

SIEMENS

Ingenuity for life

Electronics and semiconductor

AEC Illuminazione

Street lighting leader doubles productivity with NX and Teamcenter

Products

NX, Teamcenter

Business challenges

Manage the complexities of lighting fixture design through the application of innovative technology

Integrate design and related processes with other enterprise functions

Implement consistent procedures for all designers

Keys to success

NX for integrated styling and functional design

Teamcenter to create a unified information vault

Results

One single management system to store and share enterprise knowledge

Efficient and integrated management of all project documentation

With Siemens PLM Software solutions, AEC Illuminazione integrates design, production and marketing

After the terrible flood, Cino Cini (who had founded the company in 1957) created the new decorative lights of Florence, seizing an opportunity to begin the production of artistic cast iron chandeliers for the lighting of historical centers.

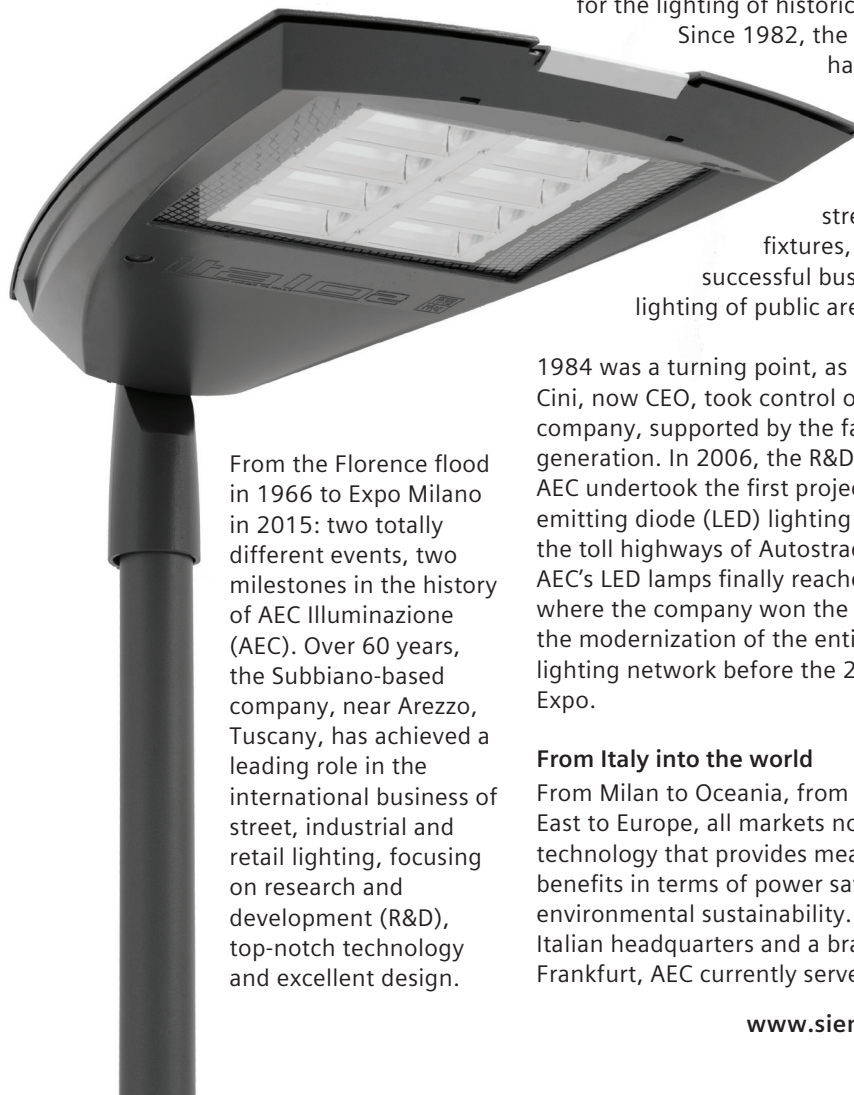
Since 1982, the company has constantly invested in the production of street lighting fixtures, developing a successful business in the lighting of public areas.

1984 was a turning point, as Alessandro Cini, now CEO, took control of the company, supported by the family's third generation. In 2006, the R&D division of AEC undertook the first projects of light-emitting diode (LED) lighting fixtures. Over the toll highways of Autostrade per l'Italia, AEC's LED lamps finally reached Milan, where the company won the contract for the modernization of the entire street lighting network before the 2015 World Expo.

From Italy into the world

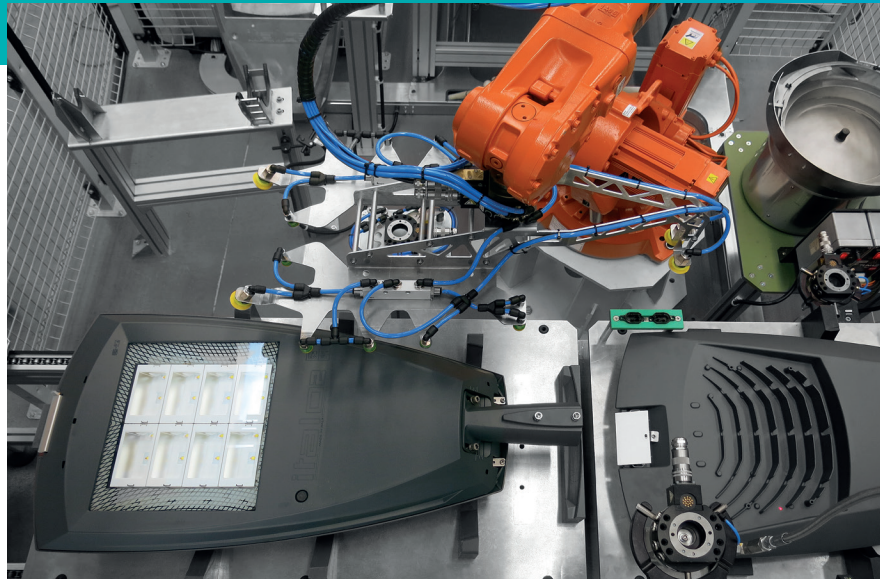
From Milan to Oceania, from the Middle East to Europe, all markets now require technology that provides measurable benefits in terms of power savings and environmental sustainability. From the Italian headquarters and a branch office in Frankfurt, AEC currently serves 44

From the Florence flood in 1966 to Expo Milano in 2015: two totally different events, two milestones in the history of AEC Illuminazione (AEC). Over 60 years, the Subbiano-based company, near Arezzo, Tuscany, has achieved a leading role in the international business of street, industrial and retail lighting, focusing on research and development (R&D), top-notch technology and excellent design.



"Several years later, we can say that the company made the right decision to adopt NX and Teamcenter, because many business processes have improved and many more will improve in the future."

Tommaso Catalani
PM Technical Department
AEC Illuminazione



countries through a global distributor network, delivering solutions for tunnel, street and airport lighting. Now the company is adding new families of lighting fixtures for indoor industrial and retail environments.

"To each product, we dedicate intensive R&D activities and significant investments to create highly functional and efficient products with a great design," says Alessia Cini, marketing manager at AEC. "Product development is closely monitored through accurate process control at each stage, from design to industrialization, up to the finished product. Our approach is to keep all production stages in the Italian headquarters; this is one of our key strengths.

Furthermore, each unit is based on a very versatile concept that helps us meet different market requirements."

Efficient and versatile response to market needs is the company's core strength and the key to AEC's success in a global market where industry giants cannot be as flexible to adapt their products and processes to customer needs. This is the origin of popular solutions like Italo, now the flagship product of the Tuscan company, selected by several municipalities to increase the energy efficiency of their street lighting. Besides Milan, where 1,000 units were installed, Italo makes a beautiful impression in Brescia, Bergamo, Turin and many cities in Italy and abroad.

"NX and Teamcenter help us broaden our vision: when we realize what Siemens products can do, we can look far ahead."

Tommaso Catalani
PM Technical Department
AEC Illuminazione

Using Siemens PLM Software solutions, AEC's technical department can now develop ten or more new products every year.



Design and technology: win-win combination

Product development at AEC starts from market analysis followed by styling and visual impact considerations. Then, the development process follows a dual track: the designer creates curves and shapes concurrently with the technical development of the product. So, design and technology walk hand in hand and marry progressively.

Until the introduction of early LED lamps, AEC used history-free CAD software with no product data management (PDM) capabilities. The technical department, headed by Tommaso Catalani, and the management team soon recognized the necessity to change management processes following the onset of new technology and the constant expansion of business. "As our product technology evolved," says Catalani, "design and engineering became integral parts of a wider process, requiring us to extend data visibility and use to different enterprise functions that depend on engineering for their daily activities."

Catalani joined AEC in 2008, concurrently with the adoption of NX™ software and Teamcenter® software from product

lifecycle management (PLM) specialist Siemens PLM Software. The impact of an advanced tool like NX was relatively soft on a technical department that had already been using 3D design software for ten years. "Our technical department staff have improved significantly as a result of the implementation of NX," says Catalani. "Today, our designers need to create more and more processes to support internal efficiency by increasing training and introducing new software tools."

With the advent of LED technology and electronics, the complexity of lighting fixtures has skyrocketed. Electrical and electronic design have become essential and require efficient management of all types of components in all variants. "In four years, we grew from one circuit/cabling designer to four full-time engineers dedicated to electrical routing," Catalani says. "NX streamlines the layout of components with great accuracy and efficiency, and helps create simple and complete documents for manufacturing."

Processes under control

At AEC Illuminazione, the adoption of NX triggered the extension of engineering to other departments and functions involved in bill of materials (BOM) management

"Following the introduction of Teamcenter we have reorganized and optimized our engineering process."

Tommaso Catalani
PM Technical Department
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"The implementation of Teamcenter proves the long-term vision of our management and their awareness that design could no longer be a separate world, as it has significant impact on all business operations downstream."

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and product industrialization. Having gone beyond the previous CAD experience with no PDM functionality, and then selecting new modeling software, AEC managers attentively evaluated different solutions and identified NX and Teamcenter as the winning combination.

"The implementation of Teamcenter proves the long-term vision of our management and their awareness that design could no longer be a separate world, as it has significant impact on all business operations downstream," Catalani says. "So we chose a high-end PLM suite like Teamcenter, combined with parametric CAD. Several years later, we can say that the company made the right decision, because many business processes have improved and many more will improve in the future."

Looking ahead, Teamcenter's current architecture will be expanded from two to four tiers, in order to enhance collaboration with subcontractors by allowing them to access the Teamcenter vault to view 3D assemblies and other data that support their production processes. Soon AEC will also deploy a virtual private network (VPN)

connection to enable direct access from the German branch. "The new system generates a huge volume of data," says Gianluca Daveri, information technology (IT) manager, "but with the Teamcenter architecture we have been able to set up a highly scalable infrastructure, with different servers to share the workload generated by 25 main users and a total population of 165 employees accessing Teamcenter data. At present, the internal infrastructure is comprised of two data centers, with high-reliability clusters for data protection."

"Following the introduction of Teamcenter we have reorganized and optimized our engineering process," Catalani says. "From basic CAD we have made the transition to workflow management with clearly defined flows and users, where each project follows a structured and configured path. The Siemens software has become an essential part of our product validation processes. With NX and Teamcenter, we have regulated the development procedures and stages, so that the design team is now aware of and aligned with the work of each member."

“NX and Teamcenter will become a unified knowledge management system: they will be the safe of our know-how.”

Alessia Cini
Marketing Manager
AEC Illuminazione

Under a new light

Using Siemens PLM Software solutions, AEC's technical department can now develop ten or more new products every year. "Product turnover and renovation cycles have significantly shortened under the pressure of markets and technology evolution," Catalani says. "The number of variants has also increased exponentially, because LEDs and electronics have caused a proliferation of items, especially wiring and optical groups."

With the legacy system, increasing product complexity and variant counts would have slowed down engineering. The use of Teamcenter offers stricter control on the entity of each change and its impact on all existing configurations. "With sustained productivity rates, preventing errors and misunderstanding avoids recurring mistakes that would affect thousands of parts," Catalani says. "Efficient information and change management will therefore be extended to manufacturing, where Teamcenter will make information accessible to each operator."

Besides assembly instructions for manufacturing, which are already available for each product, future plans include the

integrated management of technical publications. The integration of Teamcenter with Microsoft Office® software will help manage all of the manuals and information required by other departments inside the Siemens PLM Software development environment. "Marketing is a typical example," says Alessia Cini. "To create websites, catalogs and brochures, we need information that is already available. With Teamcenter we can tap the data warehouse directly from Microsoft's Word or Adobe's InDesign software to produce all kinds of information and promotion materials. NX and Teamcenter will thus become a unified knowledge management system: they will be the safe of our know-how."

AEC also plans to integrate other functions into the Siemens PLM Software environment, particularly those employing software tools that interface with NX. "We are evaluating optical design with NX," Catalani anticipates. "We have recently introduced the styling package for surface modeling, an essential tool for the visual impact of our products. We need a single



Solutions/Services

NX

www.siemens.com/nx

Teamcenter

www.siemens.com/teamcenter

Customer's primary business

AEC Illuminazione Srl manufactures and sells different types of lighting fixtures for public areas, including street lighting, artistic lamps, road and tunnel lighting.

www.aecilluminazione.com

Customer location

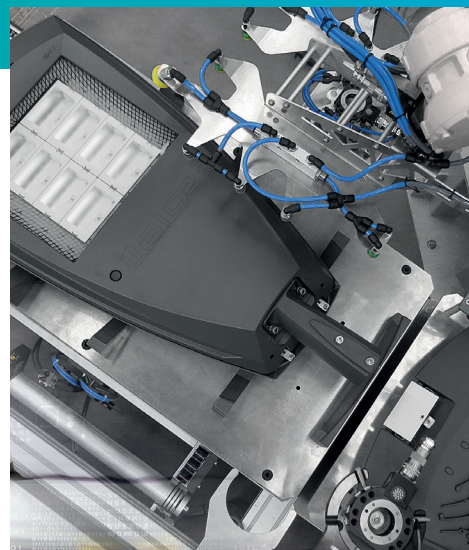
Subbiano, Arezzo

Italy

tool to sketch with NX first, and then move on directly to engineering."

The modeling battle experience

Within the implementation and training process, Siemens PLM Software devised a modeling battle experience for AEC designers: all NX users were asked to design the same item, starting from a drawing on paper. Then the workstations were shuffled and everyone had to change someone else's model according to specific instructions. The test's purpose was to evaluate the level of skills of the design team, while demonstrating to each user how difficult it is to handle a model created by someone else if the working approach and methods are not consistent and regulated. "With this experience, our designers have realized the inefficiency of a disorderly approach and the necessity to define a standard method applied by everyone," Catalani says. "All the



employees involved really appreciated the initiative as an opportunity for improvement and confrontation, while the company could identify critical issues and fine-tune training with excellent results."

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About Applied CAx

Our combination of a mechanical design firm, machine shop and FEA consultancy allows us to provide the strongest support for Siemens PLM Software in the US.

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Teamcenter • FEMAP • STAR CCM+

- Software licenses and installation
- On-call support
- Customized training
- Teamcenter architecture
- CAM Post writing
- CAM Simulation kits
- Mechanical engineering
- Finite Element Analysis consulting



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