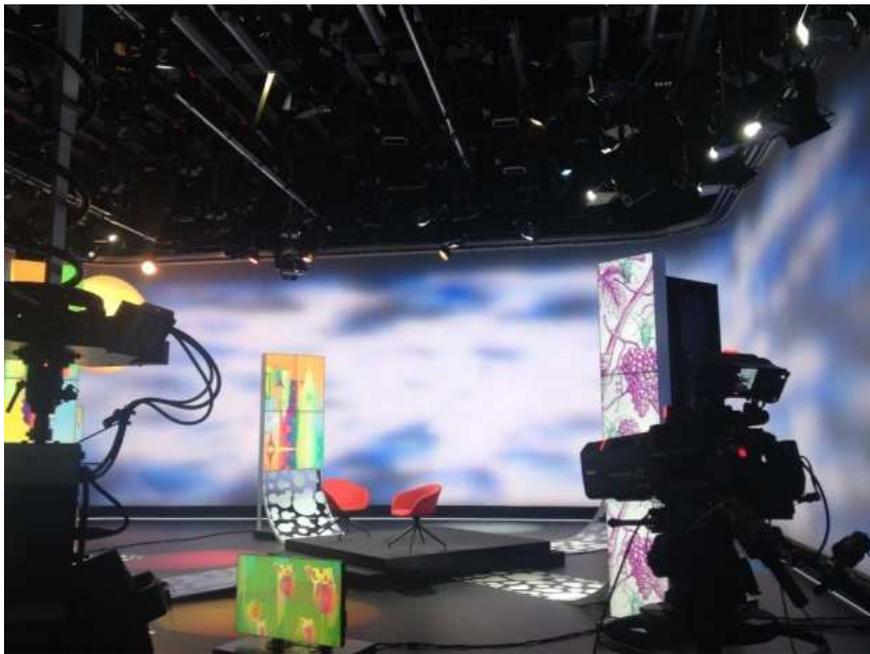


## Worldwide first fully automated TV studio with LED technology inaugurated

RTS Geneva opened the most up-to-date studio for the production of magazine programs on 30<sup>th</sup> June 2015.



RTS (Radio Television Suisse), member of SSR SRG Group, is responsible for the French-speaking Swiss cantons and is based in Geneva.

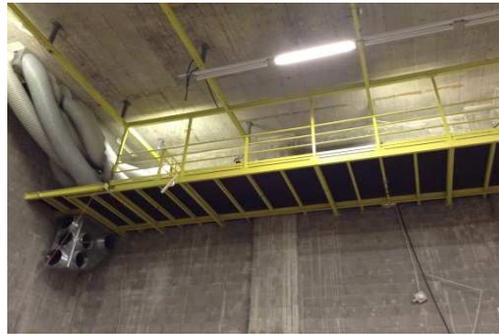
RTS will concentrate the current broadcastings like news, magazines and sports in the headquarters in Geneva and move the bigger productions to Lausanne. This measure required a modernization of the studio technology in Geneva. This was now realized for magazine broadcastings both for direction as well as in the studio.

An existing studio of 340 m<sup>2</sup> was completely renewed, planned and equipped for magazine formats with the most up-to-date technology by **Despar Systeme AG**. The aim was to select technology that allows running multiple productions in the studio with the shortest preparation time and little staff. The application of a power-saving and sustainable lighting system with the most up-to-date technologies was decisive as well. Up to now the magazine broadcastings have been produced in 3 studios, from now on only in the newly equipped studio.

After only 9 months of renovation the old technology from 1984 was dismantled, the basic ceiling construction was changed, the air-conditioning as well as the acoustics renewed and a new lighting technology installed.



Old studio lighting technology with barrel hoists and pantographs



Studio after dismantling

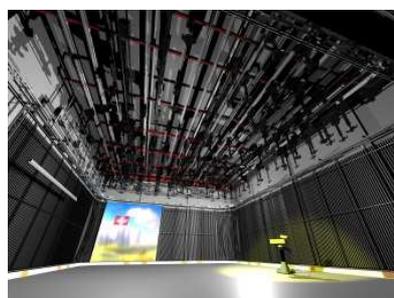
On this occasion the wish for enlargement of the playing area was taken into account by removing surrounding galleries on 3 sides. By that and with a space-saving LED background lighting the playing area could be increased by approx. 20%.

The studios of SWR in Stuttgart, also equipped by DESPAR Systeme AG in 2012, served as a reference for the planning of the studio lighting technology for RTS. The studios of SWR were also equipped with fully automated lighting technology on telescope light hangers and with CYCLO-LED background lighting. SWR's good experiences with this technology could convince the production experts of RTS. However, halogen luminaires had to be installed at SWR because luminaires with LED light sources did not yet meet the demands. For the new studio of RTS of course the suitability of LED luminaires of the latest development should be examined.

Like in other modern studios the demands of RTS for the production of the magazines called for an automation of the studio lighting technology with storage and recall of the luminaire positioning.



Studio A, SWR Stuttgart with automated lighting technology and LED background lighting



RTS 3D-Layout Studio without luminaires

The result of the investigation of the available LED lighting technology was positive with the arisen higher light achievement of present LED luminaires with 200 W and a new device with 400 W of connection achievement and high quality standards concerning color rendering. Therefore it was possible to completely use LED technology equipment.

The motorization of all 8 shifting functions of these luminaires was still to be solved which was a special challenge, particularly with the device with the higher achievement by the adjustable focusing tube.

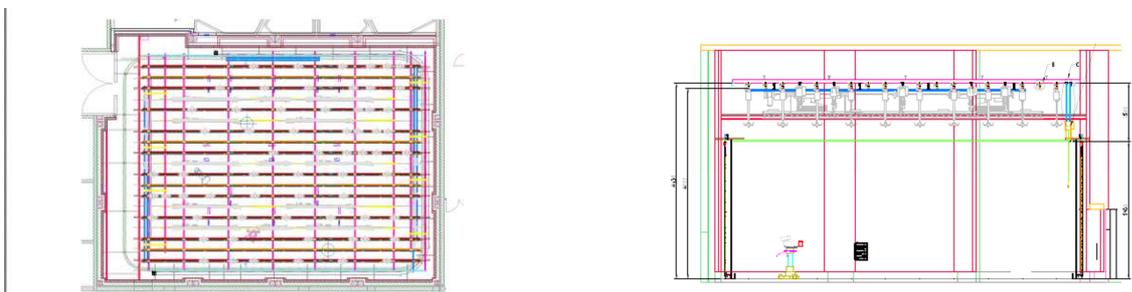


Motorized LED luminaire Arri L7-C/L10-C

The luminaire types were selected as C version with adjustable color temperature from 2,800 to 10,000 K because herewith all future demands in connection with projection technology and effect luminaires can be met.

The luminaires are attached to telescopes which are moved in 10 bus bars/rails. The horizontal position of the telescopes in the rails is measured by an optical code system as an absolute value.

The proven TV-Track TT 200 rails were used with a coupled bus-bar system on the side.



Ceiling system with rails for telescope and scenery hoists as well as with barrel hoists

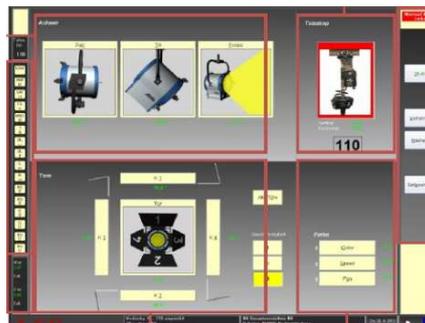
In addition barrel hoists with suitable net and signal wiring for effect light and also for devices of the audio and video technology like loudspeakers, microphones, cameras and screens were attached between the telescope slides. Therefore special production-related traverse constructions at scenery hoists and the complex wiring are eliminated.

In four separate bus bars/rails for scenery hoists chain hoists are motor driven and steered via the positioning system.

The positions of the telescopes, barrel hoists and scenery hoists as well as all mechanical settings of the luminaires are stored and automatically recalled when required via a control system. This procedure allows to provide the accompanying luminaire settings for every broadcasting form with suitable standard decorations in only a few minutes.



Control desk of the position control system



Touch-panel layout for telescope and luminaire settings



Ceiling construction system with rails, hoists und luminaires



View from the gallery: telescopes with LED luminaires, barrel hoists with effect light and LED background lighting

Regarding the studio size of approx. 300 m<sup>2</sup> playing area the number of the telescopes with 64 devices is an economic solution. This was possible because the devices can be positioned over the entire studio surface and the total number is sufficient for every broadcasting format.

The cyclorama rail system consists of 3 rails on 3 sides of the studio of which the exterior rail is covered with the projection foil of the LED background lighting. A lifting station as well as a curtain switch amends the system. In front of the studio wall the CYCLO-LED profiles are arranged in frames.

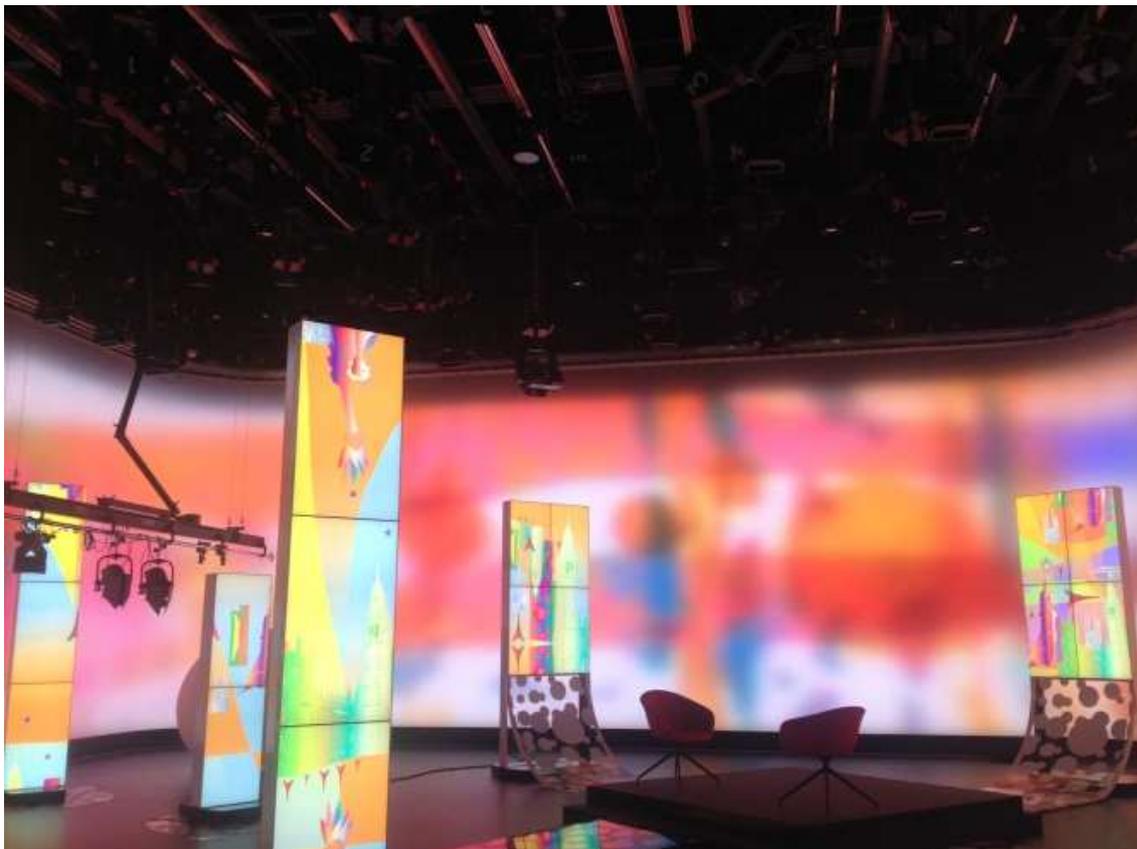
Like in other new studios the LED background lighting was realized with the patented CYCLO-LED system of Despar Systeme AG. The system consists of RGB-LEDs which are arranged in a pixel pitch of 10 cm behind a tightened projection foil. The distance is only approx. 22 cm. Therefore the space required by the system is small and the studio area became accordingly bigger. Compared to a gallery solution given before 20% of studio area could be won.



CYCLO-LED pixel 10 x 10 cm behind a projection foil

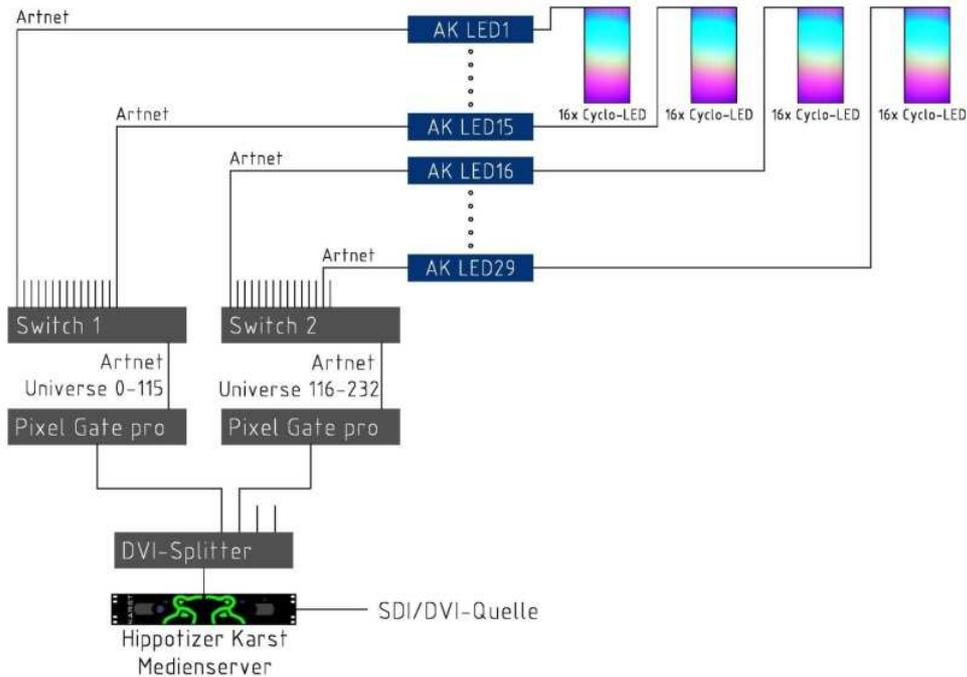
In the curved areas the distances between the LEDs and the projection surface are adjusted according to the resulting bulge of the foil.

The CYCLO-LED system which is installed over a surface of 47 x 5.25 m is controlled via the lighting control desk and a media server. Thus it allows any projection of basic or mixed colors as well as image and graphic information as fonts and forms statically and dynamically. With its wide range of opportunities this projection technology is an essential background design element which helps to reduce the amount of real decoration in the studio.



LED background and screen „Totems“ as decoration elements

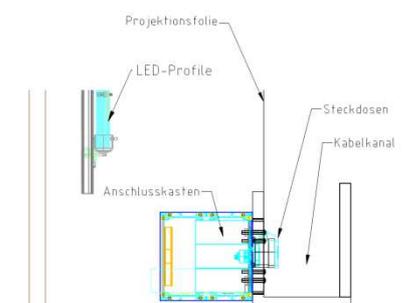
The single RGB-LEDs with a performance of only 0.7 watts are supplied and controlled by pixel gates and a bus system of system power packs with DMX signals and power supply. The bus system works bidirectional and allows to recall status values of the single LEDs, their adjustments and the direct addressing. The system overview is displayed in a graphic.



#### Overview CYCLO-LED wall system

The system power packs are arranged above the LED frames. They contain the required power supply for the LEDs and a router for the signal distribution to the LEDs. The single CYCLO-LED system pipes with a length of 5.25-m can be removed and reinstalled upwards in case of service without removing the projection foil. This way any failure, which due to the long life of the LEDs is very rare, can be resolved quickly and easily.

The required mains supply and signal wiring to elements on the playing area is solved by a functional canal with built-in connection fields for mains, DMX, Ethernet and audio/video signals between the floor and the projection foil.



Floor canal with sockets and instruments for wiring to the playing area

The operation of the studio with LED lighting technology for the recording light provides significant energy savings and a lower heat flow that is diverted through the air-conditioner. The table below shows the comparison between the LED lighting technology and the previous use of halogen incandescent lighting.

<b>Power with LED-luminaires LED-Cyclorama</b>		<b>Comparison with Tungsten luminaires and und Tungsten cyclorama lights</b>
Luminaires 100% background	15,6 kW (46 W/m <sup>2</sup> )	78 kW (230 W/m <sup>2</sup> )
<u>CYLO-LED/Tungsten :</u>	<u>16.9 kW (47 W/m<sup>2</sup>)</u>	<u>90 kW (260 W/m<sup>2</sup>)</u>
Sum 1	32,5 kW	158 kW
<u>Other luminaires + AV</u>	<u>25,0 kW</u>	<u>25,0 kW</u>
Sum 2	57,5 kW	183 kW
simultaneity factor 0,6	<b>34.5 kW (100 W/m<sup>2</sup>)</b>	<b>110 kW (320 W/m<sup>2</sup>)</b>

This heat flow of only approx. 100 W/m<sup>2</sup> as continuous load allows using modern air-conditioning technology with little room and cost expenditure. Using tungsten lamps the heat flow would be more than 3 times higher compared to LED technology. A use of background lighting with RGBW fluorescent lamps still keeps a factor of around 2.4.

In the new RTS studio the entire air-conditioning with cooling convectors and air outlets were inserted in the area of the supporting construction above the lighting technology. The area underneath could be kept for the studio lighting and stage technology only.

The lighting technology of the studio presents the currently most up-to-date equipment worldwide of a production studio with a high rate of utilization. 2 to 3 different and recurring magazine formats are produced Monday to Saturday in short intervals one after another. This density of utilization of a studio cannot be reached without automation of the studio lighting. At the same time the energy demands not only for lighting but also for air conditioning could be reduced significantly through the consistent use of LED technology.

## Project handling and involved manufacturers of the devices and system

-Planning and general contractor	Despar Systeme AG
-Rail systems	
-Installation	
-Network	
-LED background lighting CYCLO-LED	Despar/Schnickschnack
-Lighting hangers as telescopes and barrel hoists	MTS Czech via MovieTech, Munich
-Bus bars and position readers	Vahle, Kamen
-Scenery hoists Otto 250 kg	ASM GmbH, Wünnenberg-Haaren
-Position control Discovery	LSS GmbH, Altenburg
-LED-Spotlights L7-C und L10-C and spotlight motorization	Arri Cine Technik/ Licht-Technik, Munich
-Projection foil Transmission for background	Gerriets GmbH, Umkirch

Authors:

Despar Systeme AG: Rüdiger Kreckel, Steffen Rumberg

June/2015