SIEMENS

HOTEL SOLUTION
Reservation and energy management
User's guide

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Building Technologies

Siemens Switzerland Ltd.
Building Technologies Group
International Headquarters
Gubelstrasse 22
CH-6301 Zug
Tel. +41 41-724 24 24
Fax +41 41-724 35 22
www.siemens.com/sbt

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1 General notes

1.1 Purpose

This document describes the reservation and energy management component of the Siemens HOTEL SOLUTION software. It is implemented in the user interface in the **Energy Management** menu.

For hotels with front-office systems that do not support this function, it is possible to change the temperature setpoint manually in whole groups of rooms at a time without taking account of reservations.

1.2 Terms and abbreviations

Terms and abbreviations	Definition
FOS	Front Office System A software solution covering the commercial aspects of running a hotel
User interface	User Interface Refers to the user interface of the Siemens HOTEL SOLUTION software
RCU	Room controller ("Room Controller Unit") A device for control and monitoring of the building services equipment in a hotel room
TCU	"Temperature Control Unit": the room controller

1.3 Typographical conventions

The typographical conventions used in this manual are described in the table below. We have adopted these conventions to make it as easy as possible for you to read the manual, so please take a few moments to read through the table.

Description	**Example**
Text to be entered by the user is printed in italics	*setup*
Italics are also used for special terms and to emphasize specific points	*Special term*
Placeholders in pieces of code and examples of files are also shown in italics	*Variable*
Path information and file names are shown in Courier	Format.exe
The names of keys and key combinations are printed in angular brackets. The "+" sign indicates that the keys specified should be pressed simultaneously.	<Ctrl>+<V>
The font Courier is used for pieces of code and examples of files containing text.	`Courier`
Text in pieces of code, if shown in rectangular brackets, indicates optional information.	[*`Option 1`*]
Text in pieces of code, if shown in angular brackets, indicates a compulsory input.	*`<Compulsory input>`*

2 Reservations strategy

The purpose of the Siemens HOTEL SOLUTION reservations strategy is to support the management of energy.

To save as much heating and/or cooling energy as possible, the energy management system is used to assign different temperature setpoints to vacant and allocated guest rooms.

Guests expect to find their rooms at "room temperature" as soon as they check in.

To save costs while maintaining the comfort of guests, the rooms need to be pre-heated or pre-cooled accordingly. The reservation management system provides one way of achieving this objective.

2.1 Reservations

In a hotel, rooms can be allocated to guests in various ways. The system supports the three most common methods:

- A guest reserves a room (any room)
- A guest reserves a specific room
- A guest arrives without prior reservation and checks in immediately ("walk-in")

It is important that the required number of rooms should be heated to "room temperature" on the day of arrival. In addition, an unspecified number of rooms must be prepared for walk-in guests. Normally, this is a matter for the hotelier's judgment, based on experience.

The Siemens HOTEL SOLUTION supports this function by pre-heating/pre-cooling the required number of guest rooms to the appropriate room temperature.

If a front-office program is used which operates with reservation algorithms, the optimum room allocation sequence (in energy terms) can be transmitted via the appropriate interface. Currently, the Hogatex FOS incorporates this type of interface.

2.2 Room allocation sequence

It is clear that every hotel has its own criteria for the allocation of rooms. To achieve really effective energy savings, the actual design of the heating system must be taken into account.

Siemens Building Technologies Group installs systems of this kind, and therefore knows which rooms are connected to which heating circuit.

The objective of the energy strategy is as follows:

All rooms connected to the same heating circuit are allocated to the same *energy group*. Consequently, every guest room is allocated to a specific energy group.

The allocation of rooms is governed by the following:

All energy groups are assigned a priority number, which determines the order of the energy groups from which to allocate the rooms. Rooms in another energy group are **only** allocated when **all** the rooms of **one** energy group have been allocated. This ensures demand-based use of the separate heating circuits. The diagram below should clarify this.

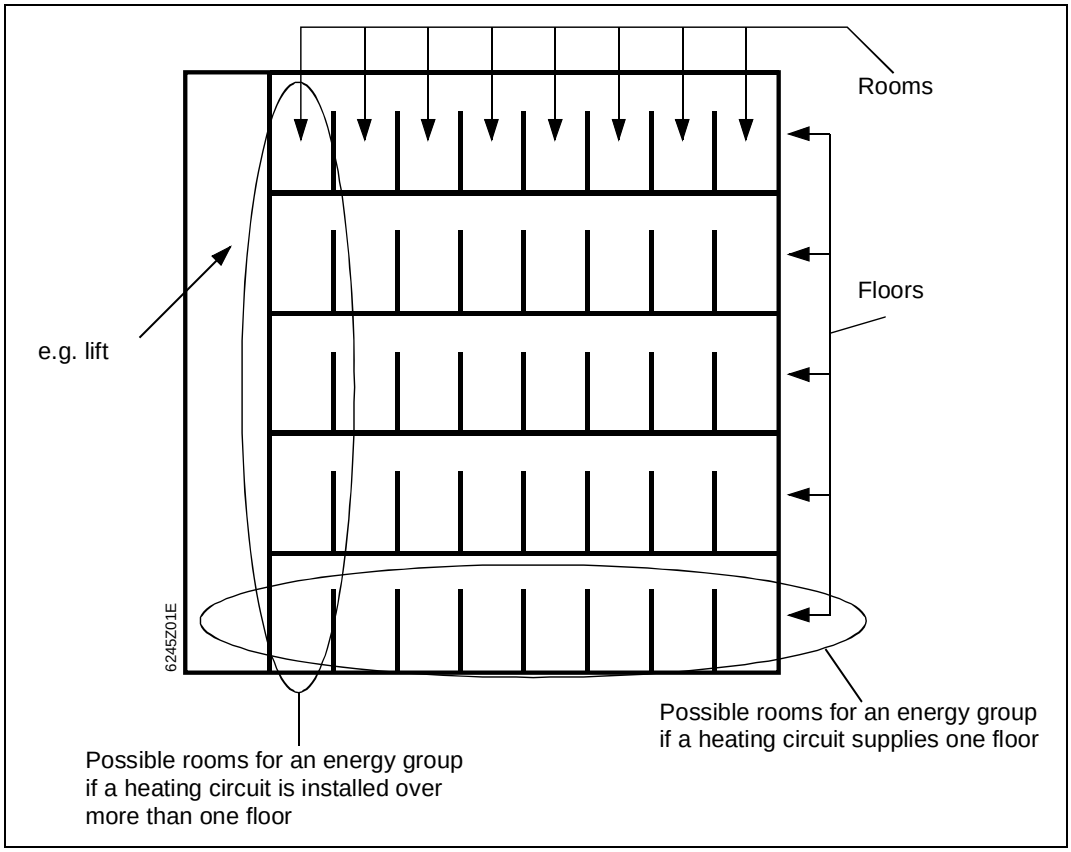

Fig. 2-1: Schematic layout of hotel

Notes on the diagram

There are two possible approaches to the allocation of rooms to energy groups. (This depends on the layout of the heating circuits.)

All areas for general access, such as the foyer, lifts, etc. need to be supplied by separate heating circuits.

The individual energy groups are based on the layout of the heating system, and are therefore set up when the hotel database is generated. Energy groups and assignment to energy groups can be managed retrospectively using the commissioning functions of the HOTEL SOLUTION user interface.

To avoid repeatedly subjecting the same rooms to excessive wear and tear, the hotel staff should vary the priority numbers originally assigned to specific energy groups by the commissioning engineer. For this purpose, too, there is an appropriate option in the **Energy Management** menu of the user interface.

To enable the hotel staff to assign the rooms within a given energy group in the required order, a priority number is also assigned to each room. This determines the order in which the rooms are allocated **within a given energy group**. If a room is to be withdrawn from the group, for redecorating, for example, it is assigned a priority of "0", and will then not be allocated.

2.2.1 Priorities

The priorities are assigned and/or modified in the **Energy Management** menu of the HOTEL SOLUTION user interface.

Priority-numbers from 0 to 100 can be assigned. Priority 0 is used for rooms which will not appear in the list of suggested rooms (e.g. rooms being redecorated, public areas etc.).

The lowest actual priority-number is therefore 1 and the highest is 100.

A room with a priority number of 10 will be assigned *before* a room whose priority number is 9. The absolute numerical values are of secondary importance, but the high and low limits must be observed.

The diagram below illustrates the relationship between energy groups, energy group priorities, room types and room-priorities.

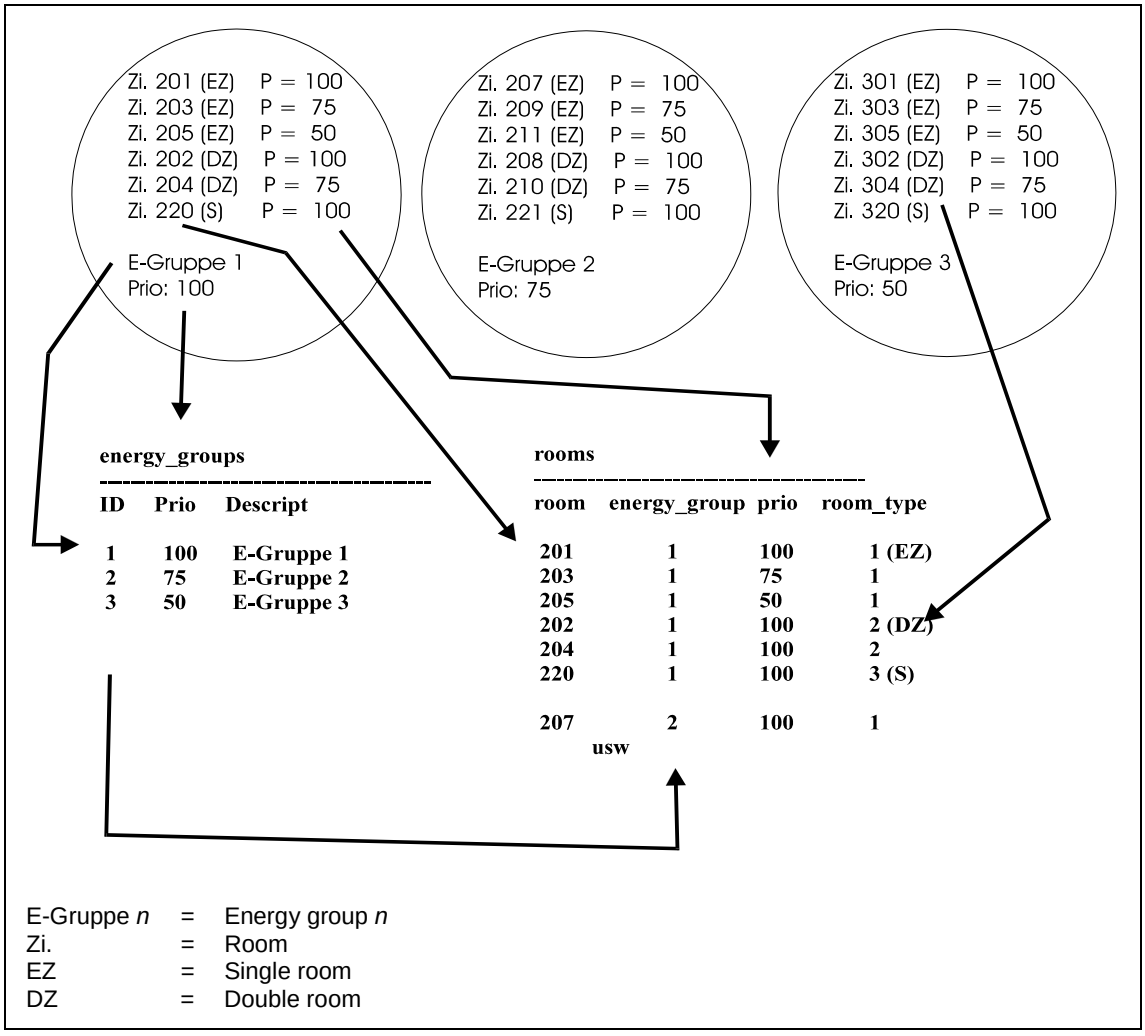

Fig. 2-2: Assigning the rooms to energy groups and priorities

2.3 FOS and Siemens HOTEL SOLUTION

For hotels already installed with front-office systems such as Hogatex, it will be noted that these products have their own reservation algorithms. However, as they do not have an energy management component, the data needs to be transferred.

The flow of data **always applies to all** room types (single rooms, double rooms or suites etc.)

In the case of the Hogatex FOS, the flow of data traffic is as follows:

Hogatex → Hotel Solution:

- Number of reservations for that day (with room numbers) transmitted once at xx:00 hours.
- Number of departures on that day (with room numbers) transmitted once at xx:00 hours.
- Number of firm bookings for that day (with room numbers) transmitted once at xx:00 hours.

Hotel Solution → Hogatex

- All room numbers with room status and priority, transmitted once at xx:00 hours.

The HOTEL SOLUTION software uses the data from the Hogatex system to set all the rooms reserved for that day to "Standby A" mode at a specific time (refer to the user's guide to the User Interface, Section 13, "Room states and temperature profiles"). As soon as the guest actually checks in, the room is heated to the comfort temperature.

The following shows how many rooms need to be set to which standby mode. "Offline" in this context refers to all rooms for which the "RCU Offline" attribute is set to *1* in the **Rooms** table.

Standby mode

Standby A = R + WI + S

Standby B = U

Standby C = SM – *Standby A* – *Standby B* – *Comfort* – Offline

Key

R	- Number of reservations for that day
O	= Number of guests checking out on that day
WI	= Number of "walk-ins" (immediate bookings without prior reservation)
S	= Number of backup rooms (safety margin)
U	= User-defined number of rooms for the current mode
SM	= Sum total of all rooms

2.4 Changing the room operating modes

The hotelier should have the facility to modify the operating mode of any room in *Standby* mode at any time vie the user interface. This ensures that the rooms can be brought to the appropriate temperature if an unexpectedly large number of guests want to check in on the same day.

In normal circumstances, however, the system should be able to use the empirical data supplied by the hotelier to calculate the number of rooms in the various standby modes and to set them to the required mode independently.

After HOTEL SOLUTION receives the data from the FOS, all rooms need to be set to the required standby mode.

When setting *Standby A,* the number of guest rooms concerned must take account of the guests checking out that day. The calculation is illustrated below, using the same abbreviations as before (see Section 2.3):

Calculation

Standby A = R – O + WI + S

"Standby A"

When the number of *Standby A* rooms has been calculated, the associated datagrams are transmitted to the room controllers, firstly on the basis of the "firm bookings" room list, and then on the basis of the "priorities" list, so that the new room setpoints can be programmed.

Note

Note that firm bookings no longer appear in the priorities list.

"Standby B"

The number of *Standby B* rooms is specified by the user. Datagrams are generated on the basis of the priorities list and transmitted to the room controllers.

"Standby C"

The remaining rooms are set to *Standby C* mode.

2.5 Summary

In conjunction with the energy management component of the HOTEL SOLUTION system, flexible heating and cooling periods can be programmed in the guest rooms of a hotel. This leads to reduced costs without impairing quality.

The priority-based controls can be used to specify which rooms are to be allocated and how often. Algorithms can also be used for an automatic change of priorities (not yet available).

Most front-office programs use their own reservation algorithms. In such cases the appropriate interfaces need to be created, in order to combine the reservation features of the FOS software with the reservation and energy management features of Siemens HOTEL SOLUTION. The example above is a solution based on the Hogatex FOS software.

If the hotel does not use FOS software, then realistic energy management is not possible at present.

3 Energy management without FOS

The energy management component of the HOTEL SOLUTION system is designed to reduce the energy costs associated with heating and cooling guest rooms. With their intelligent software, the room controllers provide some options themselves.

This section contains information about the possibilities offered by the room controllers and describes how the hotel staff can manipulate them to obtain maximum benefit.

Please also read the description in Section 4, which describes some of the basic concepts and principles for handling the dialog boxes.

Caution

To enable the energy management component to operate without a front-office system, the "`energy_with_fos`" flag must be set to "`FALSE`" via the HOTEL SOLUTION user interface (in the System | Configuration Parameters... menu).

3.1 Room controller options

Setpoint and measured temperature

The room controllers control the room temperature by comparing the measured room temperature with the room temperature setpoint. This setpoint is set via the user interface. Provided the hotel is fitted with the appropriate building services technology, the room will be heated or cooled based on its deviation from the temperature setpoint.

Individual setpoint adjustment

Guests have the facility to increase or reduce the setpoint by 2 K or 4 K. If they leave the room, these personal settings are retained, but the *economy offset* comes into operation.

Heating strategy

A controller can be operated using the *Summer* strategy, the *Winter* strategy or the *Transitional* (Autumn/Spring) strategy, set via the user interface. When a guest is absent, the temperature in the guest room is controlled by the different strategies as follows:

Summer strategy

- No heating, even if the current temperature is below the temperature setpoint
- Cooling ON if the current temperature is above the temperature setpoint

Winter strategy

- Heating ON if the current temperature is below the temperature setpoint
- No cooling, even if the current temperature is above the temperature setpoint

Transitional strategy (Autumn/Spring)

- Heating ON if the current temperature is below the temperature setpoint
- Cooling ON if the measured temperature is above the temperature setpoint.

In all cases, the guest must be absent from the room, as it is essential not to impair the comfort of guests. The purpose of these strategies is to take advantage of the current outside air temperature to achieve the setpoint. Since, in winter, it is normally colder outdoors than indoors, rooms in which the temperature is above the setpoint will cool down without the need to operate the cooling system. In summer, the opposite is true. In the transitional seasons (Spring / Autumn), outdoor temperatures are variable, so that either the heating or the cooling is switched on, as necessary.

Economy offset

When a room is allocated to a guest, the *Comfort* setpoint is set. This should always represent a pleasant indoor temperature. When the guest is absent from the room, the room controller can reduce the set temperature by an amount referred to as the *economy offset*.

At a setpoint of 23 °C and an economy offset of 2 K (Kelvin), the heating will not switch on until the room temperature reaches 21 °C.

The effect of the economy offset is to delay the heating or cooling. When commissioning the system, the economy offset can be set individually for each room using the room-controller commissioning tool.

Individual setpoint adjustment

Temperature setpoints are assigned throughout the hotel. However, the **Room Overview** dialog box in the HOTEL SOLUTION user interface allows you to modify this setpoint individually for each room.

In this way, the individual requirements of each guest can be satisfied.

Summary

The room controller options discussed here can only be used, of course, in hotels with heating and cooling systems with the appropriate control system and controls. In addition, the user must program these settings via the HOTEL SOLUTION user interface.

3.2 Energy management options

The temperature setpoints are defined via the user interface of the HOTEL SOLUTION system. For a detailed description of how to do this, refer to Section 13 ("Room states and temperature profiles") of the user's guide to the HOTEL SOLUTION user interface.

This defines *temperature profiles* and *room states* and explains how they are interrelated. These terms are therefore used below without further explanation.

3.2.1 Energy groups and room groups

In order to edit data in several rooms at once, the rooms concerned must be grouped together according to certain criteria. The HOTEL SOLUTION system incorporates *energy group* and *room group* criteria for this purpose.

All the rooms whose state is to be changed in a single operation thus need to be assigned by the user to one energy group or room group.

We recommend the use of *energy groups*, as they are specifically designed for the tasks associated with energy management. This is why it is easier to create *energy groups* and assign rooms to these groups than it is to work with *room groups*. For the same reason, the examples are restricted to energy groups although room groups can be dealt with in a similar way.

The rooms are assigned to energy groups or room groups via the menu option **Energy Management | Room Energy Group Assignment...**' or via **Rooms | Settings... .** The energy groups are edited via the menu option **Energy Management | Edit Energy Groups...**. The user's guide to the HOTEL SOLUTION system User Interface describes how to operate the various dialog boxes.

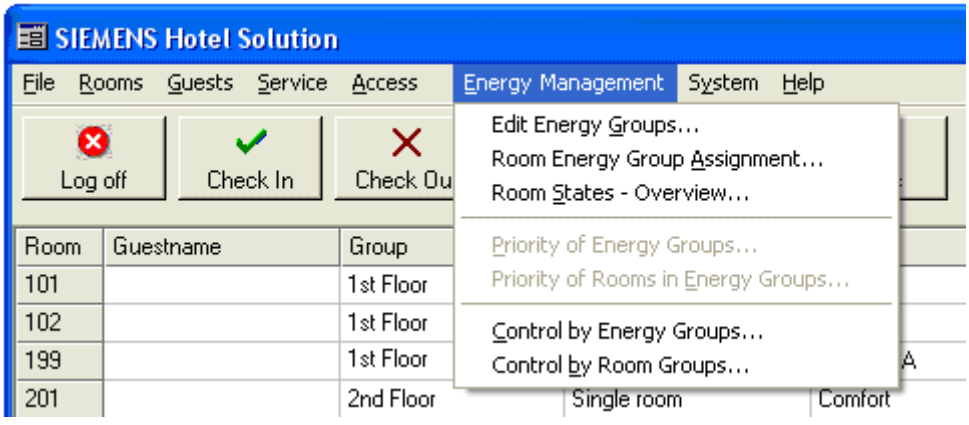

*Fig. 3-1: **Energy Management** menu in the HOTEL SOLUTION user interface*

As can be seen in the dialog box above, the **Priority of Energy Groups...** and **Priority of Rooms in Energy Groups...** commands are unavailable. These menus are for hotels in which there is a link to the FOS which supports the exchange of data with the HOTEL SOLUTION system (refer to Section 4).

Example of energy groups

- A hotel is divided into three separate and independent buildings ("a 3-house hotel"). The obvious approach is to create three energy groups, House1, House2 and House3.
- All the guest rooms in the first building are assigned to the energy group "House1", those in the second building to "House2" and so on.

3.2.2 Example: Energy management without FOS link

The complete process is described below on the basis of an example.

The objective of adjusting the temperature setpoints quickly and simply can be achieved by assigning a specific room state to an energy group or room group. If the energy groups are created in a meaningful way, the setpoint in all the associated rooms can be changed in one single operation. If a guest is later checked into one of these rooms, the setpoint will automatically switch to the *Comfort* value. It is important to remember that even if a guest is checked into a room, the setpoint will also be changed in this room.

After the guest checks out, the standard room state will be restored automatically. If required, this must be changed manually.

The following describes the individual steps required. The description includes examples for clarification. Please refer to the user's guide to the HOTEL SOLUTION User Interface for information on how to make additional settings.

Allocate energy groups

1 Assign all rooms to suitable energy groups. If the existing energy groups do not meet the requirements, set up others. Rooms should be assigned to groups bearing in mind which rooms will be dealt with together. In the "3-house hotel" referred to above, for example, the obvious approach is to define three energy groups. If a more detailed differentiation is required, the individual floors in each house could each represent one energy group.

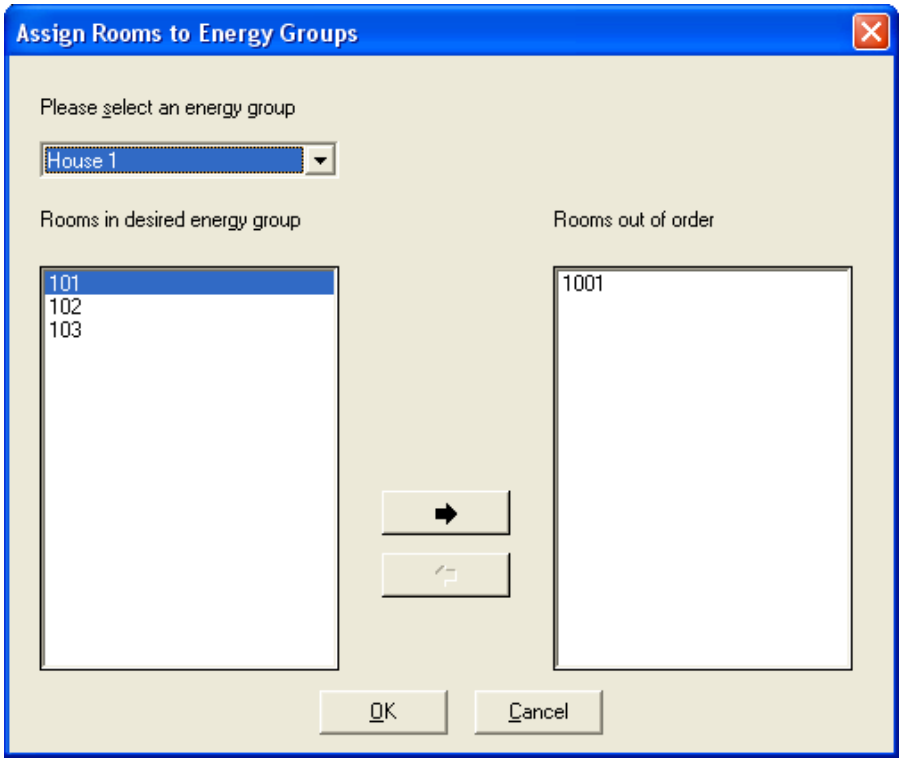

Fig. 3-2: Assigning rooms to energy groups

Allocate the room state

2 Later, a specific room state will be allocated to the rooms in a given energy group. For this purpose, only an existing room state can be used (e.g.: "Standby C").

Define the temperature profile

3 Since the room state and the temperature profile are combined to represent a temperature setpoint, the active temperature profile for the system must be defined first.

Define temperature setpoints

4 In the user interface, enter for each room state the temperature setpoints associated with the required temperature profile.

The following is an illustration:

A hotel, consisting of three buildings, is closed throughout February. However, House 1 must be kept ready for special guests. The setpoints in House 2 and House 3 should be set to 13 °C.

- Energy groups are set up for House1, House2 and House3. The rooms in each house are assigned to the associated energy group. Normally, this task only needs to be carried out once.
- The available states are: *Comfort, Standby A, Standby B* and *Standby C*
- The available temperature profiles are: *Autumn, Spring, Summer, Winter*

- The setpoints are assigned as follows:

Room state	Temperature profile	Setpoint	Heating strategy
Comfort	Winter	22 °C	Heating only
Standby A	Winter	19 °C	Heating only
Standby B	Winter	17 °C	Heating only
Standby C	Winter	13 °C	Heating only

- The temperature profile *Winter* is activated via **System | Temperature Profiles...**
- In this case, the room state must *not* be set by default to *Standby C* when a guest checks out. For this reason you should check that the entry "default_room_state" under **System | Configuration Parameters...** is set to *Comfort or Standby A*.
- In the **Energy Management** menu, select **Control by Energy Groups**…

Setting a new room state

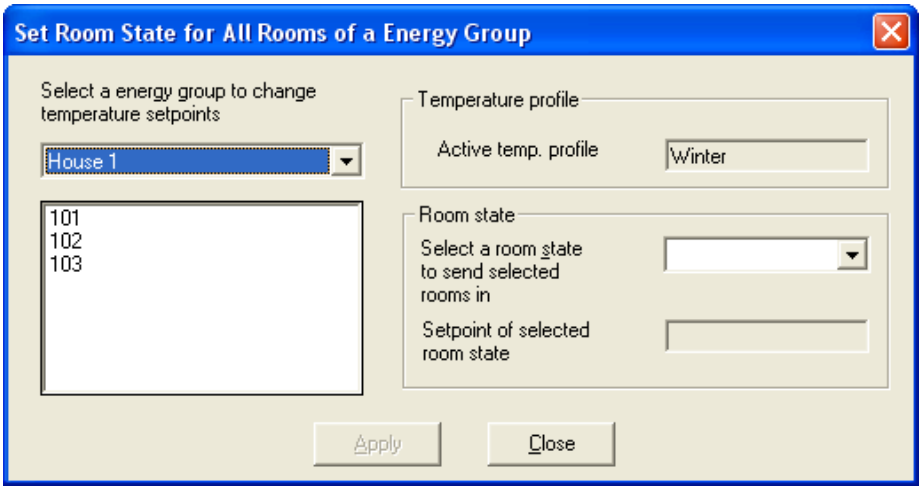

Fig. 3-3: Dialog box used to set a new room state for an energy group

Dropdown list	Allows you to select the required energy group
List box	Displays all the rooms of the selected energy group
Temperature profile	Displays the active temperature profile
Room state	Here you can select the required room state to be applied to all the rooms in the selected energy group. The associated temperature setpoint will be displayed for your information. At the same time, the **Apply** button will be enabled.

When you have finished making all the changes, the following message will be displayed for information:

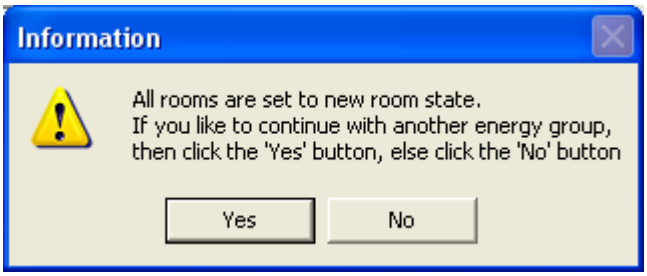

Fig. 3-4: Message about the setpoint changes

Acknowledge with **Yes** if you want to modify the room state of other energy groups.

Click **No** if you do not want to change any more room states.

4 Energy management with FOS

This section describes how the functions of the energy and reservation management system can be operated from the HOTEL SOLUTION user interface. This applies to energy management systems combined with a front-office system which exchanges reservation data with the Siemens HOTEL SOLUTION system.

Caution

To enable the energy management component to operate in conjunction with a front-office system, the `energy_with_fos` flag must be set to `TRUE` via the menu HOTEL SOLUTION user interface (in the System | Configuration Parameters... menu).

4.1 Energy groups

The energy groups are based on the design of the heating system and are defined when the database is generated. Each guest room is assigned to one of these groups when the hotel system is initialized, but the assignments can be changed later. In this way, different groups are set up, with rooms of equal weighting in terms of energy.

When hotel rooms are assigned to guests, the energy management system starts by allocating all the rooms of one energy group first. When all rooms of that group have been allocated, the rooms of the next group are allocated, and so on.

The staff using the reservation management system need to know which energy group to start with, when allocating rooms. For this reason, an order of priority is defined by assigning a priority number to each energy group.

4.2 Room priority

Each energy group contains a certain number of rooms, which are of equal significance in energy terms. Here, too, for the purposes of reservation management, staff need to know the order in which the rooms themselves should be allocated.

Every room is therefore assigned a priority number to indicate the order in which each room within an energy group should be allocated.

With these two sets of priorities, the reservation management system can suggest the exact order in which the guest rooms should be allocated from the energy-efficiency viewpoint.

4.3 Menu

The energy management software is integrated in the HOTEL SOLUTION user interface. It contains the following options:

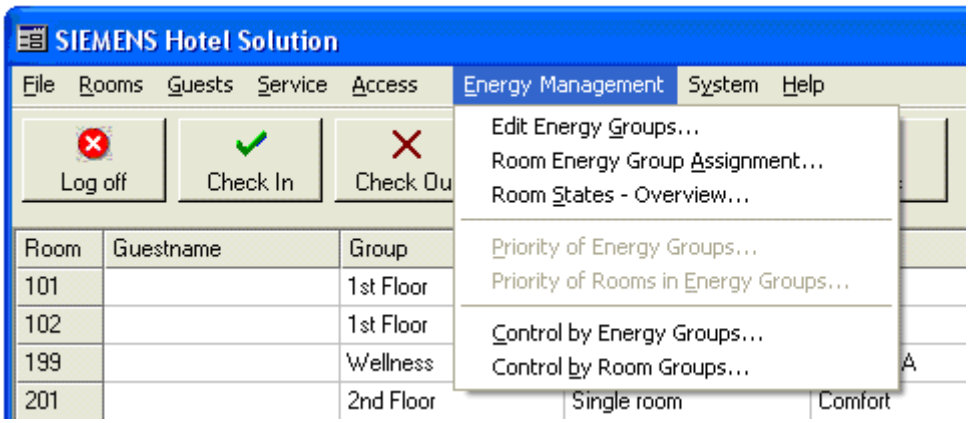

*Fig. 4-1: **Energy Management** menu*

The **Energy Management** menu is abbreviated below to **EM** for improved legibility.

EM | Edit Energy Groups...	Opens the dialog box for management of the energy groups.
EM | Room Energy Group Assignment…	Opens a dialog box in which you can assign rooms to energy groups.
EM | Room States - Overview…	Opens a dialog box containing an overview of the room state of all rooms in the hotel.
EM | Priority of Energy Groups…	Opens a dialog box in which you can sort energy groups according to priority. This menu option is only enabled if "`energy_with_fos`" is set to `TRUE` in the system configuration.
EM | Priority of Rooms in Energy Groups…	Opens a dialog box for editing the priority of rooms in the energy groups. This menu option is only enabled if "`energy_with_fos`" is set to `TRUE` in the system configuration.
EM | Control by Energy Groups…	Opens a dialog box in which you can change the room state for an entire energy group. This menu option is only enabled if "`energy_with_fos`" is set to `FALSE` in the system configuration.
EM | Control by Room Groups…	Opens a dialog box in which you can change the room state for an entire room group. This menu option is only enabled if "`energy_with_fos`" is set to `FALSE` in the system configuration.

4.4 Dialog boxes

4.4.1 "Control of Energy Groups" dialog box

This dialog box is used to define and review the order of priority of the energy groups. The following describes the operations associated with each element of the dialog box.

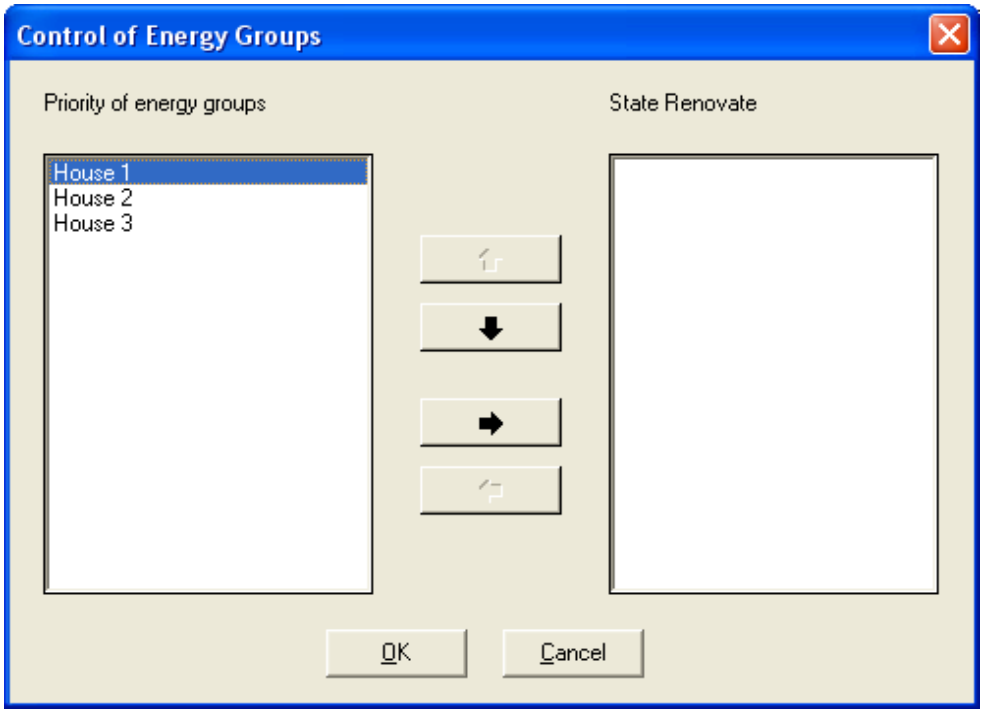

Fig. 4-2: "Control of Energy Groups" dialog box

List panes:

The list on the left contains all the energy groups with a priority number greater than 0. Priority 0 ("Renovate") is the status for rooms undergoing redecoration or repairs. An energy group with this status does not appear in the list of rooms to allocate.

The list on the right displays all Priority 0 energy groups.

The list is in order of priority (with the highest priority at the top and the last at the bottom).

Provision must be made for the following special case:
Where two energy groups have the same priority, they should be shown in the same order as in the database.

Buttons:

➔ Only active if an energy group is highlighted in the list in the left pane. Click the button to assign Priority 0 ("Renovate") to the selected energy group and move it to the right pane.

➔ This button reverses the process. Click to move a Priority 0 energy group to the end of the list in the left pane thereby assigning it a positive value. The button is only active if an item in the right pane is highlighted with cursor.

↑ This button is enabled if you highlight an entry in the left pane other than the one at the top of the list. Click this button to move the highlighted energy group one place **higher** in the list. The cursor will also move to the new position.

↓ This button is enabled if you highlight an entry in the left pane other than the one at the bottom of the list. Click this button to move the highlighted energy group one place **lower** in the list. The cursor will also move to the new position.

4.4.2 "Control of Room Priority in Energy Groups" dialog box

This dialog box contains the same elements as the **Control of Energy Groups** dialog box. The elements operate in the same way, except that the priorities in this dialog box apply to the rooms within an energy group.

In addition, this dialog box contains a dropdown list of the existing energy groups. You should first select an energy group from this list. As soon as this is done, a list of all rooms with a priority greater than 0 within this energy group will be displayed in the left pane. The list in the right pane displays all the associated Priority 0 rooms.

If you alter the room priority with the ↑ or ↓ buttons, and then change the selected energy group, a message is displayed. This draws your attention to the changes and offers the option of canceling them. Otherwise all changes are saved immediately.

The rooms at the top of the list have the highest priority, i.e. they are suggested first when allocating rooms to guests.

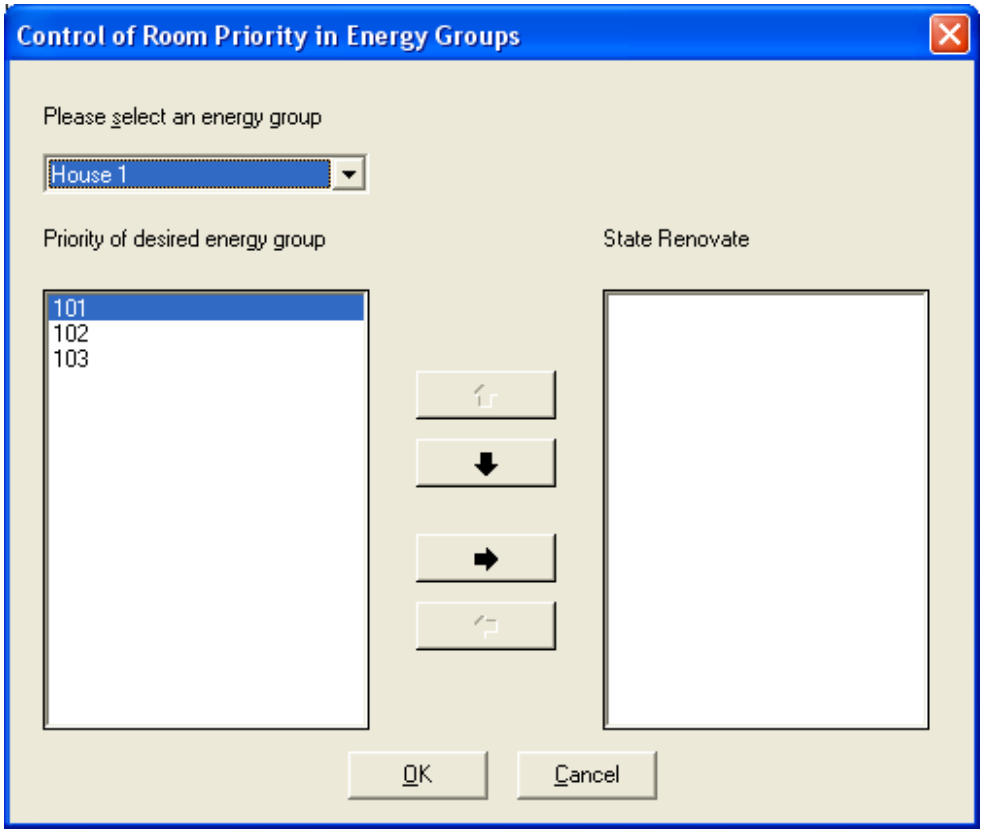

Fig. 4-3: "Control of Room Priority in Energy Groups" dialog box

Click **OK** to save all the changes, or **Cancel** to cancel them.

4.4.3 "Assign Rooms to Energy Groups" dialog box

This dialog box can be used to assign the rooms to the energy groups in cases where the original process, when generating the database, was unsuccessful or incorrect.

After selecting an energy group, you can then use the ← and → buttons to add or remove individual rooms in that group.

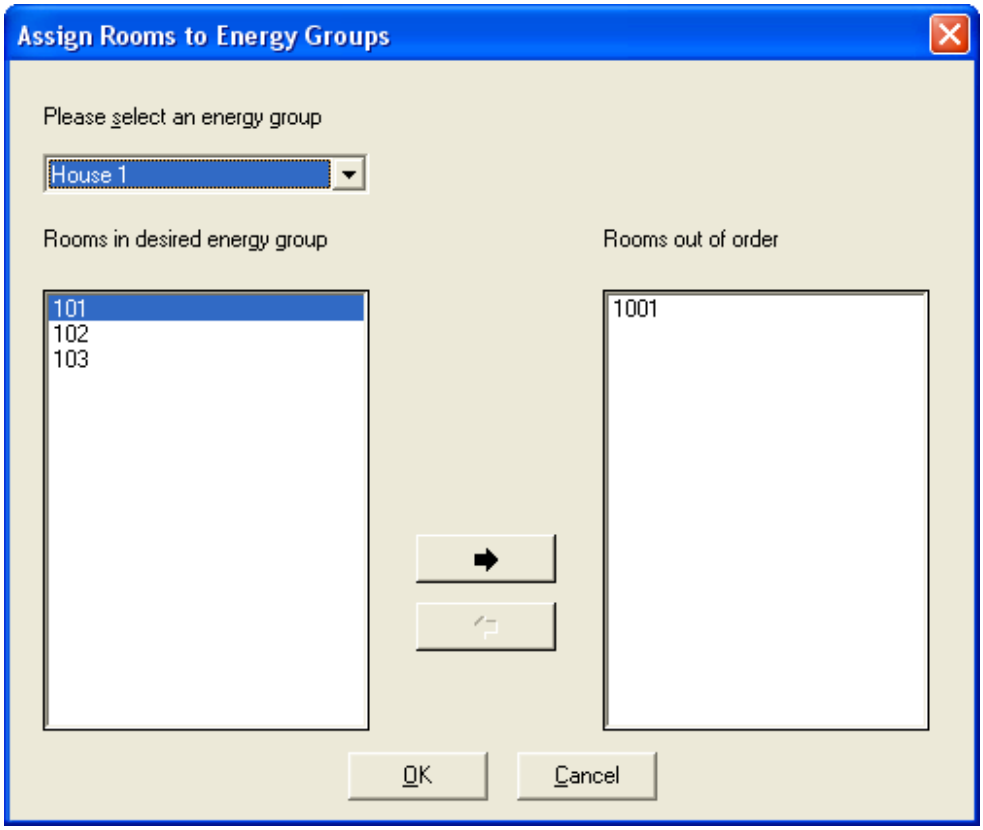

Fig. 4-4: "Assign Rooms to Energy Groups" dialog box

4.4.4 "Room State Overview" dialog box

The dialog box below contains an overview, showing which room is in which state (operating mode). It also indicates the associated temperature setpoints and actual temperatures.

You can print this table in list form, if required.

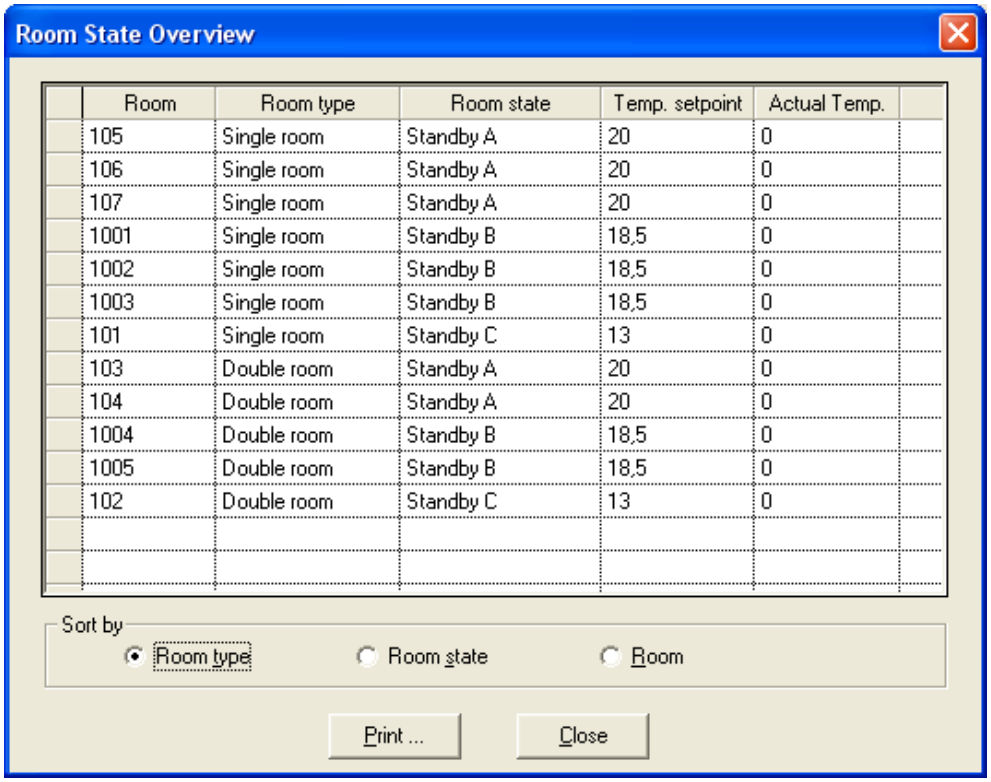

Fig. 4-5: "Room State Overview" dialog box

5 Background information

To benefit from effective savings by use of the Reservation and Energy Management component of the Siemens HOTEL SOLUTION, it is important that the rooms are allocated to guests in the best order in terms of energy efficiency.

This section describes the algorithm used by the HOTEL SOLUTION system to create a room list in the optimum order from the point of view of energy efficiency.

5.1 Basic principle

The most energy-efficient order for the allocation of rooms is based on the "IPO" principle:

I = Input: The booking information for the coming day is transferred from the FOS program via the link.

P = Processing Based on this input data combined with the order of priority assigned to the energy groups and rooms and the estimated number of "walk-ins", a list is generated, showing the rooms in optimum order in energy terms. At the same time, the rooms are set to the required room state.

O = Output: A table is created showing all the available rooms with the appropriate room state and room priority. A stored procedure could be used to read this table.

The input is written to a table in the database, which creates a further table in the processing phase, suitable for output. Access to the tables is only possible via stored procedures. The advantage of this method is that the database interface remains independent of the FOS software.

5.2 Input interface

The FOS program requires information on the current occupancy of the hotel and the anticipated occupancy on the next day. The required inputs are as follows (for *each room type*):

- Which rooms (by room number) are occupied and will remain so?
- Which rooms (by room number) will be vacated due to check-out the next day?
- For which rooms (by room number) are there confirmed bookings for the next day?
- How many rooms are reserved without room numbers?

5.3 Processing

In this phase, the optimum order for room allocation in energy terms is calculated on the basis of the input information, the currently assigned priority numbers and the predefined setpoints.

The algorithm can be started either at a specific time of day or after a successful transfer of data from the FOS program without the need for further synchronization. Suitable dialog boxes must be created in the FOS program for the input data. The algorithm should be started automatically when the inputs are complete.

The following diagram shows the algorithm used to create suggested room lists.

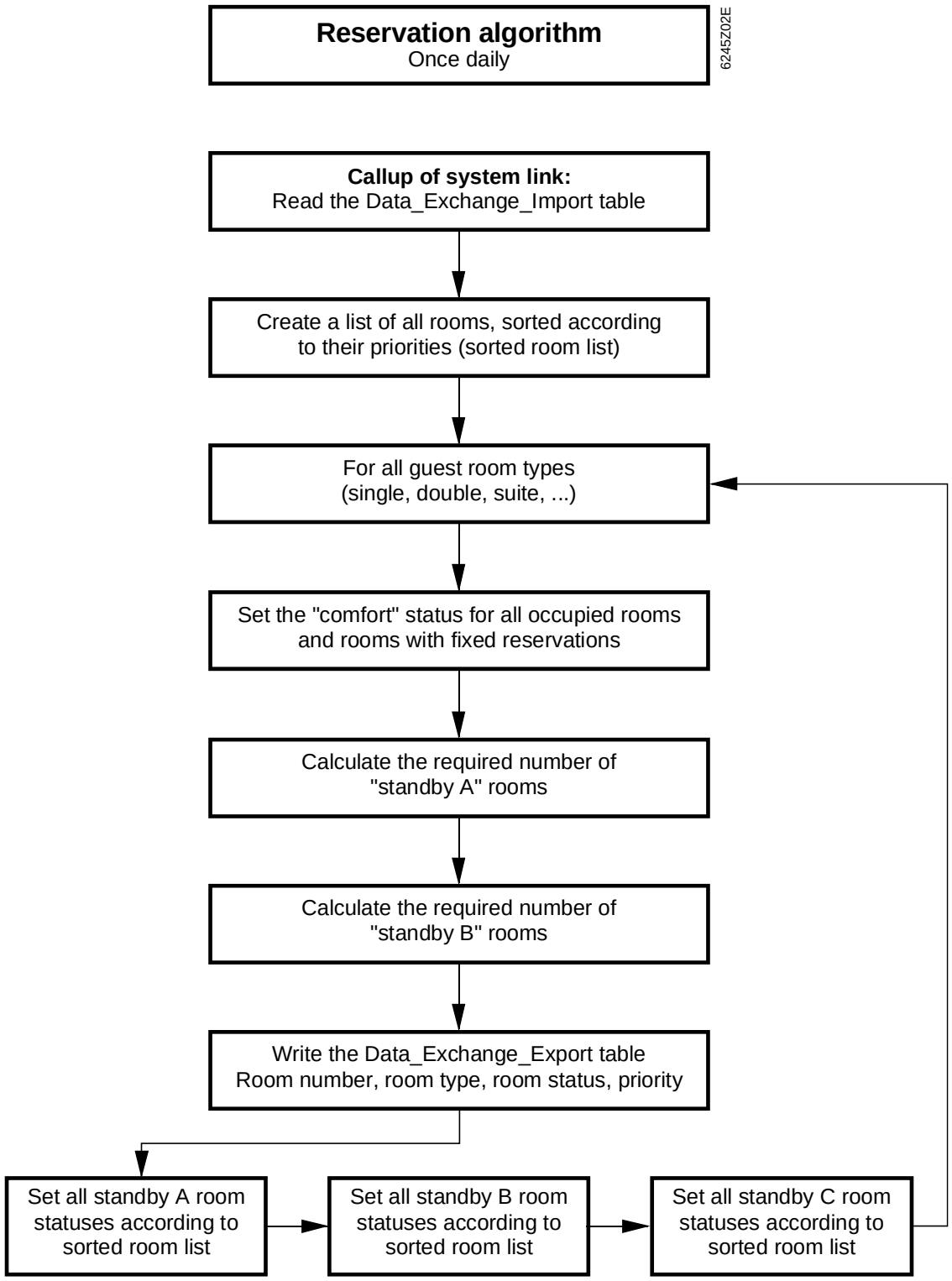

Abb. 5-1: Flow diagram for the Calculate_Room_List procedure

5.4 Output interface

The hotel staff needs a list showing the most energy-efficient order for the allocation of rooms. This list is provided by the output interface.

Room number:	Indicates the room concerned.
Room type:	Indicates the type of room. Valid options are shown in the **Room_Types** table. Normally, these are: *Single, Double, Suite* etc.
Room state:	Specifies the current state (operating mode) in the room. This value also represents the temperature setpoint in the room.
Room priority:	The priority of the room in the **Rooms** table. This value should be tested via the link, to obtain information about "offline" rooms. A value of 0 indicates a room which must not be allocated to a guest. The relevant messages to the FOS should be generated.

Siemens Switzerland Ltd.
Building Technologies Group
International Headquarters
Gubelstrasse 22
CH-6301 Zug
Tel. +41 41-724 24 24
Fax +41 41-724 35 22
www.siemens.com/sbt