

INNOVATION PROJECTS: Energy efficiency

Aligned with the strategy for reducing GHG emissions and in anticipation of future regulations, projects are developed in the areas of maintenance, monitoring, auditing and optimization of energy efficiency in buildings, reducing electricity consumption for street lighting, and expert energy management systems.

SATESO: Software for automatically identifying the ten most common flaws in buildings' energy consumption

- Development of software for the rapid detection and correction of the ten principal causes of energy inefficiency in buildings.
- Research groups at Ferrovial Services Spain and Amey are collaborating with MIT to monitor energy consumption in hospitals and compare the data with pre-defined models with a view to identifying the main causes of malfunctioning and proposing corrective actions.

EMMOS: Energy Efficiency Monitoring and Management Operating System

- Software for measuring energy efficiency in singular buildings and infrastructure by which data is captured from sensors and measuring devices in buildings and energy efficiency is analysed by comparison with benchmarks. The system self-adapts to the conditions in each geographic area.
- Project participants include AMEY Consulting (collaborating on software development), the University of Alcalá (standards modelling), and the Centre for Intelligent Infrastructure Innovation (CI3).

BuScan: Infrared scanning of buildings, and refurbishment based on energy efficiency

- Development of a tool based on Kinetic Super Resolution technology that is capable of scanning and detecting the principal areas of energy loss in buildings with a view to identifying potential savings or improvements.
- This project includes the technical analysis of a group of buildings in Spain (Ferrovial Services Spain) and the UK (Amey) to measure energy losses, their associated costs and the necessary refurbishment. The mobile platform analyses images, compares them with those in the database, and determines the main areas for repair and energy savings based on the best return on investment.

LiScan: Street lighting measurement and optimisation

- Development of a methodology and a tool to optimise street lighting management, from design and installation through to maintenance and operation.
- This research focuses on the development of mobile technology which measures street light levels to detect malfunctioning lamps, zones that are over- or under-lit, and areas with potential for energy savings. The goal is to draft a detailed up-to-date lighting map to facilitate decision-making.
- This project is being developed in cooperation with the MIT Energy Initiative.

SEEDS: Self learning Energy Efficient buildings and open Spaces

- Development of a new system for sending energy consumption data in real time with a view to increasing the energy efficiency of buildings and open areas. The system allows buildings to "learn" constantly to maintain user comfort while minimising energy consumption and CO2 emissions and optimising building performance in terms of comfort, energy efficiency, economic performance, efficient resource management, functionality and life cycle.
- The results of the SEEDS project are being validated in two pilot projects in Europe with contrasting climates: i) A university campus in Stavanger (Norway), including several buildings and open areas, and ii) an office building with a car park in Madrid (Spain).