

LED TUBES – AN EXCELLENT ALTERNATIVE

X Good light quality, no glare and homogeneous illumination for office and production areas.

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"LEDs also provide better and healthier light, since it is more directional and higher in contrast, making it ideal for working."



In the warehouse: Here one has a good view of the four LED tube strands, which allow homogeneous, flicker-free illumination of the room at the push of a button.

Ruag Space, Europe's largest independent supplier of aerospace products, is known among other things for its components for the Ariane 5 rockets. The company also implements a future-oriented lighting concept in various buildings in Zurich-Seebach: the new "Ecoline" LED tubes from Elbro. High luminous efficiency and quality, as well as energy efficiency combined with lower costs are aspects that convince Ingo Traber, Director of Central

Services, Safety and Environment at Ruag Space, of the new lighting concept.

Real Estate AG is the competence center for all real estate matters of the various divisions at Ruag. The company is responsible for the provision, operation and maintenance of the entire infrastructure for the area of Corporate Real Estate Management. As Facility Manager, Ingo Traber and his team of four employees attends to the needs of all facilities

Technical background information

The new "Ecoline" LED tubes, with energy savings of up to 80 % have been tested and classified as safe by the Swiss Federal Inspectorate for Heavy Current Installations (ESTI). Replacement of the starter does not affect the approval of the light. The LEDs are currently available in the following colour temperatures: Daylight white, 4500 K (± 100 K), Cold white, 6000 K (± 500 K) and Warm white, 3400 K (± 200 K). They are designed for up to 50,000 lighting hours, which is equivalent to more than five years of continuous operation – regardless of the frequency of switching on and off. A voltage range between 100-250 V can be selected.

in Zurich-Seebach, the fifth largest plant of Ruag in Switzerland.

For some of the new offices and for existing, older office areas and for a remodelled warehouse, the FM department decided to install a total of 140 "Ecoline" LED tubes. The requirements for the project were stringent:

"In a comparison of old with new, we were able to save at least 50% in electricity, contrary to the doubts of critics."

The new light concept had to provide homogeneous, flicker-free illumination, safety and reliability, as well as being maintenance friendly and energy efficient. In an interview Ingo Traber explains the details of the concept and installation of the new lights.

Ingo Traber, how was it decided to use LED tubes instead of conventional light tubes as a retrofit solution? What were the alternatives available to you?

"I already use the LED technology at home and am satisfied with it. Back then I was already looking for a cost effective variant for use of the expensive LED technology in everyday situations. The retrofit solutions provide possibilities here. For the

company I had found no other suitable module that could be used for retrofitting existing light fixtures. Now I have a partner, Elbro, who supplies me with X and Y lights, and that is very elementary. The installation at home was a good experience for testing the technology in a work situation. The colleagues should also feel comfortable with new solutions and thanks to my personal experience I can offer LED technology with a clear conscience. The most important thing for me is homogeneous illumination with no flickering."

Which lights have you installed?

"In the offices we have daylight LED tubes and in the warehouse we installed Ecoline LED tubes."

Why did you use longer lasting, but "more expensive" LED tubes?

"My personal, positive experience was decisive here. LED tubes provide good and sufficient light; another important aspect are the lower maintenance costs, since the lights do not have to be replaced as often. Cleaning and disposal costs are also lower, I don't have to keep as many lamp types in stock and I no longer need any ballasts, etc. Another positive aspect is the long guarantee and the long service life of up to five years. My personal research also shows that the energy savings are considerable. LEDs also provide healthier and



View of an office corridor: Employees were positively deceived by the homogeneous and bright light, as if the doors were open.

better light, since it is more directional and higher in contrast, making it ideal for working."

What special requirements were there for illumination of the warehouse, where sensitive components are stored?

"We have many different products that are stored here. Depending on the requirements, they also include components that have to be stored in a closed atmosphere. In addition to prototypes for satellite components, rocket casings are also stored here. Important aspects for us were good light quality, as well as non-glare and homogeneous illumination. Longer replacement intervals also means less risks for our products."

With 140 installed LED tubes – what is the specific energy-saving advantage?

"In a comparison of old with new, we were able to save at least 50% in electricity, contrary to the doubts of critics. Depending on the type of use, the ROI is possible in about three years and this does not take maintenance into account. In our areas one can expect hourly rates of 80 to 120 Swiss francs, in view of material preparation, securing of storage areas and lifting platforms. With the old FL tubes I have replacement intervals of five times more often, as well as several components during troubleshooting.



View of an office wing: Especially the low installation costs, the absence of flickering and the good light quality are convincing arguments for the long-term lighting concept. Non-glaring and pleasant, healthy light enable fatigue-free working.

Use in a future sustainable concept is elementary for our company. Facility Management is also working on solutions in this respect. That means clear advantages for our employees and for the company. That is the most important thing affecting my decisions. Long-term use will show whether the specifications and the products can withstand the test of time."

What about the cost aspect?

"With the installation costs we are in a similar range as with the alternative conventional lights. It was important for me to remain within the cost framework as far as possible. If the key data for the LED tubes prove to be positive, with a life of three to five times longer than the old lights, that will be very good for us."

Originally, five strands of lights were planned for the warehouse. Four strands are now installed: How did you achieve the good light values in the warehouse?

"At first we were very doubtful about the luminous efficiency and whether this would work with the LED lights. With the older technology there were five rows with double lamps in the warehouse. After initial tests we then decided to install only four rows (single lamp) with the LED tubes. The values achieved are above the required 300 Lux, and we are very happy about that! Employees who saw this for the first time were also enthusiastic. This was the first feedback we received. There have been no negative reports so far."

How did the new installation go and what advantages do you see here in particular?

"In addition to the lower maintenance and supply costs, the LED tubes are easier to handle, since they are more stable and less susceptible to breakage. With this product we do not use reflectors, which require installation, cleaning and general maintenance. The installation costs are lower, since mounting of the lights went very quickly with the single current paths. Our electrical installer was also positive about this."

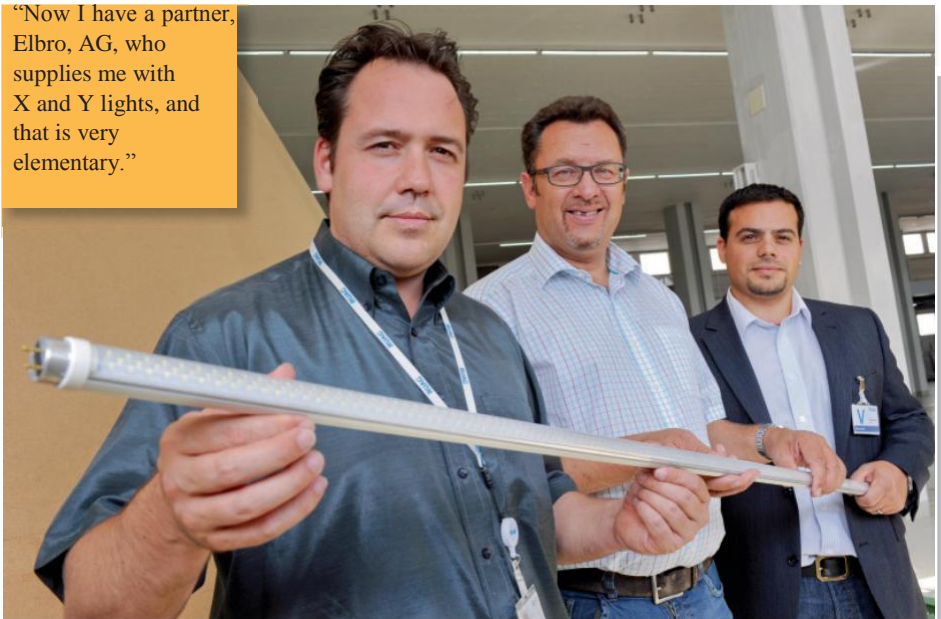
Who installed the LED tubes at your facilities? Were there any special challenges?



View of a conference room: Here, existing busbars were simply converted, with the corresponding adapters the LED tubes could be used, saving tremendous costs: Functionality and simplicity for good light.

"One of our partners, Elektro Compagnoni AG, installed the lights for us. The installation went very smoothly and quickly. That can result in savings on installation costs in the future,

"Now I have a partner, Elbro, AG, who supplies me with X and Y lights, and that is very elementary."



Satisfied faces, thanks to an ideal lighting concept (left to right): Ingo Traber, Director of Central Services, Safety and Environment at Ruag Space, together with Gerhard Engelbracht, Sales Director at Elbro, and Giuseppe Cottoni, Director of PM at Elbro AG, in the warehouse with the new LED tubes (at left is a prototype of the Ariane V casing).



since we need no reflectors, but only one power channel. Peter Herzog, Project Manager at Elektro Compagnoni, assured me that the work process for this installation was fast and efficient. As soon as all the materials are present, a lighting solution with these LED tubes is a fast and competitive alternative to conventional lighting systems!"

How important was the safety aspect for you?

"Safety is a very high priority for us! There were uncertainties with respect to the new technology and the ESTI reports confused even me. It was not quite clear, what is allowed and what is not allowed. And then there were the promises from the manufacturers of energy-saving lamps, which did not always fulfil the expectations. Therefore, clarifications were necessary in order to be able to use the LED technology. The safety precautions for these Ecoline LED tubes were a basic factor in our decision-making process. Elbro provided us with very good advice in this respect, allowing us to dispel all doubts."

How important is it for you that the LED tubes provide the full light as soon as they are switched on?

"That was a fascinating point for me. The warehouse is now illuminated at the push of a button. My assistant, Mr. Fimian, was very quickly impressed by the technology – after 48 years (!) of employment – amazed and excited about the success in the warehouse, which is now illuminated immediately with no flickering and no delay. This was supplemented by the positive experiences of Elbro, which equipped all of its office facilities with the LED tubes."

Will you install these LED tubes in more areas?

"Yes, I will continue to expand the use of the LED technology, since I want to observe the effective results of the new lights in everyday situations. I am already planning to retrofit some areas now equipped with conventional lights."

Your conclusion?

"I can clearly say that initial doubts were successfully dispelled and that we were able to implement this retrofit solution at almost neutral costs. I will continue to use these LED tubes and can definitely recommend them!" ■

Thank you for the interview.

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