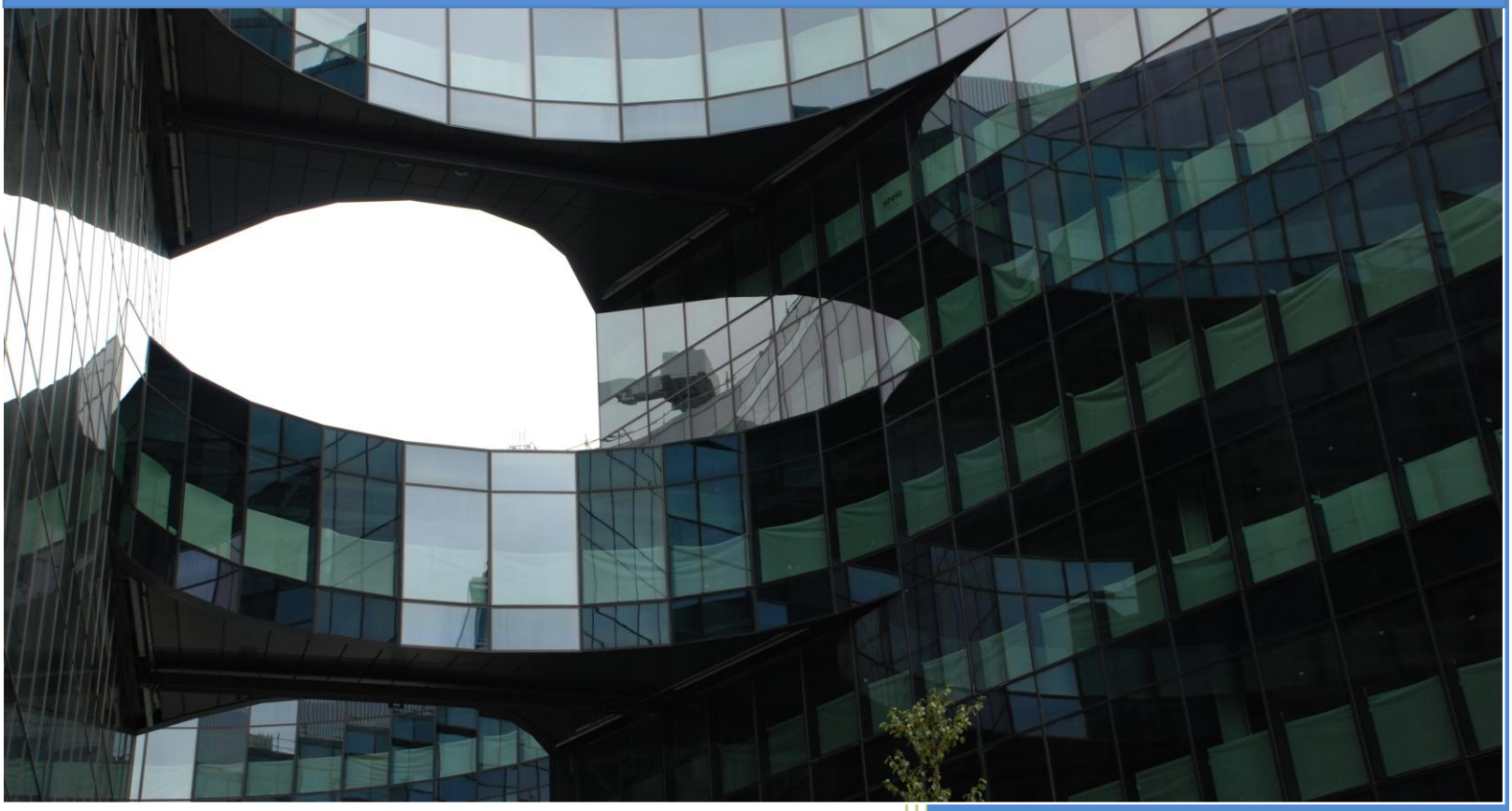
EnergyFusion™:

Innovative Energy Management Solutions for Sustainable Buildings



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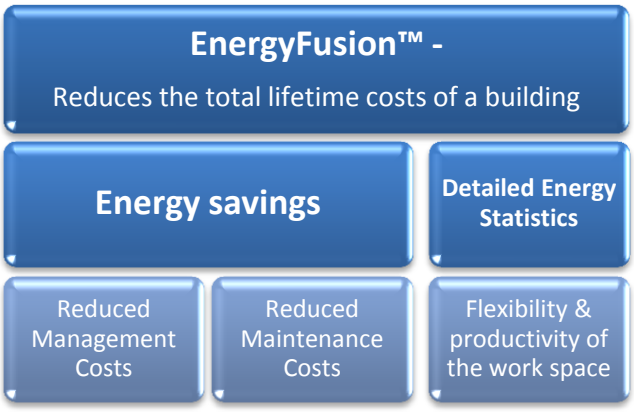
The Tantallon EnergyFusion™ System

EnergyFusion™ is an exciting and innovative **energy management system** which reduces the energy and operating costs of commercial buildings.

Based on digital and software technologies, it employs a number of unique features to drive down the energy spend associated with **lighting**, **heating**, **cooling** and **appliances** within buildings. It closely integrates energy management with building control and provides complete closed loop control of building facilities, to reduce the energy used.

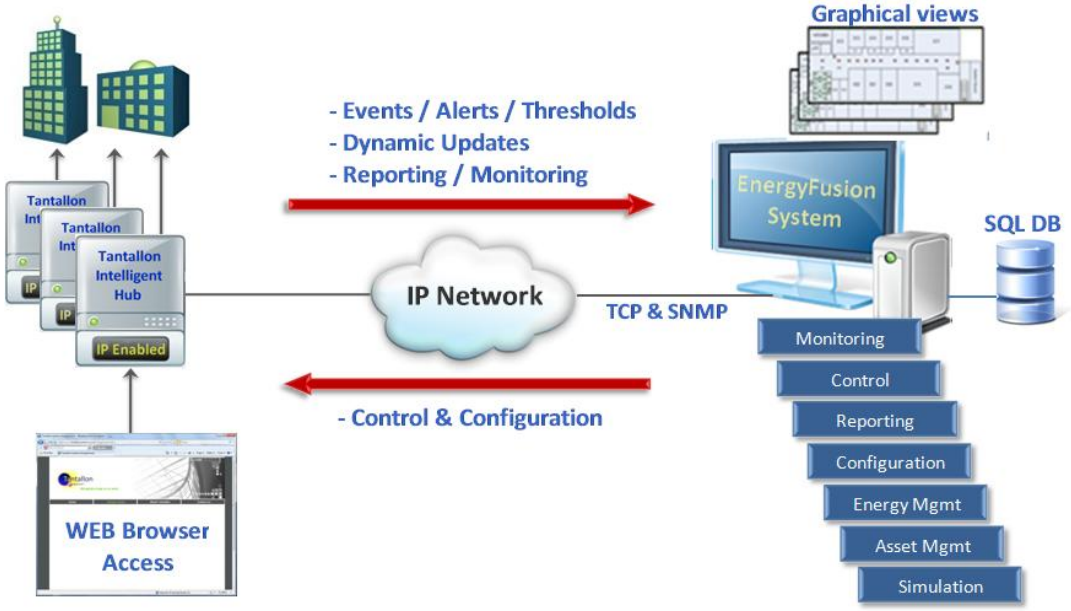


EnergyFusion™ includes a number of unique and powerful features and embodies an intelligent rule-based capability which provides event-driven cause and effect control and allows the system to respond intelligently to its environment. EnergyFusion™ besides providing advanced and flexible control gives detailed energy performance statistics.

The system incorporates standard security protocols allowing all system elements to be managed securely across a corporate network.

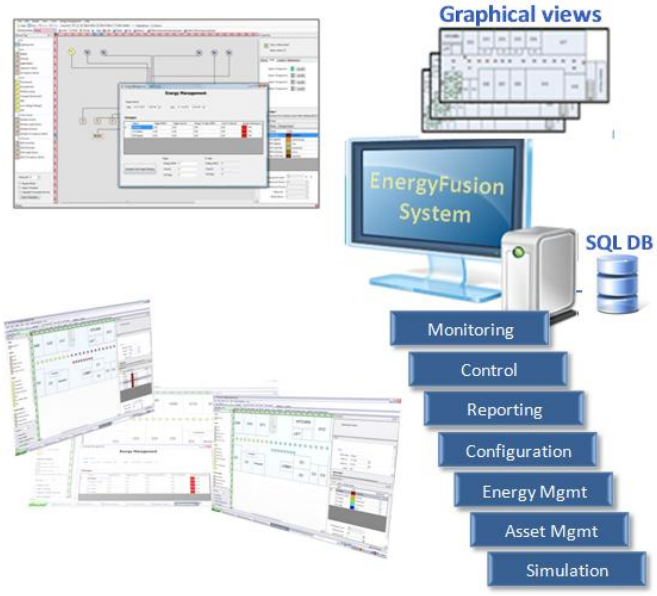
EnergyFusion™ consists of two main components;

- **Energy management software** - A suite of powerful monitoring, control, reporting, simulation and configuration tools with an intuitive graphical interface allowing all elements of the system to be represented graphically.
- **Intelligent hubs** – These embedded technology hubs provide monitoring and control of local facilities via wired or wireless sensors and support for specialised lighting interfaces. Tantallon intelligent hubs are all IP enabled and once configured over the network become semi-autonomous.



EnergyFusion™ Graphical Management Software

The EnergyFusion™ system incorporates a range of powerful features; it has been designed with an intuitive graphical interface that serves to simplify the innate complexity 'under the bonnet'.



EnergyFusion's™ graphical management software is the basis through which the building facilities can be configured and managed: It is a key element in providing access to the intrinsic power of the EnergyFusion™ system and reducing the management burden. The software design goals have been to allow unprecedented levels of control and easy configuration whilst hiding unnecessary complexity within the context of a graphical representation of the building.

EnergyFusion's™ management software provides an object based environment which allows all elements of the system to be represented graphically. Lighting controls, lamps and lighting controller hubs are represented by graphical icons which can be dragged onto a design window to represent the lighting system for the selected area.

The deployed system can be viewed against the backdrop of the architectural floor plans. Devices to be controlled and managed are placed on this canvas as icons. The screen is kept 'informed' by events sent from the hubs in real time. Each icon provides an active representation of the real device being deployed so if the status of the device changes the icon the screen reflects this on a dynamic basis.

This is a very powerful approach which lends itself to the management of the system but the power of the software only begins there. The model once complete is loaded automatically into the hubs and provides dynamic feedback of the active status of every active system element in real-time.

EnergyFusion™ features include:

- Powerful graphical user interface giving intuitive display and drag-and-drop configuration
- Unique energy management capability
- Powerful and flexible grouping of controlled devices, sensors and controls
- Active real-time status of all system elements including managed devices, sensors, and lighting controllers
- Dynamic feedback of status and alerts from EnergyFusion™ hubs
- Logging, time-stamping and recording of all system events
- Fault notification and escalation of alarms
- Sophisticated time scheduling
- Powerful simulation tools
- Non-disruptive updates

EnergyFusion™ Innovation

EnergyFusion™ employs a number of stand-out areas of innovation which differentiate it from other approaches. These will make a significant impact on reducing the operating costs of a building.

- **Integrated energy management and control –** A powerful and central capability of the EnergyFusion™ system provides management, control and optimisation of the energy spend associated with lighting, heating, cooling and other appliances. Real-time and detailed statistics of the energy, associated CO_2 and costs can be provided on demand and stored to provide regular reports.

- **Energy Policy management -** EnergyFusion™ allows the control and energy savings to be optimised for the building according to a specific management policy. Operating within the context of a framework policy, the EnergyFusion™ system employs a powerful rule-based system to automatically manage energy use within user set targets.

- **Powerful Simulation Tools –** EnergyFusion™ embodies a unique simulation capability that allows the building controls to be simulated as part of their environment. This enhances operational efficiency by allowing the deployed system to be simulated and verified off line prior to going live avoiding disruption. Updates and changes can be made in an active environment without impacting users.

- **Integrated Database and Asset management -** Data for every component can be recorded into an integrated database. This allows system information, fault history and system operational costs to be available on demand. The system also prompts for maintenance schedules, statutory tests, and lamp and battery change-out times. All of which simplifies and reduces management overheads.

- **Graphical configuration and graphical user Interface –** EnergyFusion™ has been designed with 'ease-of-use' in mind and sports an advanced graphical user interface which allows the controls to be shown in the context of the building architecture. Over and above this, the system is graphically configured and the building control hubs can be configured remotely.

- **Powerful Rules based system –** This lies at the heart of the system and allows complex behaviours to be easily set up and controlled. It provides the basis for event-driven cause and effect behaviours for unprecedented flexibility of control. Control scenarios, which were previously not possible without dedicated hardware, can now be easily established.

- **Intelligent Hubs** - EnergyFusion™ hubs use embedded processor technology and provide sensor connection using wired and wireless technologies and once configured over the network they become semi-autonomous. The hubs are IP enabled and provide control of facilities such as lighting, heating and cooling within their local vicinity and support for specialised lighting interfaces based on open and international standards.

EnergyFusion™ Summary of Features & Benefits

EnergyFusion™ delivers increased return on investment by reducing the energy costs of buildings along with reduced management and maintenance costs. In current trials the system is showing **energy savings of greater than 60%** against benchmark figures.

Features

- Integrated Energy Management and Control
- Powerful energy reduction algorithm
- Powerful Lighting Control with unique custom control options
- Powerful Simulation Tools
- Integrated Asset Management
- Alarm Management
- Energy Consumption Reporting
- Intuitive Graphical User Interface
- Utilises Industry Standard Protocols
- Control protocol Security

Benefits

Financial Savings

- Savings of energy used in building
- Savings on operational management
- Savings on maintenance
- Savings on space management

Easy to use

- Advanced flexible energy management
- Graphical User Interface
- Network accessible
- Remote and local control

Implementation

- Easy to install
- Minimum Disruption
- Quick work space changes
- Can be retrofitted

Tantallon Background and Experience

Tantallon are passionate about reducing the waste of energy in Buildings. This has been the central driving force for the company since the beginning and has led to the development of a specific focus in the design and implementation of environmentally sustainable building control systems.

The EnergyFusion™ system relies on state-of-the-art software and hardware design and these are key skills within the company. EnergyFusion™ leverages the knowledge, expertise and experience of Tantallon's staff in designing, installing, and managing large networked systems for large organisations.

EnergyFusion™ epitomises the needed convergence of software and networking technologies with building controls which will revolutionise the way buildings are operated and managed for the benefit of their owners, their users, society and the environment.

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