

Thus On/Off devices are turned on when the power requested exceeds the maximum power that the inverter device can generate, plus 20% of the difference between the maximum power and minimum power of the inverter device (variable *Inverter_Power_Min*).

Special attention should be paid to the use of **Lst_Dev_Power**, which indicates device power. In fact, maximum device power under inverter is always set by the value in list address 0 as indicated below:

If the number of circuits is between 1 and 4 and the number of devices is between 1 and 4

Ind.List	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1			2				3				4				
Device	INVERTER	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

If the number of circuits is 1 and the number of devices is greater than 4 and less than or equal to 16

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuit	1															
Device	INVERTER	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

EXAMPLE 1 (DEVICES WITH EQUAL POWER)

Number of circuits: 1

Number of devices per circuit: 3 (1 inverter device and 2 On/Off devices)

Different_Size= 0

Rotation_type= LIFO

En_Inverter: 1

At this point, set data in **Lst_Dev_Power** and enable inverter management:

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1			2				3				4				
Device	INVERTER	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Values	33.3	33.3	33.3	0	0	0	0	0	0	0	0	0	0	0	0	0

Inverter min: 10%

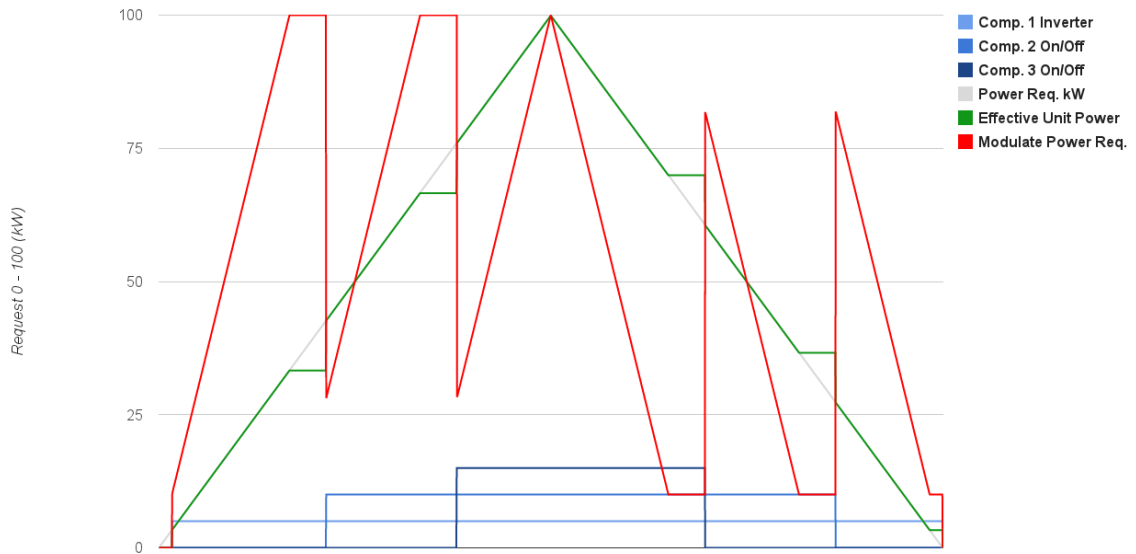
Maximum power of each compressor: 33.3 kW

In this case, the second compressor will turn on when the request reaches the threshold calculated in this way:

$$42.67 (\%) = \frac{33.3 + 3.33 + \frac{20 * (33.3 - 3.33)}{100}}{33.3 + 33.3 + 33.3} * 100\% = \frac{42.624}{99.9} * 100\%$$

The On/Off compressor, thus, if necessary, turns on when the request exceeds the activation threshold.

The graph below shows inverter and On/Off device trends when requested power changes (*Power_Request*):



EXAMPLE 2 (DEVICES WITH POWER UNDER THE RANGE OF THE DEVICE UNDER THE INVERTER):

Inverter max = 60KW

Inverter min = 30% (value to be linked to pin *Inverter_Power_Min*)

On/Off device power = 20KW

Number of circuits = 1

Number of devices per circui= 3 (1 inverter device and 2 On/Off devices)

Different_Size= 0

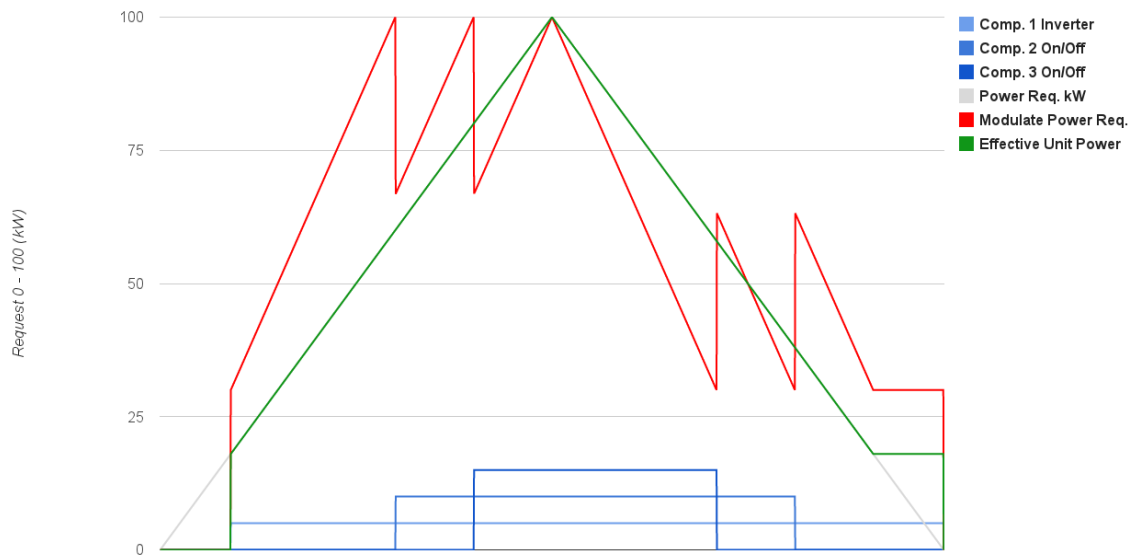
Rotation_type= LIFO

En_Inverter= 1

At this point, set data in **Lst_Dev_Power** and enable inverter management:

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1				2				3				4			
Device	INVERTER	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Values	60	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0

The graph below shows inverter and On/Off device trends when requested power changes (*Power_Request*):



EXAMPLE 3 (DEVICES WITH POWER OVER THE RANGE OF THE DEVICE UNDER THE INVERTER):

Inverter max = 40KW

Inverter min = 50% (value to be linked to pin *Inverter_Power_Min*)

On/Off devices power = 30KW

Number of circuits = 1

Number of devices per circuit = 3 (1 inverter device and 2 On/Off devices)

Different_Size= 0

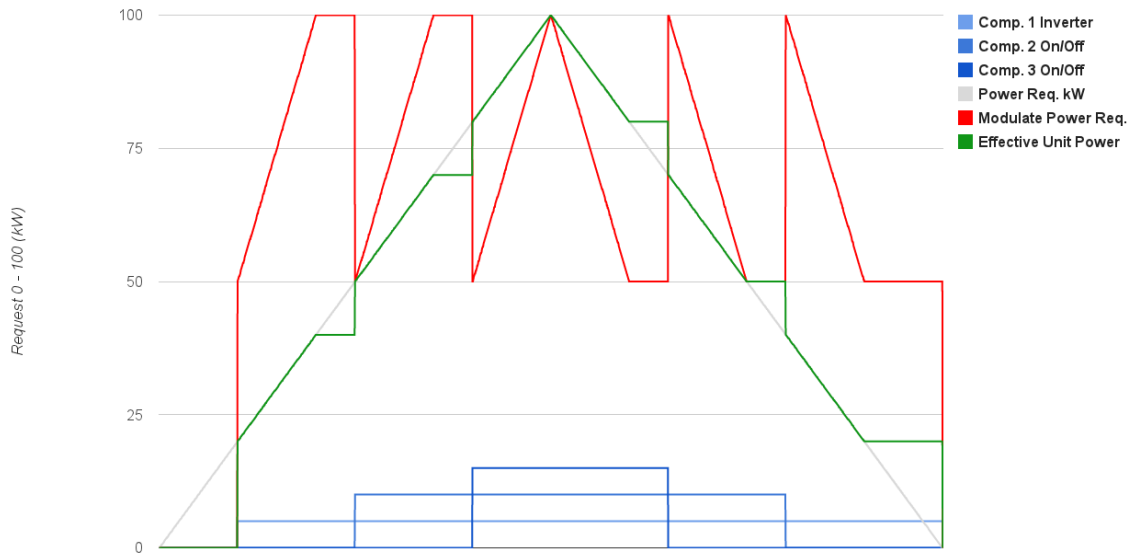
Rotation_type= LIFO

En_Inverter= 1

At this point, set data in **Lst_Dev_Power** and enable inverter management:

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1			2				3				4				
Device	INVERTER	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Values	40	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0

The graph below shows inverter and On/Off device trends when requested power changes (*Power_Request*):



EXAMPLE 4 (DIFFERENT SIZED DEVICES):

Inverter max = 50KW

Inverter min = 50% (value to be linked to pin *Inverter_Power_Min*)

On/Off devices power = 30KW and 20KW

Number of circuits = 1

Number of devices per circuit = 3 (1 inverter device and 2 On/Off devices)

Different_Size= 1

Rotation_type= Custom 2 (can only be Custom or Custom 2)

On sequence: Comp.1: 0 (device under inverter); Comp.2: 1; Comp.3: 2

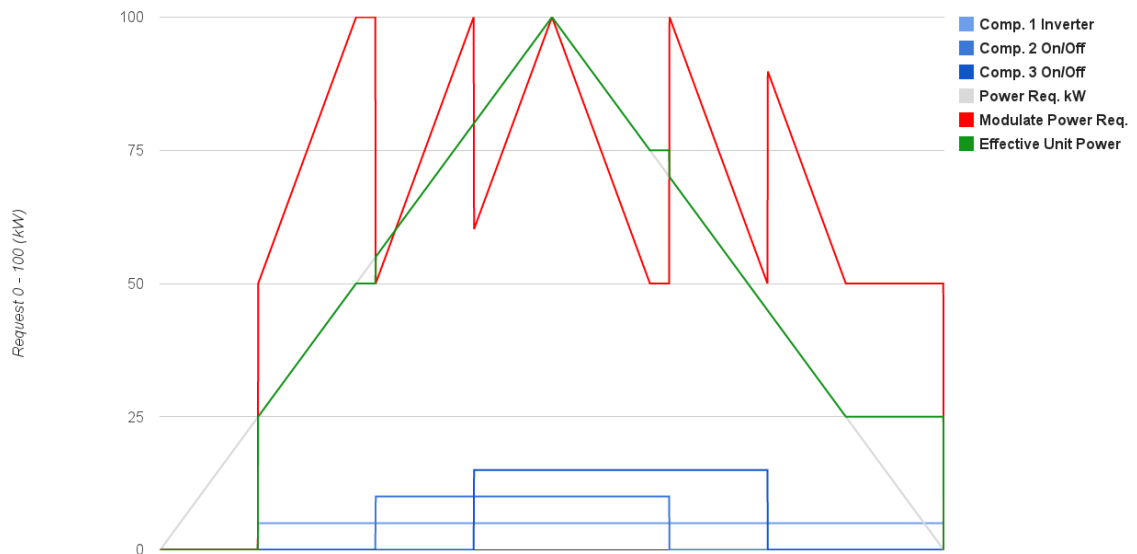
Off sequence: Comp.1:2 (device under inverter); Comp.2: 0; Comp.3: 1

En_Inverter= 1

At this point, set data in **Lst_Dev_Power** and enable inverter management:

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1			2				3				4				
Device	INVERTER	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Values	50	30	20	0	0	0	0	0	0	0	0	0	0	0	0	0

The graph below shows inverter and On/Off device trends when requested power changes (*Power_Request*):



The graph shows that when the inverter range is lower than the On/Off device power, it remains at minimum or maximum until the request decreases or increases so as to turn a device on or off.

Next device ON and next OFF

Through output pin *Device_Next_On* e *Circuit_Next_On*, this devices makes the next device available to be turned on and, through *Device_Next_Off* e *Circuit_Next_Off*, the next to be turned off. The choice is made according to the set type of rotation and compressor safety times, sent to Mod_Devices_Rotation_3 by a list *Lst_Countdown_Safety_Time*, populated with minimum shutdown times. At the end of this time, the compressor can be turned back on (in safety conditions) and the *Lst_Countdown_ForceOn_Time* list populated with minimum start time. Only at the end of this time can the compressor be turned off (unless an alarm is triggered).

Lst_Countdown_Safety_Time is a 16-element list illustrated below:

If the number of circuits is between 1 and 4 and the number of devices is between 1 and 4

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1				2				3				4			
Device	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

If the number of circuits is 1 and the number of devices is greater than 4 and less than or equal to 16

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuit	1															
Device	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Lst_Countdown_ForceOn_Time is a 16-element list used to provide feedback on minimum start time, during which the compressor cannot be turned off. An illustration is provided below

If the number of circuits is between 1 and 4 and the number of devices is between 1 and 4

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuits	1				2				3				4			
Device	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

If the number of circuits is 1 and the number of devices is greater than 4 and less than or equal to 16

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Circuit	1															
Device	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16