



Led lighting

Litek srl

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## LITEK case history – APECCHIO

May 2009



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Regione Marche



Litek Led Lighting



Comune di Apecchio (PU)

**LED ILLUMINATION**  
**EXAMPLE -APECCHIO (PU) ITALY**  
**ENERGY SAVINGS CONFORMING**  
**WITH THE LAW N°10 / 2002**  
**REGION MARCHE**  
**May 28, 2009 -10:00am**  
 Raffaello Hall - Region Marche  
 Via Gentile da Fabriano, 9 - 60125 Ancona, IT



Region Marche environment council:  
**Marco Amagliani**  
*Greeting and opening*

Mayor Apecchio:  
**Stefano Cristini**  
*Necessity of the project and rational choice inauguration*

Manager Region Marche environment:  
**Antonio Minetti**  
*Regional funding and programs*

CREE Inc. Europa:  
**Savino Arcari**  
*constant evolution in LED technology*

President Legambiente Marche :  
**Luigino Quarchioni**  
*Energy efficiency, environmental opportunities, economics, innovation.*

Planners:  
**Luciano Bartolucci & Andrea Cardinali**  
*technical criteria of choice and results obtained*

Litek Led Lighting :  
**Fabio Facchini**  
*Functional LED lighting, building while conforming with the laws, Making a responsible choice*



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## COMUNE DI APECCHIO

Working to improve the street lighting system with great energy savings and reduced light pollution as a result

### Starting situation:

Public Street Lighting System was made up of:

- Mercury vapor street lights(125W)
- Sodium street lights(150W)
- Optics not conforming with the law n°10/2002
- Street lamps substituted= 356
- Total power absorbed= 58,74 kW
- Annual energy consumed= 181'983 kWh



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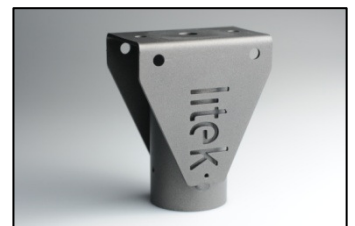
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### Projector selected:

Light fixture used, LED light PROLED series  
art. S02DAAS216AR02 technical characteristics:

- LED 20x 2W light fixture
- Nom. Power 40W, absorbed 55W
- Nom. Light flow 3414 Lumen
- Light color 6000°K
- Double internal drivers
- Power supply 100/260 V - 0/50/60 Hz
- Insulated in class II
- Grade of protection IP54
- Double on/off switch and rapid external connector
- Street optical asymmetrical, totally cut-off OTTICA2
- Electrical security certificate, trademark CE
- Within the standards of "non-polluting light" laws
- Body made of pressure fused aluminium
- Painted with a polyester powder "Silver"
- 5 mm transparent, tempered glass
- 3 year total guarantee
- Highest quality >>> designed and realized totally Made in Italy



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## Results obtained:

### Technical results:

- Immediate start up
- Universal range in the voltage supplies 100-260V 0-50-60Hz
- Increased visibility for safer streets
- Increased light at street level from 2/5 Lux before, to 15/18 Lux after (maximum results taken from the test zone) .
- Reduced flow of electrical current in the electrical lines, with a reduction in the loss of electricity caused by the Joule effect and the possibility to broaden the installed system
- Management of the system simplified by means of the double on/off switch with the possibility to reduce the light flow and prolong the control times
- Life expectancy > 50'000 hours

### Economic results:

- Yearly costs : before (energy 23,650€ + light bulbs 4,600€ = 28,250€ total), after ( energy 6,630€ + no costs for bulb replacement in the first 12 years)
- Energy savings annually(for the first 12 years) 21,620€
- Payback time for the investment  $\cong$  4,5 years (calculated on the difference in cost of the fixtures HG 156 W – LED 55 W)
- Reduction in the power contract with the energy company

### Environmental results:

- Annual energy savings = 131'250 kWh
- Annual TEP saved = 24,55
- Avoided emissions = 73,64 tCO<sub>2</sub>/annual

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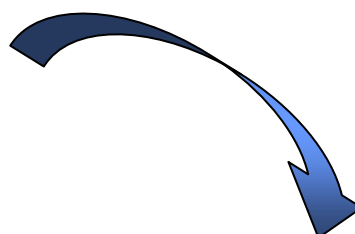
**COMUNE DI APECCHIO**

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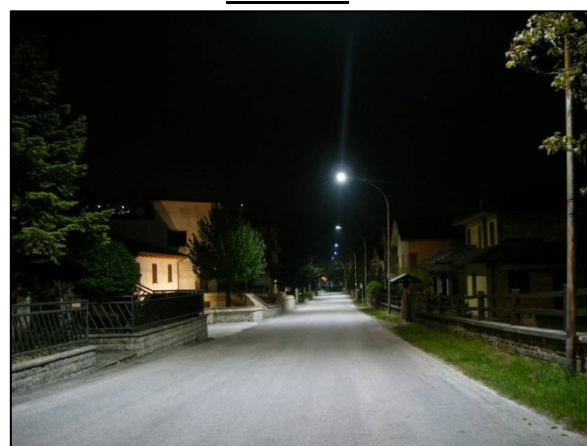
### Visible results:



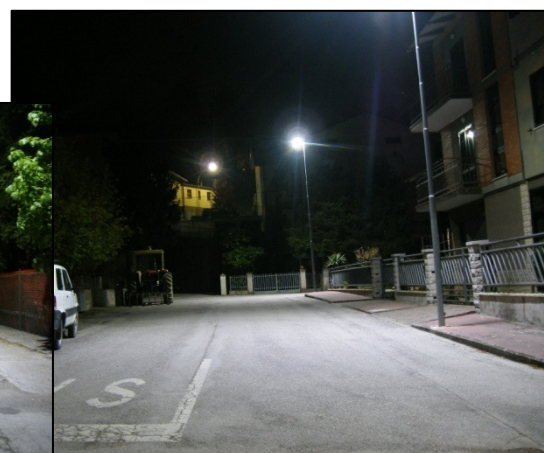
Apecchio - Via Circonvallazione  
BEFORE



Apecchio - Via Circonvallazione  
AFTER



### Other images after intervention



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General comparison:

	<b>System before intervention</b>	<b>System after intervention</b>
<b>Type of light fixture - power</b>	<b>Mercury Hg 125W Sodium HPS 150W</b>	<b>PROLED 40W</b>
<b>Number of fixtures</b>	<b>356</b>	<b>356</b>
<b>Power absorbed</b>	<b>kW 58,74</b>	<b>kW 20,08</b>
<b>Annual energy costs</b>	<b>€ 23'650,00</b>	<b>€ 6'630,00</b>
<b>Annual maintenance costs (lifetime for LED)</b>	<b>€ 4'600,00</b>	<b>€ 0,00</b>
<b>Up to standards with law N°10/2002 Marche</b>	<b>No</b>	<b>Yes</b>
<b>General optics present</b>	<b>No</b>	<b>Yes</b>
<b>Light pollution</b>	<b>Yes</b>	<b>No</b>
<b>TEP saved</b>	<b>0</b>	<b>24,55</b>
<b>Guarantee (years)</b>	<b>0</b>	<b>3</b>
<b>Glaring light</b>	<b>Yes</b>	<b>No</b>
<b>Chromatic response index - IRC</b>	<b>Limited - 30/40</b>	<b>Good - 75</b>
<b>Sufficient light</b>	<b>No (2,5 - 4,4 Lux)</b>	<b>Yes (14 - 18 Lux)</b>
<b>Class of insulation</b>	<b>I</b>	<b>II</b>
<b>Power supply</b>	<b>Single</b>	<b>Double universal switch</b>