

The Litek logo features the word "litek" in a bold, lowercase, sans-serif font. A registered trademark symbol (®) is positioned to the upper right of the letter "k". The logo is set against a dark teal square background.

Led lighting

Litek srl

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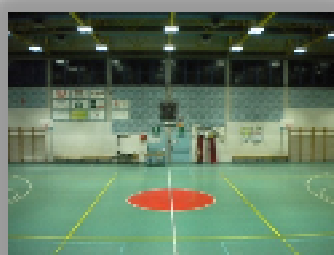
www.litek.it - com@litek.it

YOUR LED VISION

LITEK case-study:

GYMNASIUM "RODARI"

Gymnasium illuminated by LED:
One of the first realized in Europe.
Verucchio (RN - Italy)
Aprile 2010



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GYMNASIUM "RODARI" – TOWN OF VERUCCHIO

Working to requalify the lighting installation with a goal of saving energy , making the system safer, and reducing the period of inactivity for maintenance.

BEGINNING SITUATION:

Lighting installation made up of:

- Height of installation 7,40 mt.
- Existing projectors 16
- 400W metal halide general projectors
- Energy consumed annually 30'206 kWh
- Total energy absorbed (including energy lost) 7,44 kW
- Additional technical notes:
 - Absence of a protective security grate and the presence of visible glass.
 - Elevated transversal-horizontal glare due to the optical trajectory of the projector.
 - Unnecessary light flow outside the playing court.
 - Light delayed when turning on (typical for high power discharge lamps).



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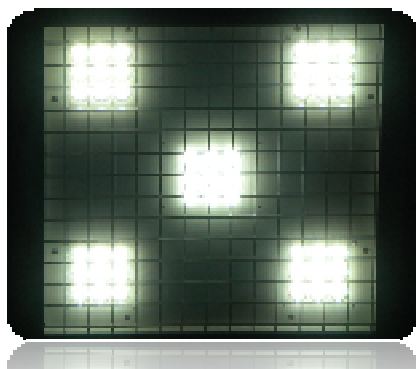
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CHOSEN PROJECT:

Light fixture used, DAMA series LED ceiling lamp

Version art. D45240/7015LBOF technical characteristics:

- LED 45x2W suspended ceiling lamp
- Light color Neutral 5000°K
- Chromatic index efficiency CRI/RA 75
- Mixed opticals for a round-symmetrical emission 40°+70°
- Total light flux 7200 Lumen
- Nominal energy efficiency 100 Lm/1W
- Power supply 100/260 V - 0/50 Hz
- Nominal power 90W - consumption 125W
- Five electronic switching drivers
- Immediate ON/OFF
- Regulable cable press
- Connection through a fused connecting terminal
- Class of insulation I
- Body made of zinc-plated metal sheet
- Painted with a epoxy-polyester for indoors
- Grade of protection IP 20
- Dimensions 60x60x10
- Protection grate made of steel (welded and painted)



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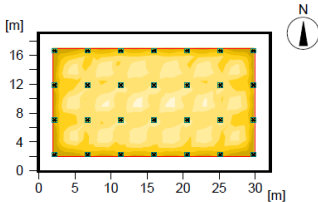

GYMNASIUM"RODARI" – TOWN OF VERUCCHIO

Working to requalify the lighting installation with a goal of saving energy , making the system safer, and reducing the period of inactivity for maintenance.

PROJECT DATA:

New LED light installation made up of:

- Height of installation 7,40 mt.
- Fixtures used 28
- 90W LED light fixtures
- Total energy used (including the loss) 3,50 kW
- Energy used annually 14'210 kWh

Oggetto	: Comune di Verucchio (RN)	 Litek [®] Led lighting YOUR LED VISION																																										
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RESULTS OBTAINED:

TECHNICAL RESULTS:

- 53% reduction in the energy used and consumed, with an improvement in the general existing illumination.
- Increased security thanks to the steel protective grate used and to the absence of glass.
- Great reduction in glare thanks to the two types of opticals used, making it possible for a general uniform light over the whole court.
- With use of the right opticals , reducing the unnecessary light outside of the court.
- Absence of a programmed maintenance (for changing the lamps) ≥ 10 years.
- Immediate ON/OFF.

ECONOMIC RESULTS:

- Annual costs for energy:
 - *Before € 5'437,10*
 - *After € 2'557,80*
- Annual costs for maintenance:
 - *Before € 624,00*
 - *After €0,00 (10 years)*

ENVIRONMENTAL RESULTS:

- Electric energy saved each year= 15'996 kWh
- TEP saved annually= 3,52
- Avoided Emissions = 8,50 tCO₂/annual



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VISIBLE RESULTS:

Before-intervention



After-intervention



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SUMMARY OF COMPARISON:

	System before intervention	System after intervention
Type of Light Fixture power	Projector JM 400W	Fixture DAMA LED 90W
Number of fixtures	16	28
Total Energy absorbed	kW 7,44	kW 3,50
Annual energy kWh	kWh 30'206	kWh 14'210
Annual energy cost €	€ 5'437,10	€ 2'557,80
Programmed costs for maintenance 10 years	€ 6'240,00	€ 0,00
Security: grate / glass	No/Yes	Yes/No
Medium illumination value on court	Exsistent-sufficent	Increased 12%
Glare transversal/horizontal	Yes	No
ON/OFF	Delayed	Immediate
Selectivity of failure	No	Yes
TEP yearly savings	0	3,52
Yearly savings of CO2 emmissions (ton.)	0	8,50
Warranty years	0	3

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OPINIONS - INTERVIEWS:

Mayor Giorgio Pruccoli and councilman Alberto Ottaviani (Verucchio - Italy):

✓ **QUESTION:** Mayor Giorgio Pruccoli and councilman Alberto Ottaviani, which were the principal motivations that pushed you and your administration to realize an installation that is so innovative, and if we can also say risk taking, given the fact that it looks like the first of its kind in Europe? Has your administration already used this type of technology?

✓ **ANSWER:** Our administration decided to realize this intervention because we believe in the technology of LED, both as a fundamental instrument today and in the future for reaching the objectives of saving energy and reducing the current costs for the Town's budget. This intervention, as you have mentioned the first in Europe, demonstrates that an administration has to know how to read and intercept that which is positive, the research, the innovation, and in general, what the market proposes. We decided to be the first to light a gymnasium with LED because we have applied and tested this technology in the lighting of Town streets and two roundabouts for which, having been very satisfied with these interventions we believe we must go forward (and will continue to go forward) with this new frontier of energy saving illumination.

Mr. Thomas W. Weissenberg - light/optical designer (Rimini - Italy):

✓ **QUESTION:** Mr. Weissenberg being a known technical light specialist, can you tell us which were some of the particulars of this installation?

✓ **ANSWER:** At first I would say it conforms with the norm UNI EN 12193, then without a doubt to assure a good light flow utilized coefficient, in fact the light flow is now used only where needed with great advantages using specific opticals and naturally saving energy. It is also extremely evident on the court as seen in these photos the best chromatic view thanks to an IRC/RC 75. It is also obvious from the multicolor makeup of the court given its many uses (basketball, volleyball, handball) the great visual improvement; the subjective perception of the reality of colors becomes sympathy, cheerfulness, vitality all values typical of sports. Another technical aspect that had to be addressed was the problem of GLARE caused by "too little" and consequently too far apart rectangular projectors with a large industrial optical. This was corrected using specific opticals directing the light only where needed. Another particular of this technology is the immediate accension when turned on either if the LEDs are hot or cold without the long wait typical of the discharge lamps, think of when you have to use this environment for sports, theatrical events, or school functions for which this area is used.

Mr. Fabio Facchini - CEO Litek Led Lighting (Poggio Berni - Italy):

✓ **QUESTION:** In the past your company is noted for realizing the first roundabout in Italy illuminated only with LED street lights, or Apecchio the first town illuminated with LED street lights, also the Rimini Convention Center using your LED fixtures, but using LED technology on a basketball court frankly speaking, don't you think it is too much!?!?

✓ **ANSWER:** The arrival of new and more difficult goals extends our boundaries, above all our mental attitude, which permits us, once we have achieved a goal, to take on the next goal with optimism. In reality we are working on another two difficult projects that will permit us to apply our LED technology in all the areas of illumination... The evolution, technology, our strong specialization in this area, with an excellent group of men and women, permits us to achieve these important results. This technology already for some years, has been utilized in all areas of technical illumination, as more confirm of the last years LITEK vision in developing LED technology, the most important convention in the world for lighting "Light & Building" that show the next 3/5 years lighting tendency, has just ended in Frankfurt Germany and 2/3 of the functional light fixtures exhibited were of LED technology.