WHITE PAPER

SUSTAINABLE OPERATION OF MEDIA TECHNOLOGY SYSTEMS IN MEETING ROOMS

Foto: © macom GmbH

Reduce electricity costs and CO2 emissions of the company with intelligent power distribution strips

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macom GmbH predicts trend towards sustainability

Energy efficiency plays an important role in the operation of media technology installations. In addition to purely economic considerations, electricity savings also lead to a considerable reduction in CO2 emissions. And with advancing climate change, this aspect in particular will become increasingly important in the coming years.

Siegfried Hermann, Managing Director of macom GmbH, predicts a clear trend towards greater sustainability:

„In the operation of audiovisual systems, companies will increasingly be faced with the question of how to realize concrete savings in power consumption in the coming years. This is a challenge that can only be met with intelligent technology coupled with the appropriate expertise.“

SIEGFRIED HERMANN
Managing director
macom GmbH

1 | Initial situation

Together with the company macom GmbH, the following question was investigated as part of a project in 2020: "How can sustainable operation be taken into account in addition to technical and functional issues when equipping modern meeting rooms and how high are the associated cost savings?

Here, the goal was to equip meeting rooms of various sizes with audio/video and IT hardware. The room sizes ranged from small huddle rooms to large conference rooms. The task was to implement a suitable control technology that would enable the installed media technology to be switched off when not in use.

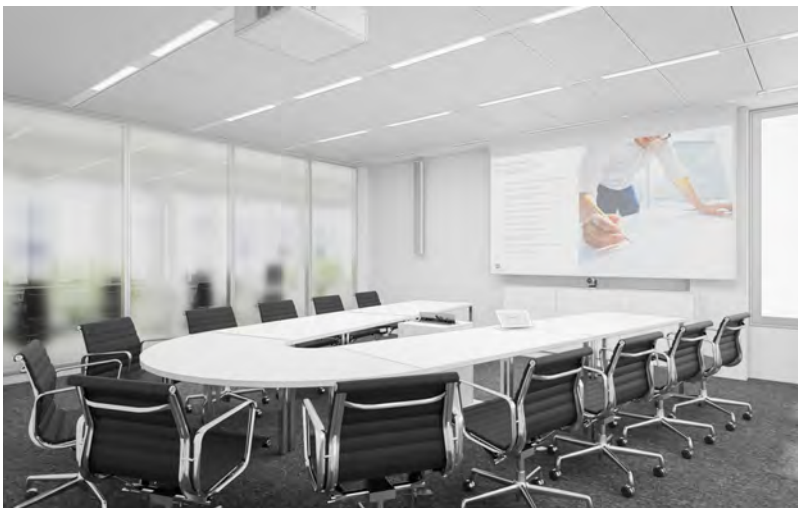
The background: With a large number of planned devices, power consumption in stand-by mode at night and on weekends adds up to a considerable cost factor for the installation. In addition, the shutdown routine ensures that the lifetime of the devices is increased by avoiding continuous 24/7 operation.

To solve this problem, switchable IP power strips from GUDE Systems were incorporated. They can be used to automatically shut down AV applications outside of business hours at night and on weekends. Thanks to the programmable shutdowns, the customer can fully exploit the savings potential: the payback period can be found under 3.

2 | Meeting room equipment

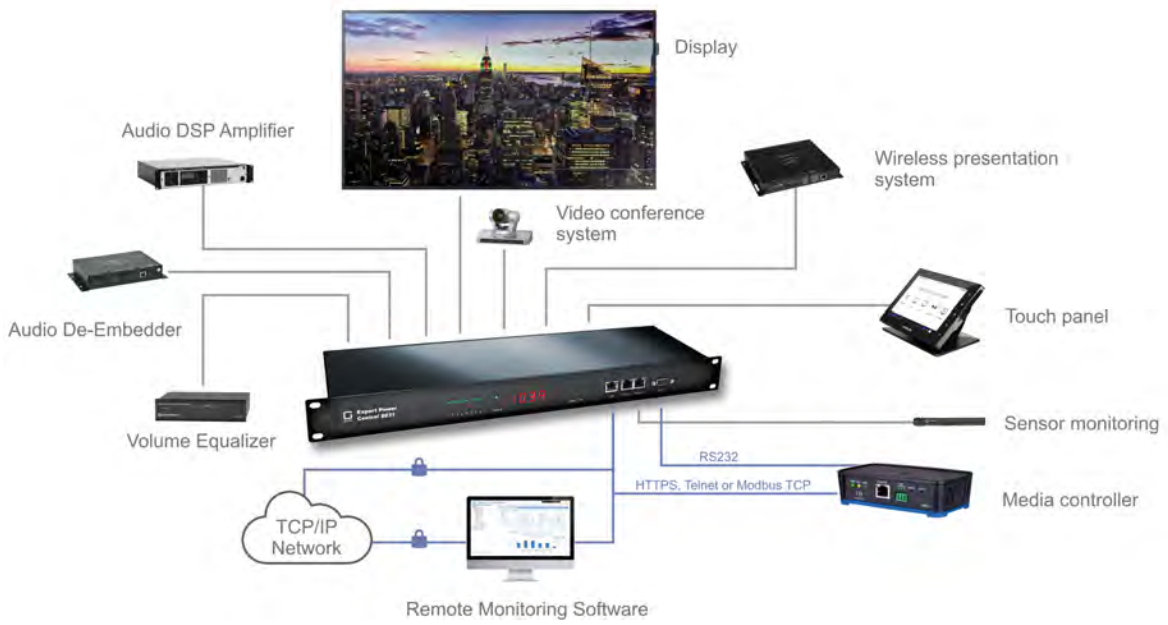
The meeting rooms in the actual project could be divided into three size categories: Small, medium and large meeting rooms or conference rooms.

The installed equipment per room includes displays, loudspeakers, wireless presentation systems, microphone and camera systems as well as corresponding control elements.



Small, medium and large meeting rooms
Fotos: © macom GmbH

The night shutdown performed by the power distribution unit removes power-hungry consumers such as power supplies, control and extender systems from the network. To make this possible, the power distribution unit (PDU) is connected upstream of the AV devices as a central network component. A simplified representation of this structure is shown in the
following sketch:



Ideal typical setup of an AV installation using the Expert Power Control 8031 as an example

For the small meeting room, 8 AV devices are planned, for the medium 13 devices and for the large conference room 20 devices. Due to the larger number of consumers, distribution strips with 8 socket locations are used for the medium and large meeting room, while a distribution strip with 4 sockets is sufficient for the small huddle room.

Size of meeting room	**Small**	**Medium**	**Large**
Number of AV devices	8	13	20
Number of AV devices to be switched off	3	5	8
IP power strip	EPC 1202-1	EPC 8031-3	EPC 8031-3
Number of sockets	4	8	8

The PDUs are installed in 19-inch racks alongside other IT and AV equipment in a few simple steps and connected to the end devices as well as the IT network. The racks themselves disappear behind wall panels and media furniture in the meeting rooms.

The programming of the power distribution strips for the intended night shutdown is carried out via the web server integrated in the devices, which provides a corresponding configuration interface. This is password-protected and can be accessed from any PC in the network.

3 | Amortization after less than 2 years

After evaluating the device-specific standby consumption, the following total savings are obtained for the various room sizes over a period of 1, 5 and 10 years, the total savings are as follows:

Small meeting room

Duration	Savings in ... kWh	EUR
1 year	744.80	148.96 €
5 years	3,724.00	744.80 €
10 years	7,448.00	1,638.56 €

Medium meeting room

Duration	Savings in ... kWh	EUR
1 year	1,134.35	226.87 €
5 years	5,671.75	1,134.35 €
10 years	11,134.35	2,495.57 €

Conference room

Duration	Savings in ... kWh	EUR
1 year	1,202.95	240.59 €
5 years	6,014.75	1,202.95 €
10 years	12,029.50	2,646.49 €

Electricity prices based on *de.statista.com*

With a purchase price of 282 EUR for *Expert Power Control 1202* and 499 EUR for *Expert Power Control 8031-3*, the return on investment for the installed PDU was therefore as follows in each case:

- Small meeting room **1.9 years**
- Medium meeting room **2.1 years**
- Conference room **2 years**

Accordingly, after about 2 years, the acquisition costs for the night shut-off have already been amortized, regardless of the room size.

4 | Up to 14.5 tons of CO2 saved

From a sustainability perspective, further savings are achieved in the project: Based on the assumption that the kW-hour of electricity leads to emissions of 0.5 kg CO2 on average, the avoidance of electricity consumption through night-time shutdowns results in a significant reduction in CO2 emissions.

CO2 saved as a function of room size and duration:

Duration	Room size: Small	Medium	Large	Total savings
1 year	350 kg	533 kg	565 kg	1.5 t
5 years	1,750 kg	2,666 kg	2,827 kg	7.2 t
10 years	3,501 kg	5,332 kg	5,654 kg	14.5 t

Conversion based on:: Energiemix in Deutschland 2019, Quelle: UBA, Climate Change13/2020, S. 9

This means that by avoiding unused energy consumption in the three meeting rooms alone, CO2 emissions of around 15t can be saved after a period of 10 years.

5 | Outlook for the environmentally friendly and highly available operation of audio-visual systems

The power distribution units used allow simple and rapid commissioning. The intended reduction in electricity costs can be realized through intelligent switching routines. When equipping small, medium and large meeting rooms, the investment in IT control technology pays for itself after just two years. In addition, the avoidance of unused energy consumption makes a relevant contribution to reducing the CO2 footprint.

There are further advantages for the operator of the media technology systems: Location-independent remote access to the installation is possible at any time and without cost-intensive service technician call-outs.

What's more, the integrated automatic reboot function ensures that the power strips restart faltering AV and IT applications without the operator's intervention. And in addition, the connection of temperature and humidity sensors to the IP power strips allow extended monitoring of the meeting rooms. Critical conditions on site can thus be avoided at an early stage in the future. The fact that the devices are switched off when they are not needed also reduces the risk of fire. Hence, this solution also improves fire protection.

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