



## Television playout goes green

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As broadcasters strengthen their environmental credentials, and also look ahead to potentially higher electrical costs under 'cap and trade', they are now widening their perspective on energy saving to address the whole television process, from creation to transmission. This new emphasis on energy and space efficiency is now even impacting areas with lighter electrical consumption, such as playout equipment.

Traditionally, power saving at television stations has focused around transmitters and production studio lighting, as these represent the biggest offenders when it comes to power consumption. For instance, a single production studio can consume 400 KW in lighting alone. Unsurprisingly, this heavy power usage has driven demand for lower consumption transmitters, and innovations like LED studio lighting, which can save more than 90% of electrical costs.

This move towards greater energy efficiency has become broad-based, and is evident at local television stations, the major networks and many playout centers. It's happening by a process of ongoing upgrades, and most strikingly at new 'green field' site facilities, which in some cases are even incorporating alternative energy production, including wind and solar power generation.

The worldwide television industry may not have been an early adopter of 'green' technology, especially when compared to other industries such as mobile telephony, but it's now catching up fast.

This shift towards green values has not gone unnoticed amongst broadcast equipment vendors, and they have responded with more energy and space efficient products for the breadth of the television playout process.

The latest generation of playout products are now delivering higher, 3G/HD/SD video performance, with substantially lower power consumption, and greatly improved space efficiency. These new devices are also bringing many other diverse environmental benefits. For instance, they demand less cooling, they generate less noise, and they demand fewer resources for manufacture.

The cooling required by high power consumption isn't just another cost and energy consideration for broadcasters; it often demands a big, mechanical system that's often high maintenance, noisy and space consuming. Hence, reducing the cooling requirements of television equipment can lead to wide-ranging benefits.

The substantial improvements in energy efficiency of the latest generation of broadcast equipment have been made possible by ever more powerful chipsets, including FPGAs and CPUs. Over the last product cycle, this change has resulted in many core playout devices moving from dedicated 2 RU or 1 RU boxes, based on multiple boards, to single card devices.

This process of moving to card-based solutions has spurred other non-environmental benefits, such as easier installation and maintenance, reduced cabling, and better integrated control systems, and also fewer parts to fail. In fact, power supplies have long been regarded as the most failure prone part of television equipment, and hence relying on fewer, lower power PSUs should promote greater overall system reliability.

To be more specific about the potential savings in power, cooling, rack space and raw materials, let's consider a typical 10-channel playout facility, and some of the key devices used for playout. Let's look at a cross section of essential devices at every facility: signal processing, channel branding and monitoring.

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The performance of the latest generation of 3G/HD/SD signal processors is quite astounding. An earlier generation of equipment for processing 10 channels would have comprised multiple dedicated devices for video conversion, audio de-embedding/embedding and Dolby encoding/decoding to name just a few tasks. Typically, this equipment would consume around 45 RU of rack space, and around 3000 watts of power. Now, with the latest single card processors, this 10-channel system can be condensed to a single 3 RU frame that consumes just 300 watts – a saving in power, space and materials of around 90 percent.

With channel branding, the traditional solution for a 10-channel play-out system involves using ten 1 RU frames, consuming around 1500 watts in total. The latest card-based design delivers greater graphics functionality, and yet a 10-channel system requires just 3 RU and 300 watts. Here the saving in energy, space and materials is of the order of 80 percent.

A similar pattern of savings is also evident with multiviewers, with savings of around 75 percent on power, materials and space for a 10-channel monitoring system. This calculation is based on 20 multiviewer displays, driven from a 3 RU frame, and consuming just 300 watts.

In each of these cases, the new lower power solutions require less cooling, both within the hardware and for the facility building. The result is lower air-conditioning bills, and less noise. And when this latest generation of products reaches the end of their natural lives, in maybe 10 years, they will represent far less electronic waste for disposal.

In these demanding economic times, it's also good for broadcasters to know that there's no premium for being more environmentally friendly when it comes to buying greener television equipment. In fact, it seems that the reverse is very much true, as the latest products offer more functionality for a smaller upfront investment, and they deliver savings on an on-going basis. Simply put, going green in playout is a win-win for all parties involved.



Grass Valley's Kaleido-Modular card-based multiviewer system provides unprecedented energy and space efficiency, with 20 multiviewers in 3 RU, consuming just 300 watts in total.