

# Building Analytics Success Story

AMGEN

## Amgen

With ambitious 2020 carbon reduction targets, Amgen has been driven to transform its energy management practices and become more data-centric and holistic. As a key element of its Smart and Integrated Facilities (SAIF) program, Amgen started using fault detection & diagnostics (FDD) software in 2016. While application of FDD for office and lab facilities is becoming more common, Amgen looked to push the envelope by also deploying FDD for their manufacturing facilities.

### What is FDD?

Fault Detection and Diagnostic (FDD) software identifies buildings with suboptimal performance by analyzing building automation system (BAS) data. FDD is one type of energy management and information system (EMIS).

Amgen's FDD software pulls data in near-real time from their most energy-intensive systems:

- Central chilled water systems
- Cooling towers
- Central steam boilers and distribution systems
- HVAC Systems
- Heating hot water systems
- Air handlers
- Central compressed air systems
- Water treatment system

Once operational data is imported into the FDD software, Amgen has access to automated analytics and lists of improvement opportunities prioritized based on cost, comfort and maintenance impacts. Since Amgen started implementing FDD they have been honing their data management and internal processes to maximize the benefits and, critically, ensure that the data analytics drives follow up action.



*You cannot improve what is not measured. Continuous improvement comes from continuous monitoring. These are the pillars used to develop Amgen's SAIF platform.*

*- Aditi Joshi, Sr Energy Engineer, Amgen*

### Quick Facts

**Location:** Portfolio across 3 US states, Ireland, Singapore, and Puerto Rico

**Building type:** Office, lab, and manufacturing

**Floor area with EMIS:** 6.5 million sq ft

**Total buildings with EMIS:** 6 campuses

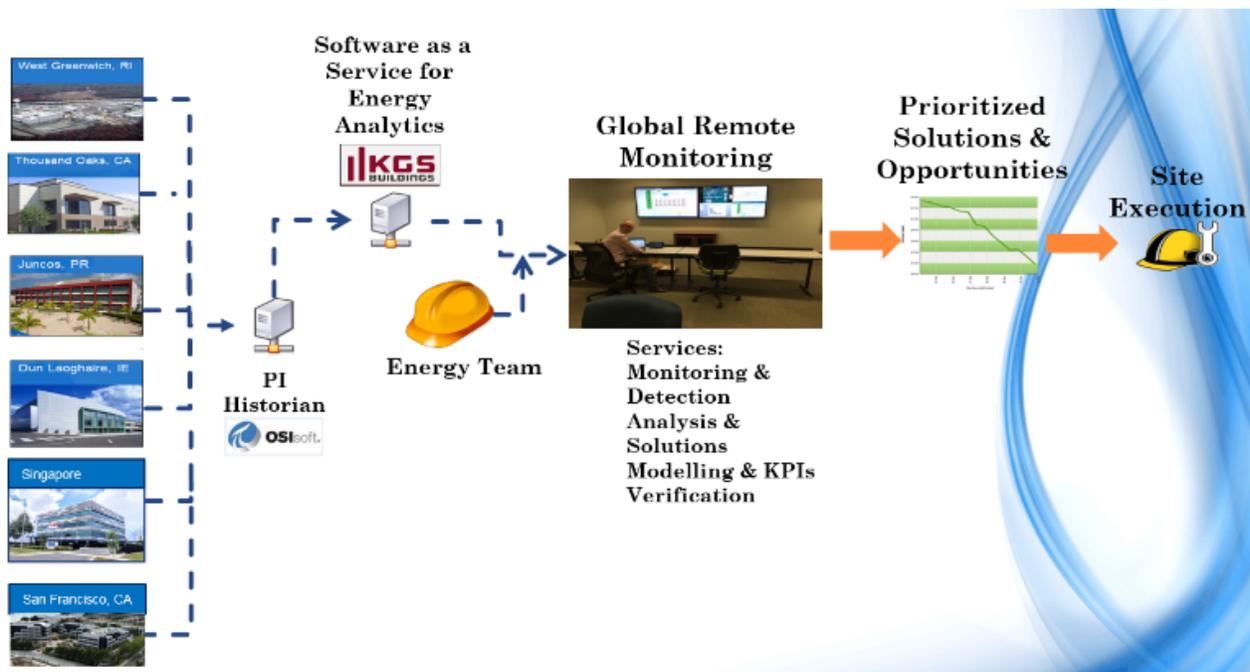
**Energy savings:** 5% whole facility energy savings (based on 3 locations reporting)

**EMIS Tool:** KGS Clockworks

**MBCx Service Provider:** KGS Buildings

### Smart Energy Analytics Campaign: Recognition for Innovation in the Use of FDD

Amgen was recognized by Lawrence Berkeley National Laboratory and the U.S. Dept. of Energy in May 2019 for their exemplary work to save energy using a fault detection and diagnostic (FDD) system.



Process Map for Amgen's Smart and Integrated Facilities (SAIF) program

## Managing Data Analytics for Success

To support a robust monitoring-based commissioning (MBCx) process, Amgen has a remote energy monitoring center with two full time engineers experienced in building commissioning. These engineers review faults reported by their FDD software and can remotely access any sites' building automation system to help diagnose the root causes.

Rather than being just another software tool to maintain, Amgen's engineers have integrated FDD into their daily routine, investigating the faults detected and energy saving opportunities at each site. Once a fault has been remotely reviewed, an email notification is sent to the building owner notifying them of the issue, the reason for the fault, and possible solutions. The summary of the energy and cost avoidance is also included.

Weekly meetings are held with each site's building managers to review the faults detected. Monthly and weekly reports are issued to each site to track progress on resolving faults and to monitor the resulting savings using meter data. An opportunity log of all faults detected and work orders issued is used to demonstrate the value of the program.

*Standardizing the visualization of global site utility data facilitates decision-making and is key to measuring Amgen's global carbon reduction.*

*- Tom Spooner, Director, Amgen*

## To Manufacturing and Beyond

Amgen recently expanded the use of FDD to waste water treatment plant (WWTP) operations. The FDD continuously monitors the WWTP system key performance indicators (KPIs) to ensure the system operation and water purification process maintains optimal performance. Stepping out of the facilities & utilities systems into manufacturing-related processes is one area where FDD is adding value to Amgen core business operations.

While Amgen has been deploying the analytics platform for three years they still consider themselves in the "development phase," and have plans to expand to other facilities and to establish KPIs for their systems, buildings and manufacturing processes. KPIs will help in monitoring trends over time and comparing buildings and plants across Amgen's portfolio.

**The Smart Energy Analytics Campaign is a public-private sector partnership program focused on commercially available Energy Management and Information Systems (EMIS) and monitoring-based commissioning practices.** The campaign couples technical assistance with qualitative and quantitative data collection to inform research, development, and field study priorities. Partnering participants are encouraged to share their progress and may receive national recognition for implementations that demonstrate exemplary practices.