

The background of the entire page is an abstract, dark blue and black image featuring vibrant, curved light trails in shades of cyan, blue, and white, suggesting motion and light. A large, white, semi-transparent number '2021' is positioned in the upper right quadrant, partially overlapping a white rectangular box.

2021

The evolution of artificial lighting
inspired by nature

REFERENCE BOOK

ENG

*arianna
light looking forward



A satellite map of Italy is shown, with numerous locations marked by star-shaped icons. The icons are in two colors: blue and yellow. Each icon is accompanied by a label indicating the location and its region. The locations are distributed across the country, with a higher concentration in the central and southern regions. The background of the map is a dark, starry space, suggesting a night-time satellite view.

Galleria Val Sarentino BZ

Galleria Kofl BZ

Galleria Pusiano CO

Sottopassi Copreno e Lomazzo MB

Sottopasso dell'Ancora MO

Galleria Val di Sambro

Galleria Monsavano #GREENLIGHT

Galleria San Casciano FI #GREENLIGHT

Galleria Albacina AN

Galleria S. Pellegrino #GREENLIGHT

ROMA

Galleria Bon

Galleria Masso della

Galleria Tindari Capo d'Orlando

*Proud to illuminate
the world's
most beautiful country*

 **arianna**
light looking for ward

Galleria Dignano UD



BO

FI
GHT

Galleria della Montagnola AN
#GREENLIGHT

Galleria San Giuseppe AP
#GREENLIGHT

Galleria Val Garizia AP
#GREENLIGHT

Galleria S.M. Paganica PU
#GREENLIGHT

Galleria
atti AV

Signora

Galleria Costa Incoronata SA
#GREENLIGHT

Galleria Montegiordano CS

Galleria Serra Spiga

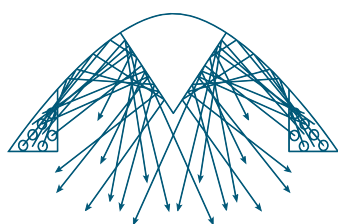
do ME

Galleria Progon e Przojna SRB

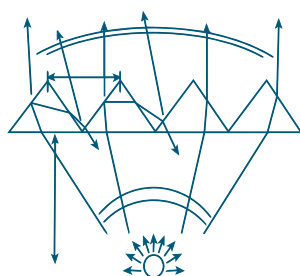
The use of **the patent for total reflection** in the tunnel makes Arianna's floodlights different from all the others: the performance, in counter-flow optics and in symmetric/asymmetric optics, is guaranteed by a specific and articulated customer support design and certified by institutions.

*The new light of Arianna comes from the heart of
total reflection:*

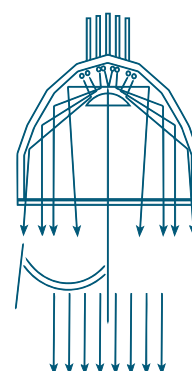
for the first time the emissions of each LED
are conveyed towards an internal reflector that
projects the light onto the ground.



DEFLECTIVE SYSTEM



LENSFLECTIVE SYSTEM



BACKREFLECTIVE SYSTEM

Arianna tunnel lighting solutions maximize safety and energy savings thanks to the new total reflection system.

Arianna's total reflection patent, filed in 2008 and now recognized internationally – including in the United States and China – uses a reflector inside the luminaire that collects the rays of LED light focuses them onto the ground uniformly. The LEDs are thus concealed from view, significantly reducing glare. Visual comfort and energy savings are the most tangible results of the total reflection system.



Autostrada A1 Var

Galleria di Val di Sambro (BO)



Teseo



Titlis



The project:

The Val di Sambro tunnel, in the Variante di Valico section of the A1 motorway between Bologna and Florence, is one of the most important infrastructure works completed in Europe in recent years, representing the main connecting route between the north and the south of Italy.

The entire construction includes more than 40 tunnels, covering 60 km of carriageway.

This tunnel is unique in terms of the technologies used, the dimensions of its sections and the overall length of the work. Indeed, its context and size make this work one of the most significant case histories in the field of LED tunnel lighting.



The reinforced lighting, realized with the asymmetrical counter beam optic patented by Arianna, directs the light in the opposite direction of traffic, **improves the visibility** of obstacles without glare

Result:

Thanks to **technological innovation**, the lighting of the Val di Sambro tunnel will be totally green with an **energy saving of over 60%** compared to traditional systems and 25% compared to alternative LED systems. The uniformity obtained is equal to 90% for the safety of drivers. Finally, the glare is less than 2%, less than a fifth of what is required by the relevant standards.

Tunnel e sottopassi

Roma



Phileo Tunnel



The project:

The collaboration between ACEA and Arianna that began in the street sector has also been confirmed in the tunnel and underpass sector.

Phileo, with its marked modularity and patented total reflection optics, was the product chosen for the capital, thanks to its unique design and marked versatility.

Two types of attachments were studied for Rome: a more traditional one with an adjustable channel able to adapt to the various existing structures and one on the wall for underpasses where the channels were not pre-existing.



The lighting of tunnels and underpasses holds significant importance for the safety standards of drivers. **Visual comfort, uniformity** and **energy savings** are our prerogatives

Result:

Patented symmetrical optics were chosen for the permanent part of the tunnels and underpasses, while asymmetrical counter-flow optics were chosen for the entry area. The installed products **guarantee energy savings of over 60%** and glare well below the limits set by the regulations.

Project #GREENLIGHT



In 2017 ANAS launched its new project for the tunnels they manage called #greenlight.

The Greenlight plan, which involves an **overall investment of around 155 million Euro**, entails not only the reduction of consumption and better management of lighting systems, but also the **raising of safety levels** within the tunnels themselves, enhancing visibility and the diffusion quality of the artificial lights. It is estimated that the operation can bring considerable savings that will provide Anas with a return on the initial investment in approximately 7 years, net of the expected reductions in the tender phase.

Out of a total number of approximately 1,800 tunnels that are managed, Anas has identified approximately 700 tunnels throughout the country on which to intervene primarily with the #greenlight plan.

Arianna, in 2018, thanks to the collaboration with the best technological installers in Italy, successfully won **4 lots of the 8 tender lots**, for an expected total of around **50,000 tunnel floodlights** in the three-year period 2018-2020. Anas has stipulated the first contract for the start-up and maintenance of the tunnel systems through the supply and installation of **latest generation LEDs** with regulation and monitoring of consumption to replace the obsolete lighting bodies.

The Anas #GreenLight Project (three-year Framework Agreement) provides for the replacement of lighting fixtures with latest generation LEDs, aimed both at **reducing consumption**, but also at **raising safety levels** within the tunnels thanks to **better visual comfort** on the road surface.



LOTTO 1 NORD-OVEST

Pieve di Teco
San Giacomo
Corte
Villatico
S. Martino
Attraversamento Lecco
Claviere
Cesana
Piccola Dora
Malpensa 6
Malpensa 7
Marina
Ca' del Signore
Fulminata
Giulia
Brogeda I
Brogeda II
Brogeda III
Quarcino

LOTTO 3 CENTRO

Collecappretto
San Pellegrino
San Benedetto
Monsavano
San Casciano
Della Contessa
Colle del Prete
San Martino Paganica
Montagnola
San Giuseppe
Valgarizia

LOTTO 6 CALABRIA

Tanagro
Castelluccio
Montegiordano
Sellara
Girella
Baldaia I
Baldaia II
Fiasco
Piscopio I
Piscopio II
Manche di Castello
San Michele
Sant'Angelo

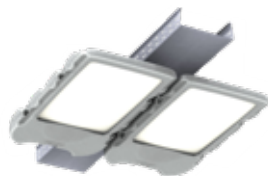
ALTRE GALLERIE ANAS

Spoletto
Marinasco
Castelluccio
Madonna di Montebruno
Sant'Egidio
Fornaci
Masso della Signora
Monti Pisani
Casina
Prosecco

Lotto 6 - Strada Europea E45 Galleria Costa Inconata (SA)



Phileo Tunnel



Snell Tunnel



The project:

The Costa Inconata tunnel is located on the A2 motorway, one of the most important roads in Southern Italy which is part of the E45 European Road.

In recent years, the tunnels along this road have been extensively renovated to ensure greater safety for motorists.

This tunnel is part of the project launched by ANAS in Italy. Arianna was awarded 4 different lots, for an expected total of approximately 50,000 tunnel floodlights in the three-year period 2018-2020.



Arianna's **total Reflection** guarantees tunnels with very low glare and maximum safety for the driver.

Result:

In these tunnels, Arianna's solutions have resulted in a **65% saving on energy consumption** compared to the previous installation.

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria Monsavano (FI)



Petrarca Tunnel



The project:

The Monsava tunnel is located on the SS 67 Tosco-Romagnola state road in Pontassieve (FI).

The intervention involved the timely replacement of the old fixtures installed with the latest generation LED floodlights, capable of reducing consumption and increasing safety.

In all, 226 Petrarca Tunnels were installed for the two pipe structures with a total power of approximately 17.5 kW. Previously there were the same number of SAP appliances (400/250/150/100 W) but with a total installed power of around 50 kW.



The new lighting of the Petrarca tunnel guarantees **exceptional energy savings**, as well as improved lighting along the entire length and removes any shadowy areas.

Result:

Arianna combines maximum energy savings with maximum glare reduction for a safer and more convenient tunnel for the client with **energy savings of approximately 65%**.

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria San Casciano (FI)



Petrarca Tunnel



The project:

Also for the #greenlight project by ANAS Arianna is in Tuscany in the province of Florence in San Casciano Val di Pesa in the San Casciano Tunnel.

The tunnel redevelopment project had to include a replacement of the existing SBP and SAP light fixtures, maintaining the same power and the same number of floodlights.

This tunnel is one-way with two lanes, consisting of two pipe structures, one towards Siena and the other towards Florence. The Petrarca Tunnel with radio wave remote control were installed for both the permanent and reinforcement lighting.



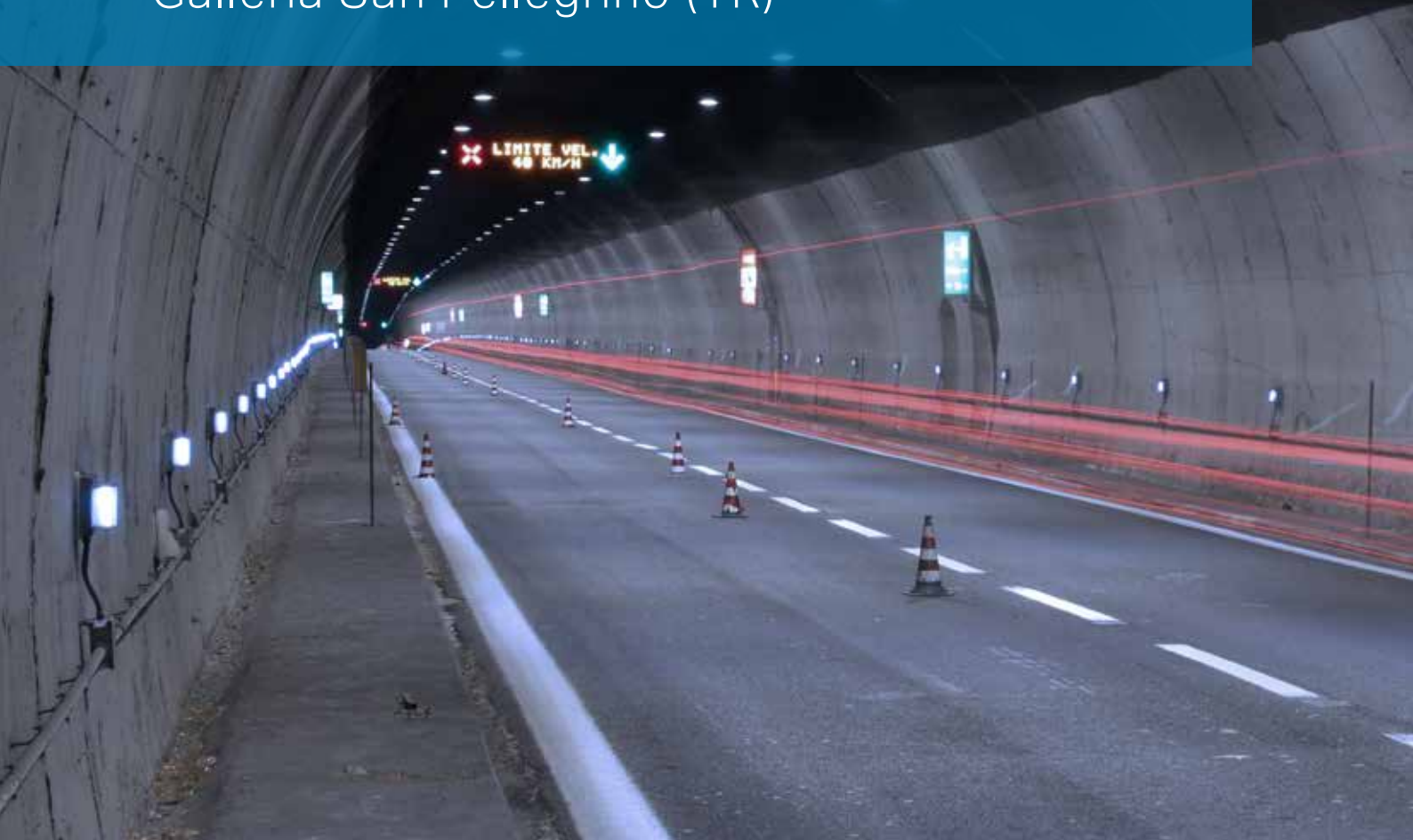
The new Arianna lighting guarantees **high uniformity**, without shadowy areas, and a very **low level of glare** along the entire tunnel.

Result:

The goal of making the tunnel **much safer and more comfortable** has undoubtedly been achieved. The surveys carried out after installation confirm that the lighting project was carried out to perfection and that all the client's requests were respected.

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria San Pellegrino (TR)



Phileo Tunnel



The project:

Phileos in the tunnel version were installed in the San Pellegrino tunnel.

For the entry area, Phileo tunnels were installed with a counter-flow optic capable of reaching high levels of brightness at low powers, which allow for significant energy savings. The same product, but with symmetrical optics, was installed along the entire length of the tunnel for permanent lighting.

The choice of using the same body both for the entry and for the entire length of the tunnel facilitated the installation operation.



Arianna has always operated with **LED lighting**, achieving primacy in tunnel works, with the aim of ensuring **the best possible lighting** for the driver.

Result:

In the San Pellegrino Tunnel, the luminance and uniformity measurements have already been carried out by the Arianna support team, **confirming the design expectations and compliance** with the regulations.

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria Montagnola



Petrarca Tunnel



The project:

The tunnel is located along the SS 16 Adriatica, in the municipality of Ancona (AN), and consists of a single two-way pipe structure with two lanes. The devices are installed on two channels above each lane.

The Petrarca tunnels by Arianna, chosen by Bouygues E&S InTec Italia S.p.A., promptly replaced the lights present, guaranteeing energy savings and visual uniformity. Also for this project of the ANAS #greenlight tender, Arianna fully satisfied the client's requests.



The Petrarca Tunnel perfectly responds to the tender requirements: an **increase in the level of safety** and a **reduction in consumption.**

Result:

228 reinforcement and 240 permanent fixtures were installed, 468 fixtures in total with a **total power of 30kW** (70% less than the previously installed power).

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria San Giuseppe



Petrarca Tunnel



The project:

The San Giuseppe Tunnel is located along the SS4 Via Salaria in the municipality of Ascoli Piceno (AP) and consists of a single two-way pipe structure of approximately 1 km. The new Arianna luminaires were installed in the two central raceways at the traffic lanes, respecting the number of existing luminaires.

For timely replacement of the luminaires, special brackets were designed to respond to the particularities of the system. The collaboration between the client and Arianna's R&D department led to excellent results, both from a technical and a mechanical point of view. The installers were able to carry out their work with the support of the mechanical designers.



#GREENLIGHT, the project
of **maximum safety** and
energy saving won by
Arianna.

Result:

Arianna's team of mechanics in the R&D department guarantees customised anchoring systems for each installation, a fundamental prerogative in the #greenlight project. The tunnel numbers are 408 fixtures installed and **70% of energy saved.**

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria Valgarizia



Petrarca Tunnel



The project:

The Valgarizia tunnel is located on the SS 4 Via Salaria, in the municipality of Acquasanta Terme (AP).

The intervention concerned the entire length of the tunnel for both the reinforcement system and the permanent one. In the tunnel, consisting of a single pipe structure with 2 lanes, timely replacement of the old luminaires installed with the latest generation LED floodlights was envisaged, capable of reducing consumption and increasing safety. 418 Petrarca Tunnel floodlights (228 reinforcement ones and 190 permanent ones) were installed with a total power of approximately 30 kW.



The **reduction in consumption** requested by ANAS was met by Arianna's Petrarca Tunnel floodlights.

Result:

Both the illuminance and uniformity values are in line with what was declared in the lighting design, both far above the relevant standards. The **energy saving is 70% measured.**

Lotto 3 Centro - Toscana | Marche | Umbria

Galleria S.M.Paganica



Petrarca Tunnel



The project:

The tunnel is one of the installations carried out for ANAS #greenlight and, like all the tunnels in the project, its prerogative is energy efficiency in maintaining the structure.

The number of new generation floodlights to be installed is always bound by the number of existing fixtures.

The challenge was to be able to lower the power of the appliances as far as possible to ensure maximum energy savings. Arianna with Petrarca tunnel was chosen by the successful tenderer Bouygues E&S InTec Italia S.p.A. for the ability to illuminate more with minimum consumption.



The **improvement of visual comfort** is guaranteed by Petrarca tunnel's patented reflection optics.

Result:

The **flexibility of Arianna** has made it possible to install it while respecting the existing structure. The clamping system made available responds perfectly to all the conditions found. The energy savings are 70% with an installed power of 40 kW compared to the previous 125 kW.

Strada provinciale SP 9

Galleria Kofl (BZ)



Phileo Tunnel



The project:

The Kofl Tunnel was conceived from a project that seeks to contain the danger of the road section of the municipality of San Pancrazio in the provincial road SP 9.

Safety has always been the main focus of the entire project and the lighting was expected to be in line with this concept. Bouygues E&S InTec Italia, which won the redevelopment tender, chose Arianna as its lighting partner.

The entire tunnel was illuminated by a single hypermodular product, Phileo, in the tunnel version. One product, two versions and zero waste.



Where safety is essential, Arianna's
patented total reflection optics
are the advantage that makes all
the difference.
Arianna ensures **glare levels**
below the required limit.

Result:

A truly exceptional tunnel that combines cutting-edge technology and high design. Arianna has managed with its lighting to guarantee **total uniformity** without shadowy areas and with energy savings superior to all competitors.

Strada statale 508

Galleria Val Sarentino (BZ)



Teseo



Titlis



The project:

The project involved the construction of two tunnels, Rafenstein and Goldegg, 1.5 km and 2 km long.

State highway «508 di Val Sarentino e del Passo di Vizze» (SS508) is located in the province of Bolzano, taking its name from the historical route over the pass and through the valley it crosses.

It has always been one of the most dangerous road in the region, and for this reason the route has been modified, shifting the road up the mountain from kilometer 3, a modification that also serves to protect the local winemaking area.



The Teseo and Titlis luminaires both exploit the **technology of Arianna's Total Reflection patent**, bringing visual comfort and energy savings into the gallery

Result:

Using Arianna technologies, **energy savings** in the reinforcement zone alone came to 20% when compared to other competing projects in the tender. For the permanent installation a special double electronic variant was chosen to double the expected life of the plant.

Autostrada A20 Messina - Palermo

Gallerie Tindari, Capo d'Orlando (ME)



Teseo



Snell Tunnel



The project:

The renewal of the lighting system in the Tindari and Capo d'Orlando tunnels is part of the structural consolidation and upgrading of the technological systems along the Messina-Palermo motorway, a fundamental arterial road for Sicily as it connects the regional capital with Messina, necessary for those who have to go to Calabria or other regions.

The orography of the northern coast of Sicily required complex engineering solutions for construction of the motorway, which comprises a large number of viaducts and tunnels.



The **Total Reflection of Arianna** ensures tunnels with very low glare and maximum safety for those who drive it

Result:

This operation was aimed at the redevelopment of the motorway section, combining **energy savings with high performance**, making driving more comfortable for those who transit.

Major improvement in visibility, thanks to uniform lighting and reduced glare.

Strada Europea E80

Progon e Pržojna Padina (SRB)



Teseo



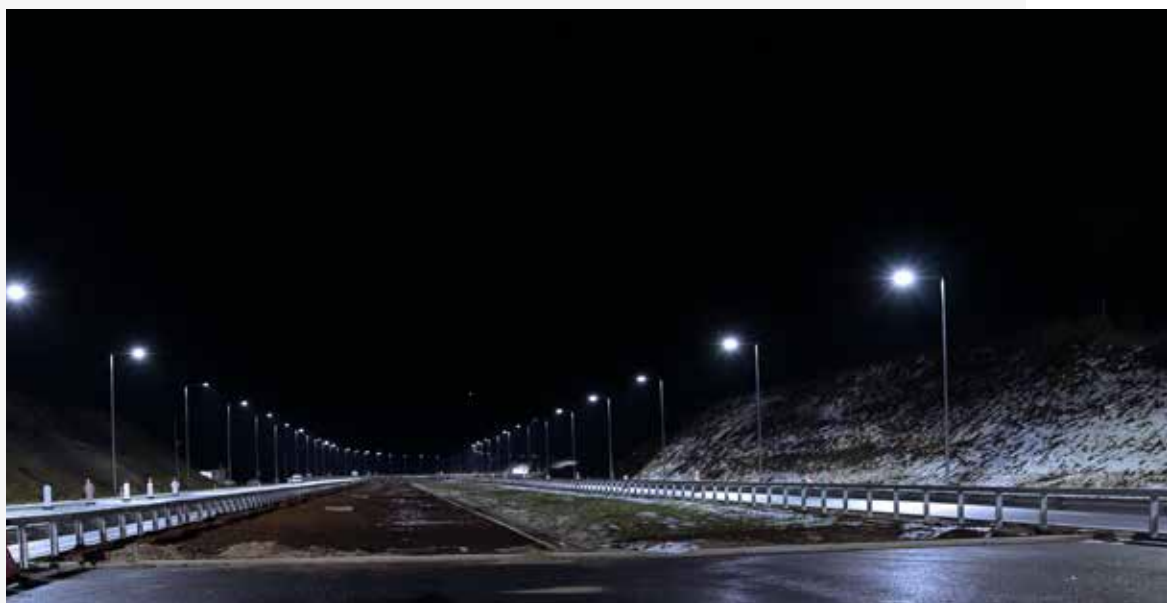
Snell Tunnel



The project:

In 2017, work was completed on the construction of Dimitrovgrad bypass, on the border between Serbia and Bulgaria, with the construction of two tunnels (Progon and Pržojna Padina) for a total length of around 3 km.

Spanning 6000 km, European route E80 is one of the longest highways in Europe, connecting Lisbon to Gürbulak, on the border between Turkey and Iran, and crossing Spain, France, Italy, Croatia, Montenegro, Serbia and Bulgaria.



Teseo, in the reinforced lighting,
and Snell, in the permanent lighting,
guarantee **maximum attention
to power consumption** while
maintaining high performance in all
the areas of the tunnel

Result:

In these tunnels, Arianna's solutions have permitted savings of **30% in power consumption** compared to the competing proposals.

SS76 Val d'Esino

Galleria Albacina (AN)



Teseo



Snell Tunnel



The project:

The Quadrilatero Marche Umbria project involves the construction of infrastructural road works (virtually representing the four sides of a quadrilateral), with an investment of over 2 billion euros and the development of 160 km of roadways.

The project is part of the main Italian connecting routes, creating an efficient connection to the surrounding regions and the rest of Europe.

The Albacina tunnel is located along state highway "SS 76 della Val d'Esino", one of the four "sides" of the project, and is part of stage 2 of the road works.



Maximum safety even in the tunnel thanks to the combination of Teseo counter beam and symmetrical Snell

Result:

The counter beam optics, for entrance lighting aim the light against the direction of traffic, thus improving visibility of obstacles.

Maximum efficiency, uniformity and glare reduction.

Strada Regionale 464

Galleria Dignano (UD)



Teseo



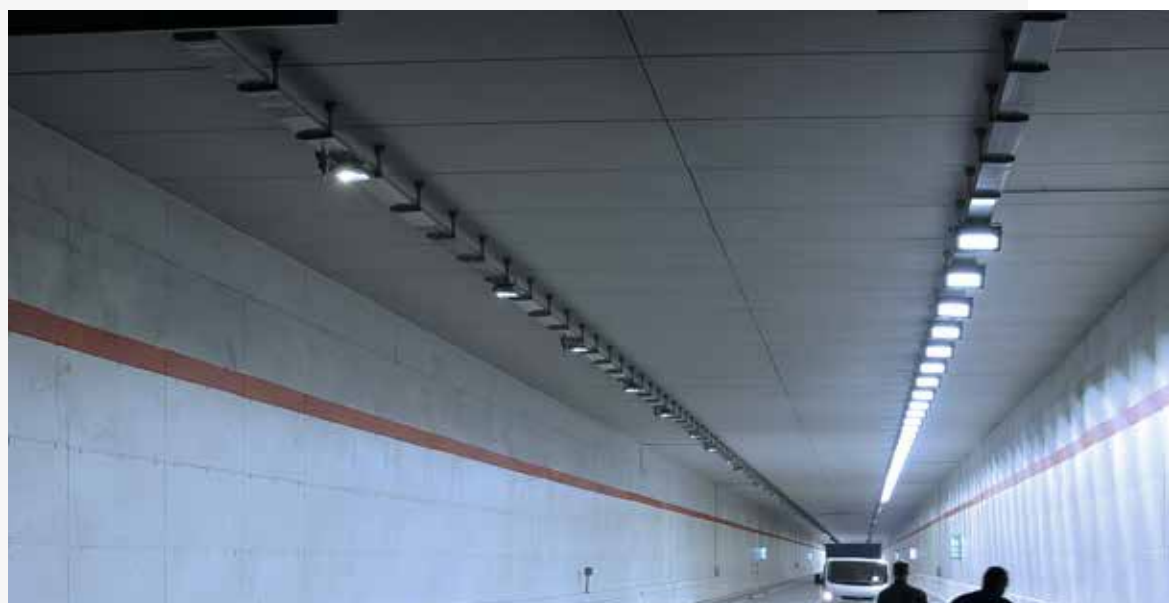
Phileo Tunnel



The project:

The lighting of the tunnel is part of the intervention of the variant of Dignano, a new road that connects the SR 464 of Spilimbergo to the SR 463 of the Tagliamento, bypassing the town of Dignano (UD). In addition to the tunnel, two roundabouts were also built at the ends of the variant. The purpose of the work is to free the inhabited centre from the transit of heavy vehicles and to lighten the traffic.

The tunnel consists of a single two-way pipe structure with a length of approximately 450 m. The permanent lighting fixtures are installed on two raceways placed in the centre of each lane. 197 luminaires were installed throughout the newly-built tunnel, resulting approximately 28 kW of consumption.



Teseo was used for the reinforcement:
the floodlight that introduced
counter-flow lighting to the
world of tunnels

Result:

Thanks to the **total reflection patent** that conceals the light source, eliminating glare, Arianna has managed to increase safety and reduce consumption to a minimum even in the counter-flow lighting of the entry.

Strada statale 106 Jonica

Galleria Montegiordano (CS)



Phileo



Snell



The project:

State highway «106 Jonica», part of European route E90, is an important arterial road running along the entire Ionian coast of Calabria, Basilicata and part of Apulia.

In 2011, state highway 106 var “Variante di Monte Giordano”, was opened to bypass the Montegiordano Marina urban area.

At the end of 2017, improvement work was performed by Arianna on lighting in Cardona, Vittoria and Montegiordano tunnels, so as to increase safety and energy efficiency, with the installation of 2000 LED luminaires to replace the traditional sodium lamps.



The **new LED lighting** by Arianna is able to achieve high levels of energy savings without glare for driver safety

Result:

The estimated **energy savings are around 60%** compared to the previous installation.

Autostrada Pedemontana Lombarda

Sottopassi Copreno, Lomazzo (MB)



Teseo



Titlis



The project:

The Pedemontana Lombarda motorway is an Italian road works project that aims to reduce journey times in the northern part of Milan, creating a road outside of Milan connecting Varese and Bergamo provinces, as well as Milan-Malpensa airport with Bergamo-Orio al Serio airport.

This road system covers more than 150 km inside an urbanised area that is among the most densely populated in Italy and Europe. At the end of construction, the work will include about 25 km of natural and artificial tunnels.

The first sections were opened to traffic in 2015, and the Copreno and Lomazzo underpasses were the first to be completed in the project.



Teseo and Titlis in the gallery,
according to the Arianna
project, **optimize energy
savings**

Result:

90% uniformity in permanent lighting. Glare below 3%, less than one fifth of the level required by tunnel lighting standards.
System of dual devices that operate alternately: this doubles the lifespan of the luminaires, which are on 24 hours a day, 7 days a week.

Autostrada A3 Salerno Reggio Calabria

Galleria Serra Spiga (CS)



Teseo



Snell Tunnel



The project:

In 2015 Arianna contributed to the improvement of the section of the A3 Salerno-Reggio Calabria motorway by lighting the Galleria Serra Spiga, in the province of Cosenza.

The lighting system is constituted by reinforced and permanent lighting. The first one, thanks to a counter-beam optics with superior lighting engineering features, is designed from a viewpoint of energy efficiency and safety.



Teseo and Titlis, arranged as per the project, allow to obtain a **uniformity of 90%**, ensuring full safety for drivers

Result:

In the permanent lighting, throughout the patented technology by Arianna, the **glare level of the products is very low**, barely amounting to a fifth of the legally accepted limit, obtaining high visual comfort.

Strada Statale 18

Masso della Signora (SA)



Petrarca Tunnel



The project:

The Salerno hill which is called, “Masso della Signora” is one of the highest and most panoramic points in the area.

During the Second World War on the “Mazzo della Signora” there were bunkers and turrets that exploited this strategic position. Arianna illuminated the tunnel along the Salerno ring road (SS 18) which passes right under this hill.

The tunnel consists of two one-way pipe structures with a length of approximately 970 m. 262 floodlights were installed in the tunnel and 64 road lights to illuminate the entry/exit junctions of the bypass near the tunnel.



Perfectly lit junctions and tunnels, without dazzling and skilfully enhancing the historical context in which they are inserted

Result:

The **uniformity obtained is equal to 90%**, a total guarantee for the safety of motorists. The glare calculated is less than 2%, or less than a fifth of what is required by the relevant standard.

Svincoli e Sottopassi

Roma GRA



Petrarca Tunnel



The project:

ANAS is redeveloping the lighting of a number of tunnels and junctions of the Grande Raccordo Anulare (A90).

Arianna was the supplier chosen for the lighting, thanks to the efficiency of the floodlights and the experience gained in the sector. This intervention concerned the Bufalotta Tunnel (Via delle Vigne Nuove), the Flaminia Tunnel and the Fiumicino Tunnel.

Overall, 300 Petrarca tunnel floodlights in the side wall version were installed in the underpasses with a total consumption of 64 kW. Phileo street was chosen for the junctions near the tunnels, for a total of 360 luminaires, in perfect stylistic continuity with the centre of the capital.



In Rome, the tunnels and underpasses are **illuminated by Arianna** in every area of the city

Result:

Since Arianna's intervention, the **lighting of the Romani junctions and underpasses** has been optimal, a fundamental prerogative for the GRA orbital motorway, an area in which the daily traffic flow is very heavy

SS639 dei laghi di Pusiano e Garlate

Galleria Pusiano (CO)



Teseo



Snell Tunnel



The project:

To ease the connection between Lecco and Como, last August the new Pusiano tunnel was built and opened to the traffic. It is situated in the state highway called "SS639 dei laghi di Pusiano e Garlate".

Thanks to the recently built tunnel, which will allow easy connections to the strategic points of the country, the city traffic will be decongested.

Safety was the starting point in the design of the lighting project commissioned to Arianna.



Teseo and Snell in the right combination ensure **uniform lighting** in all the zones of the tunnel without glare

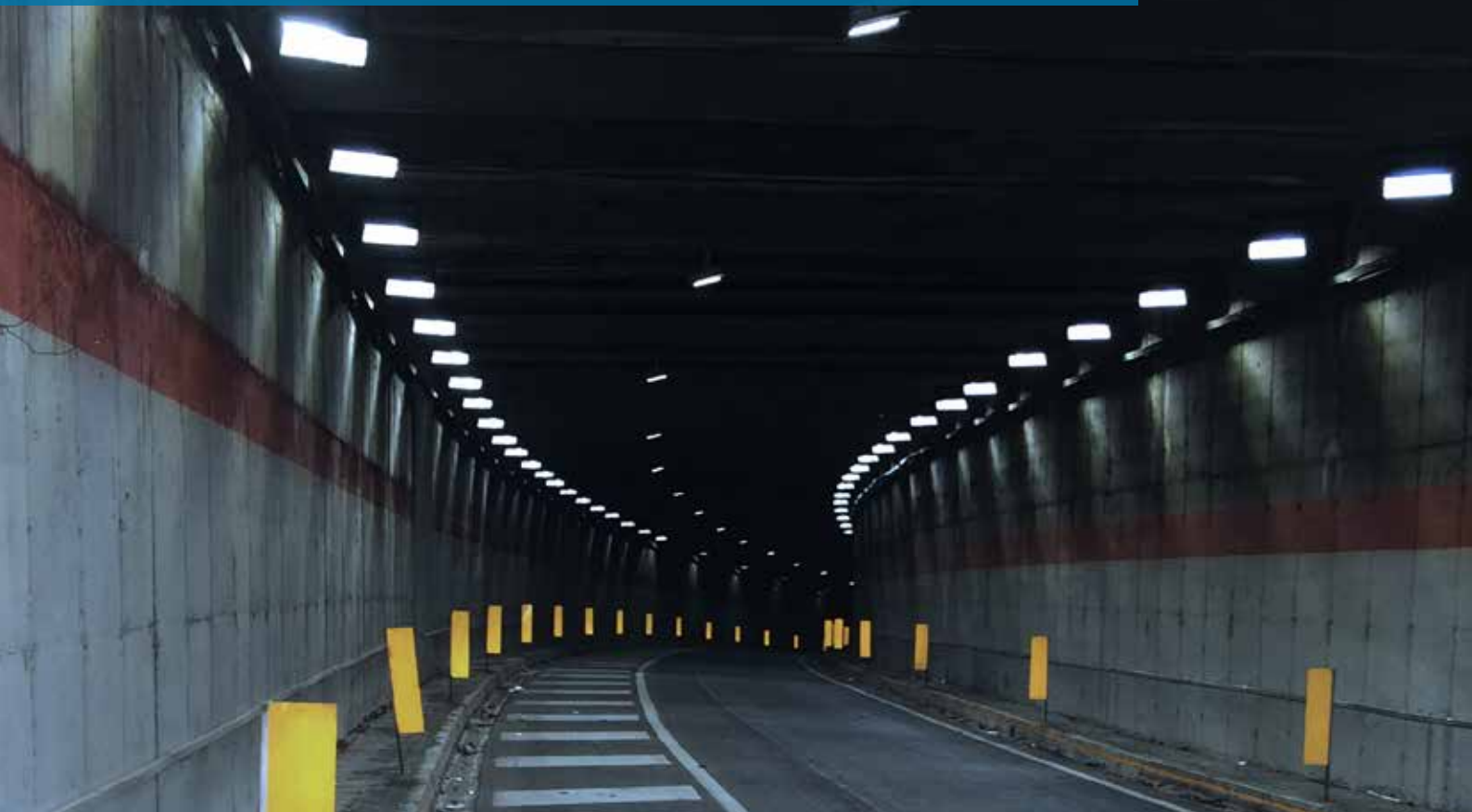
Result:

Significant energy saving.

Important improvement in visibility thanks to uniformity and reduction of glare to ensure better safety for drivers.

Galleria Bonatti

Provincia di Avellino



Teseo



Titlis



The project:

The Bonatti tunnel allows a more orderly and fluid road network along an artery that connects the suburbs of Avellino with the city and with important facilities such as the Moscati Hospital and the Partenio stadium, guaranteeing less congested traffic.

Safety in this stretch of road is of utmost importance, which is why the lighting by Arianna has been designed to guarantee minimum glare and maximum uniformity.



Safety and savings are the starting points of the Arianna tunnel lighting system

Result:

The new LED technology by Arianna ensures **energy savings of 60%** compared to traditional lighting systems.

The selected projectors also guarantee a uniformity of 90%, especially in permanent lighting for greater safety.

In reinforced lighting zone, the patented Total Reflection technology can contain glare within very reduced parameters.

Sottopasso dell'Ancora

Provincia di Modena



Teseo



Titlis



The project:

A successful collaboration between GEMMO spa and Arianna was the renovation of the new LED lighting system in the Ancora underpass in Sassuolo.

As it is happening throughout the city, even in the underpass the old equipment has been replaced with new LED luminaires in order to contain power consumption.



The Teseo and Titlis lighting luminaries installed in the underpass are both covered **by the Arianna Total Reflection patent**, and guarantee the right lighting of the tunnel

Result:

At the end of the intervention the **savings obtained are 80%** with a performance that greatly increases the lighting of the underpass, thanks to the selected projectors able to combine high lighting characteristics with high energy savings.

Arianna tunnel lighting solutions



PETRARCA TUNNEL

Small and modular luminaire with total reflection

- System efficacy up to 150 lm/W
- Reduced size and weight thanks to the aerodynamic thermal dispersion
- Visual comfort given by patented reflecting optics
- Lumen output from 2.000 to 50.000 lm



MINOX

AISI 316L STAINLESS-steel floodlights for tough and corrosive environments

- Extremely resistant to corrosive substances
- Solder free for guaranteeing increased mechanical reliability of the products
- Certified drivers to withstand over-voltage of up to 10 kV
- Patented universal bracket



High-visibility: from the first to the last metre

PHILEO TUNNEL

Customisable metre-by-metre

- System efficacy up to 150 lm/W
- High field efficacy for different tunnel geometries thanks to patented reflecting optics
- Total modularity
- Lumen output from 2.000 to 50.000 lm



SNELL TUNNEL

Saving around the clock

- Ease of installation thanks to a slim design
- Reduced size and weight
- Lumen output from 3.000 lm to 16.000 lm



Arianna Tunnel light system

Arianna reinforced lighting: counter beam optics

For its **reinforced lighting solutions** Arianna has chosen counter beam optics, giving a distribution of light in which the maximum intensity of emissions is aimed in the opposite direction of traffic.

By eliminating the vertical and symmetrical components from the light emissions, the resulting beam generates much higher luminance levels, for the same power, than different types of optics; consequently, the **design lighting specifications** can be achieved with much lower power consumption and thus lower investment costs in materials and significant energy savings.

Arianna permanent uniformity

For **permanent lighting** Arianna has optimized its technology to ensure visual comfort and energy efficiency.

The possibility to choose between a wide variety of symmetrical optics guarantees the right light in terms of glare and uniform efficiency in all **road and motorway applications.**



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