,75	0	0,5	0	0	0	0,5
Janitor's room	1	0	0	1	0	0	1	0	0	1	0	1
Restaurant	0	0	0,72	0	0,72	0	0	0	0,58	0	0	0
Toilet	0	0,75	0	0	0	0	0	0	0	0	0,5	0
Bathroom	0	0,75	0	0	0	0	0	0	0	0	0,5	0

Table 18. People occupancy for Saturday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 14 h	16 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0,66	0	0	0,66	0	0	0	0,66
Four bed room	0,5	0	0	0,5	0	0	0,5	0	0	0	0,5
Janitor's room	1	0	0	1	0	1	0	0	1	0	1
Restaurant	0	0	0,58	0	0,58	0	0	0,58	0	0	0
Toilet	0	0,5	0	0	0	0	0	0	0	0,5	0
Bathroom	0	0,5	0	0	0	0	0	0	0	0,5	0

Table 19. People occupancy for Sunday of the August examination period

	00 – 07 h	07 – 08 h	08 – 09 h	09 – 12 h	12 – 13 h	13 – 15 h	15 – 17 h	17 – 18 h	18 – 19 h	19 – 20 h	20 – 22 h	22 – 23 h	23 – 24 h
Three bed room	0,66	0	0	0,66	0	0	0,66	0,66	0	0	0,66	0	0,66
Four bed room	0,5	0	0	0,5	0	0	0,5	0,75	0	0	0,75	0	0,75
Janitor's room	1	0	0	1	0	1	0	0	0	1	1	0	1
Restaurant	0	0	0,58	0	0,58	0	0	0	0,72	0	0	0	0
Toilet	0	0,5	0	0	0	0	0	0	0	0	0	0,75	0
Bathroom	0	0,5	0	0	0	0	0	0	0	0	0	0,75	0

The last day that students spend in the student dormitory is Friday, 29th of December.

4 People occupancy for entire year according to the occupancy for a single day

In the software EnergyPlus, the easiest way to define the people occupancy is according to a single day schedule that would apply for each day during the year. If this method of occupancy defining is applied, then the schedule of people occupancy for the student dormitory would be like in Table 20.

Table 20. People occupancy for entire year according to the occupancy for a single day

	00 – 06 h	06 – 07 h	07 – 08 h	08 – 12 h	12 – 13 h	13 – 17 h	17 – 18 h	18 – 19 h	19 – 22 h	22 – 23 h	23 – 24 h
Three bed room	1	0	0	0	0	0	1	0	1	0	1
Four bed room	1	0	0	0	0	0	1	0	1	0	1
Janitor's room	1	0	0	1	0	1	0	0	1	0	1
Restaurant	0	0	1	0	1	0	0	1	0	0	0
Toilet	0	1	0	0	0	0	0	0	0	1	0
Bathroom	0	1	0	0	0	0	0	0	0	1	0

5 Results

The values of the people heat gains are shown on Fig. 2. The values of the heat gains obtained for the yearly occupancy schedule defined according to the occupancy for a single day (Case 1) are significantly higher than the values for the detailed yearly student occupancy schedule (Case 2).

For the Case 1 the monthly people heat gains depend only on the number of days within month: 3575 kWh for January, March, May, July, August, October and December, 3460 kWh for April, June, September and November and 3229 kWh for February.
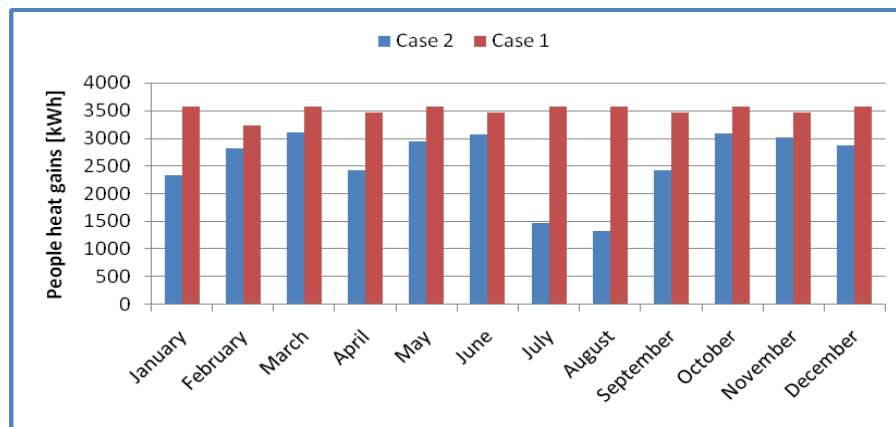
Fig. 2. The people heat gains for two analyzed methods of occupancy schedule defining: yearly occupancy schedule defined according to the occupancy for a single day (Case 1) and detailed yearly occupancy schedule (Case 2)

On the other side, for the Case 2 the highest amount of the heat gains is in March (3102 kWh), when there are no non-working days. The lowest value of the heat gains is related to August (1336 kWh) since the student dormitory is closed for students until 15th of August.

Fig. 3 shows the percentage difference of people heat gains for two analyzed methods of occupancy schedule defining. The highest difference is related to August (63%) when for the first half of the month the student dormitory was closed, while for the second half there was a small number of students in the student dormitory. The lowest difference is recorded in June (11%). In that month, the student occupancy in dormitory is higher due to the exam preparation for the June examination period. The average percentage difference of heat gains is 27%.
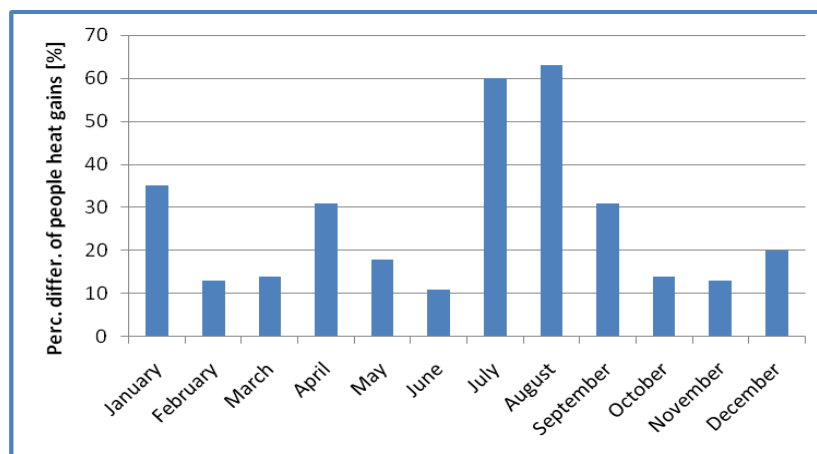
Fig. 3. Percentage difference of people heat gains for two analyzed methods of occupancy schedule defining

6 Conclusions

In this paper the impact of the methods of occupancy schedule defining on people heat gains within a student dormitory in the city of Kragujevac was analyzed. The schedules are defined for rooms which students and janitors occupy (bedrooms, toilets, bathrooms and a restaurant). The total number of considered rooms is 28. The impact of the yearly schedule defined according to the occupancy for a single day of the year and the impact of the detailed yearly occupancy schedule, on the people heat gains, by using the EnergyPlus software, was considered. The occupancy schedules include people occupancy in the dormitory during the weeks (days) of lectures at faculties, the occupancy during the weeks of vacation, as well as the student occupancy in the dormitory during National holidays of the Republic of Serbia for 2017. The results indicate a significant difference in people heat gains for two analyzed methods of occupancy schedule defining. The average percentage difference of heat gains is 27%. The highest difference amounts 63% (August) and the lowest amounts 11% (June). This paper outlines the importance and the need for a proper and detailed definition of the people occupancy within the simulation software with the aim of obtaining as real as possible data related to the heat gains or losses of the simulated building.

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8 References

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