



Digitally transform your F&B operations

Improve energy efficiency, improve occupant comfort and enhance food safety.



In this age of digitization and changing consumer preferences, keeping the competitive advantage is critical for restaurant chains. However, F&B operators face challenges in monitoring and optimizing their operations, across the network. Although the emerging Internet of Things (IoT) technologies offer great promise, operators must navigate the complexity of technology, connectivity, data security, equipment diversity and in most cases, connecting to multiple cloud services. They must also address a portfolio of F&B formats and a wide variety of equipment in various stages of advancement. Further, diverse regional weather patterns across restaurant sites is a variable that most operators do not manage. In the USA, most restaurants use energy-efficient lighting, and many use U.S. Environmental Protection Agency (EPA) Energy Star®- rated kitchen equipment, but staff may not have the time or skillset to understand the technology and use it correctly. Some F&B establishments are yet to get 'connected'. They still rely on offline tools to manage their operational costs. In other cases, some are connected but operators do not have the expertise to analyze the data and generate insights that are actionable. Even those using analytics in some form, need to log on to multiple cloud platforms to access information about various equipment, making it difficult and time-consuming to manage. Additionally, there is the need to have a centralized team that can ensure implementation across the network by coordinating with employees, service partners, and equipment suppliers.

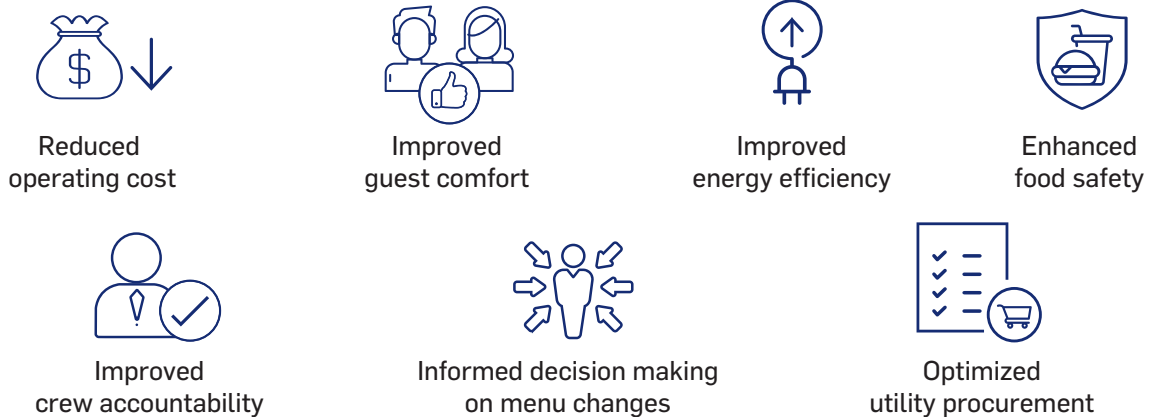


F&B operators need a full-stack IoT solution offering seamless connectivity, secure cloud services and actionable analytical insights, all implemented by rigorous centralized operations center to dive into the digital age.

Connected F&B Program

The Connected F&B Program is a comprehensive IoT and digitization program that enables F&B operators to connect and manage their facilities digitally through predictive insights. The program has a strong track record of delivering quick positive cash-flows through its context-based solutions and expertise which can be scaled from a few hundred F&B establishments to thousands, swiftly. The comprehensive program helps operators efficiently manage their equipment, be it lighting, HVAC, refrigeration, or kitchen equipment. This program is designed with the understanding that every F&B chain and the energy-consuming equipment it operates are all unique. We have built a system called Abound™ Edge that allows seamless bi-directional data connectivity of restaurant equipment with the cloud. The Abound Edge system provides out of the box capability and compatibility with our Abound Insights platform in the cloud. The Abound Insights platform, built with our context-based approach, collects data from multiple sources, analyzes and contextualizes it. It then offers predictive insights as well as acts on them autonomously to ensure better equipment operations and continual savings. Our BluEdge™ Command Centers offer remote support and assistance to act on those predictive insights.

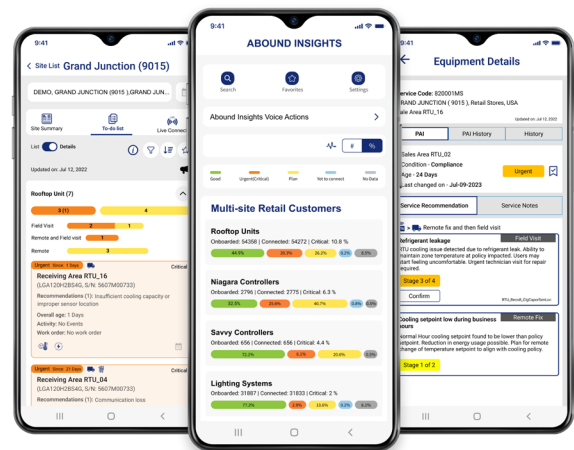
Across the globe, F&B operators have partnered with us to transform their operations from being reactive to proactive, leading to the following transformational benefits:



How we do it

The Connected F&B Program uses the Abound Insights IoT suite. The part of the solution that are inside F&B outlets consist of the Abound Edge system which is an intelligent kit of robust IoT hardware modules. It includes meters, sensors, controllers, and gateway that is quick, simple and easy to install. The Abound Edge system is also provided with regular software, firmware, and intelligence updates. It offers a simplified interface that integrates nearly all information from the IoT and Building Management System environments into a single view. Operators then have the task of prioritizing actions across the network and arriving at the best course of action. Typically, operators tend to respond to problems only after they occur. With our context-based approach and Abound Insights platform, they can now run operations in a proactive manner. These predictive insights on process and equipment irregularities, enable managers to prioritize actions, sometimes even 2-4 weeks in advance.

The insights from the Abound Insights platform are conveyed using the Abound Insights web portal and mobile app which enables F&B operators to have all the equipment performance information at their finger-tips. It is an effective operations tool that displays insights through simple actionable visualizations. The insights cover a range of connected equipment typically installed at F&B establishments, from ovens, to walk-in coolers, makelines, holding cabinets, aircon units, and lighting, to name a few.



Given that F&B operators need to be more focused on their customers than numerous insights from the platform, the day to day implementation rigor and responsibility is taken up by our BluEdge Command Centers. The BluEdge Command Centers consist of teams of domain experts, data scientists, analysts, controls engineers who manage requisite interventions, define action plans and ensure their comprehensive completion in a timely manner. The team ensures that the predictive insights are deployed to proactively intervene on issues before they develop into major problems. They also look at the trends of developing problems and work with the operators to ensure that necessary technology and process changes are carried out to improve operations and equipment performance.

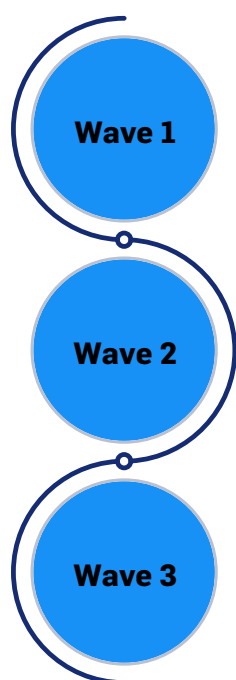
A case in point is how we reduce energy consumption for restaurants. As per the EPA, restaurants are extremely energy-intensive, using about 5 to 7 times more energy per square foot than other commercial facilities, such as office buildings and retail stores. High-volume quick-service restaurants (QSR) may even use up to 10 times more energy per square foot than other commercial buildings! Beyond the energy demand created through heating, cooling, and lighting, the cost of sanitation and the utilities required to run cooking equipment add to the energy spend and make up a significant portion of the operating expenses.



To drive down energy costs, the Abound Insights platform uses our patented Service Window™ framework and understands the correlation between energy consumption patterns and operations patterns across restaurants. Service windows are the unique energy profiles of a typical restaurant during its daily operations. The energy profiles are results of business volume, weather, equipment usage, etc. Energy profiles for each of these service windows (crew setup, peak business hours, lean business hours, crew shutdown hours, and non-operational hours) are different. They are repeated every day with a fair degree of consistency. Based on effective monitoring of energy consumption in these service windows, we identify opportunities to optimize and act on them proactively. This focus, across service windows, leads to operational improvements and savings.

3 Waves Approach

Our proprietary 3 Waves approach is a comprehensive, 3-step digital transformation process that enables us to maximize efficiency, minimize maintenance costs, enhance guest comfort, and ensure occupant safety.



Our Abound Insights building IoT platform has been working for almost a decade, processing data from over hundreds of thousands of energy-consuming units of equipment across thousands of sites. The entire knowledge bank developed by this platform is deployed for the equipment and stores from day 1. We apply proven strategies to optimize and enhance F&B operations.

The improvements in operations and energy efficiency, achieved in Wave 1, are expanded in Wave 2 through detailed understanding and specific insights of the restaurants. The Abound Insights platform predicts and addresses anomalies either autonomously or through assisted interventions. The platform is equipped with learning capabilities and decision making based on the insights becomes embedded in every part of the process making a smarter ecosystem.

Wave 3 delivers a comprehensive digital transformation of F&B operations. The advanced analysis of data maximizes the effectiveness of the insights usage in all processes and enables the identification of new opportunities to improve. This also helps unravel strategic insights to make informed decisions on design and process improvements.

Business outcomes delivered to industry leaders across formats

A large franchisee of a pizza restaurant chain set a goal in 2015 to reduce energy consumption by 15% over its 2014 baseline consumption by 2018. The group owns a network of over 220 pizza restaurants. In 2 years, we helped the organization save over 21 million kWh which resulted in over 15,000 tons of CO₂ emissions reduced. 13.5% energy saving was delivered over the 2014 baseline. Moreover the performance of HVAC, refrigeration and kitchen equipment is continuously monitored to address all identified inefficiencies. As a result, food storage compliance maintained above 68.9% and occupant comfort maintained above 85%. There was over 9% reduction in Energy Usage Index (EUI) in 2022 versus the 2017 baseline. This project won a 2018 Environmental Leader Top Project of the Year Award.



Jubilant FoodWorks Limited (JFL) partnered with us to implement an enterprise-wide IoT and analytics program that has transformed operations across hundreds of their restaurants. Our solution targeted key areas including efficiency enhancement, guest comfort, HACCP deviation management, policy compliance, proactive issue detection, equipment lifecycle enhancement, and food safety. Since the launch of the Connected F&B Program, JFL has sustained savings of 30 million kWh. Our collaboration also led to a 23% improvement in walk-in-chiller compliance and an 82% increase in guest area thermal compliance over three years. Recognizing our impact, JFL awarded us a Breakthrough Innovation award in 2021.



Speciality Restaurants Limited partnered with us for an IoT and Analytics initiative across 25 of its fine and casual dining restaurants in India. The objectives were optimizing the energy spend, enforcing thermal compliance policies in dining areas, and enabling central real-time visualization of energy usage. The Connected F&B Program enabled sustained average multi-year savings of more than 13% across kitchen and dining loads. In addition, we helped the operator achieve an improvement of 5% in guest area thermal compliance and 14% in employee area thermal compliance over 3 years of the engagement.



F&B operators are increasingly looking to minimize energy waste, ensure food safety, improve equipment performance and reduce operational costs. Our Connected F&B Program is a comprehensive solution that is designed to help restaurant operators succeed.

The program enabled us to win the 2020 IoT Global Award service of the year in the Retail, Marketing and Hospitality category.

Write to us at abound.smb@carrier.com for more on how we can help your company achieve its business and sustainability goals.

About Carrier Abound

Carrier Abound provides digitally connected lifecycle solutions and services for diverse building portfolios. The solutions and services enable building management to see deeply and broadly across their assets, prioritize and act on real-time insights, and refine, adapt, and scale on a continual basis to improve energy efficiency and asset performance, enhance occupant comfort and productivity, and streamline compliance reporting. Carrier Abound is part of Carrier Global Corporation.

For more information, please visit www.carrier.com/commercial/en/sg/abound/. Join the conversation on [LinkedIn](#), [X](#) & [Facebook](#).

