



Market Leading Energy Saving & Control System

COMEC



Energy Manager's Goals



Energy savings



Full control over all sites' activities



Effective maintenance



Results verification for previous investments



Site detailed analysis to decide future investments and actions



The ComEC Mission



Facility Manager

- Hundreds of sites
- Few people, with limited know-how
- Every site has inherent differences
- Pressure to reduce costs
- Constantly changing perimeter



- Can't analyze and leverage big quantity of data coming from monitoring platform
- No single control point, complexity to manage across multiple platforms
- Lack of actionable data and insights
- No integration with business needs
- Need warranties on ROI

Systems

Systems disparate and not standardized (sometimes inexistent)



Meter



HVAC



BMS



Cooling



Site Manager

No visibility on site's operation
Cannot ensure compliance

Maintenance

Lack of control over maintenance

Both single site and multi-site customers suffer from major issues

Our Approach

Comec/
ComEC

Energy saving, from day 1

Energy Saving, Stabilize Voltage, extend equipment lifetime and reduce maintenance costs



Visibility and management

Flexible, customizable IoT platform, built for the multi-site manager, with full system integration and 3° party devices



Make sense of your data

Machine learning algorithm for monitoring and optimization of energy consumption, and automatic extraction insights from Big Data

One solution to fit
both single-site and
multi-site customers

Control Voltage and Power



Save Energy, Save Money

Control electricity usage at the facility
Reduce consumption through voltage control
Reduce bill (kWh)

Reduce stress on electrical equipment
Increase lifetime of equipment

Reduce peak demand (kVA)
Eliminate voltage peaks and dips
= accurate stabilization ($\pm 1\%$)

Improve Power-Quality¹¹

Technology

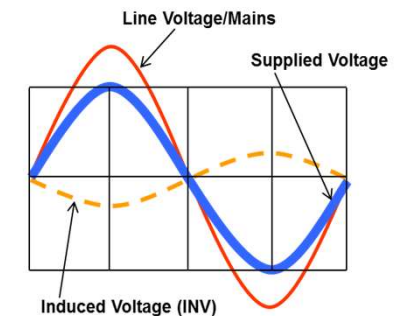
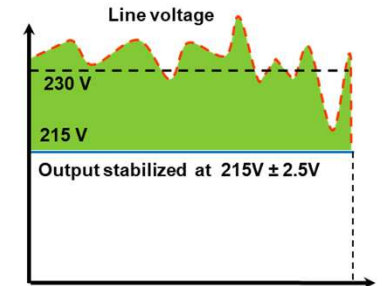
Patented technologies for Sinusoidal Voltage Control:

- ✓ Induced Negative Voltage – INV
- ✓ Voltage Vector Combination – VVC

Transforms only a part of the voltage that should be reduced from the Mains

Advanced embedded field device with adaptive algorithms

Small footprint: 6 - 10x smaller than a full power transformer



The ComEC Mission

Universal Energy Controller for Commercial Facilities

Control electricity usage at the facility

- Reduce consumption through voltage control
- Reduce electricity bill (kWh)
- Reduce stress on electrical equipment
- Reduce peak demand (kVA)

Improve systems' power quality

- Eliminate voltage peaks and dips = Stabilization
- Filter out electrical distortions
- Suppress harmonics
- Increase lifetime of equipment

Contribute to a greener Environment



Comec Features

- Advanced power and voltage control
- Sub metering and load control
- Integrated Gateway (Optional)
- Standard communication protocols , third party integration
- Powerful IoT cloud based platform (Optional)
- Advanced rules engine



Load Types

• *Where we do savings*

Refrigeration systems

Kitchen appliances

Lighting

Heaters

Air conditioners, HVAC

Electric motors

• *Where we do little savings*

Computers and IT equipment

Lighting with electronic ballasts, LED

Inverter based HVAC

Motors controlled by VSD/VFD

Target Application Characteristics

Majority of inductive and resistive loads

Refrigeration Freezer

Kitchen appliances, heaters

Lighting (indoor and outdoor)

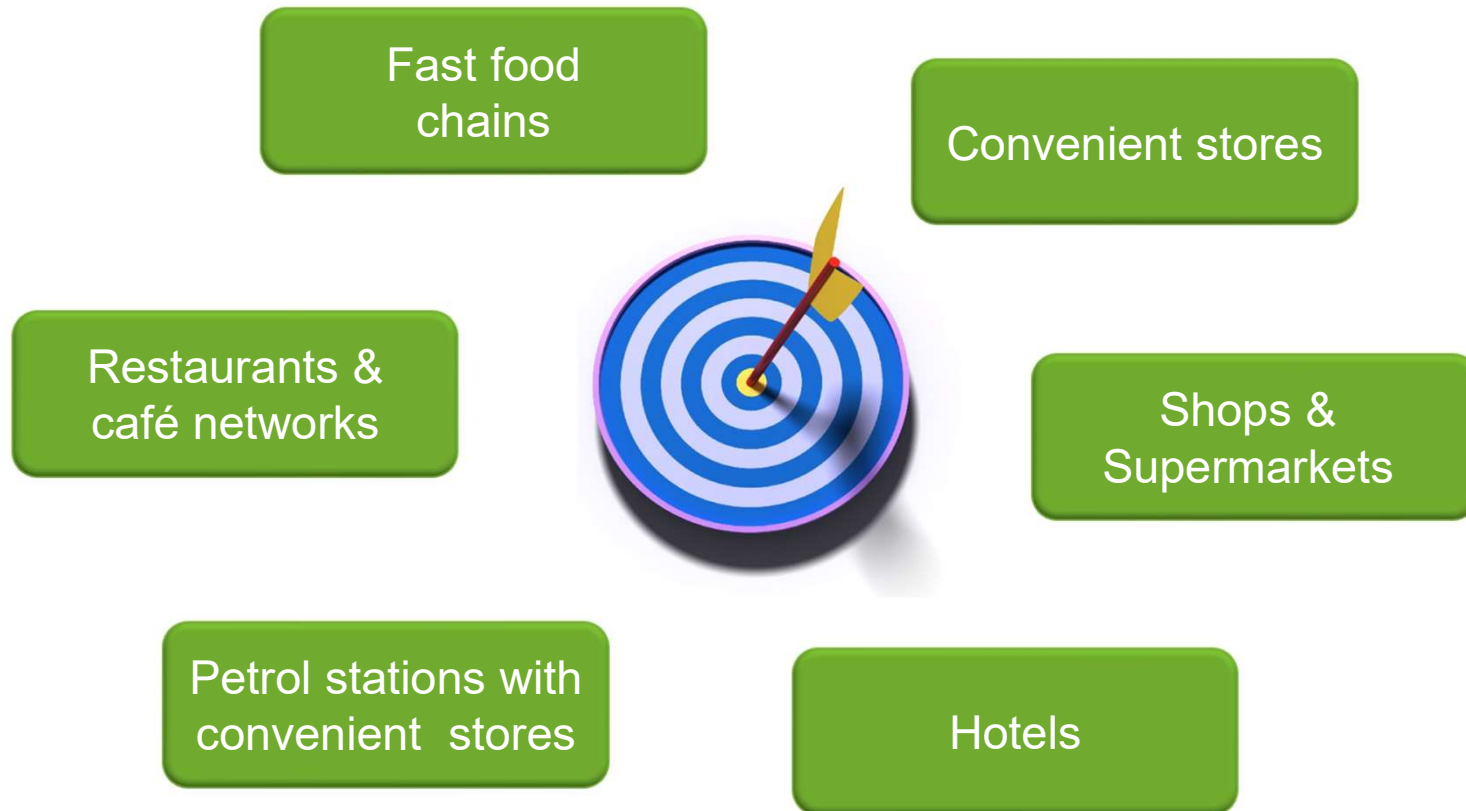
Long operating hours

Medium sized commercial facilities

Distributed sites

Multiple sites

Target Markets for Voltage Regulation



COMEC PRODUCT LINE

ComEC VS - All-in-One System

Range: Com EC 63 – 80 – 160 – 250 - 400A

Supplies stabilized voltage to all loads

Provides sinusoidal voltage control

Voltage regulation up to 23V

Voltage control steps 2.5V

Installs after the main circuit breaker

Includes internal bypass

Programmable saving counters

daily, weekly, monthly & yearly

Controls electric data measurements on all 3 phases



Voltage Stabilization

ComEC:

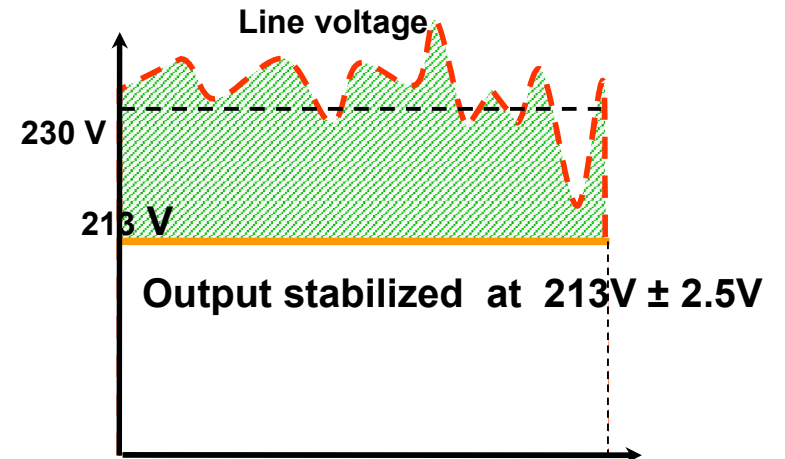
Regulates voltage at the right level

Default 213V

Stabilized voltage output ($\pm 2.5V$)

Saves more when the voltage increases

Maintains the required level when voltage drops



Conventional voltage regulators reduce a fixed voltage amount:

- ✘ Cannot maximize voltage reduction
- ✘ Provide less saving if line voltage increases

Built-in Protections

ComEC:

The highest safety level

Internal Bypasses

Output circuit protection

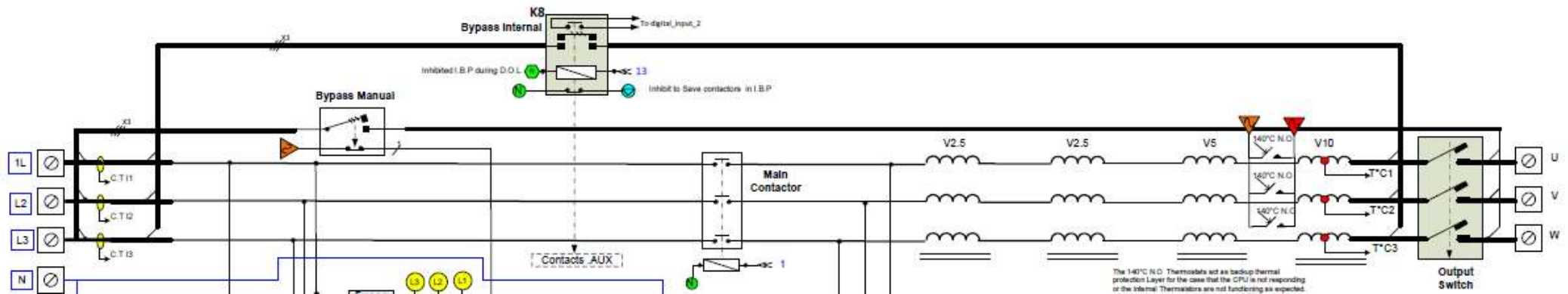


Voltage Regulators without Bypass and Protections:

- ✘ Are Not safe & May cause irreversible damage
- ✘ Require extra costs to implement an external Bypass switch

ComEC Electrical Diagram

Comtec Hub 63A-125A Detailed Architecture block Diagram Rev C0 80-125A 1.8.17



Quick, simple and easy installation

ComEC Electrical installation has to be performed just after automatic Circuit Breaker sized as per appropriate design data and calculations.

New ComEC Layout Photos



Plug & Save Installation

Quick, simple and easy installation

No need to change existing electrical infrastructure or wiring

Minimal disruption to business operation

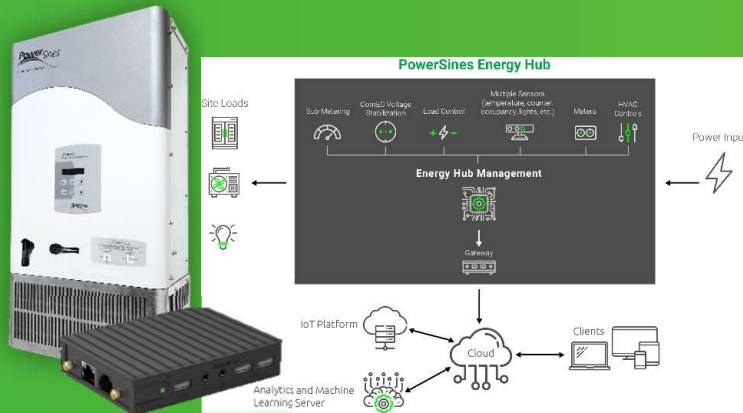
Small footprint – can fit into any electrical room

Wall-mountable (80-125-160A)

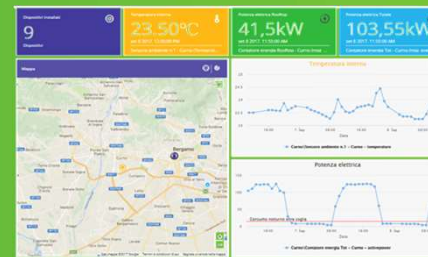


The ComEC set-up must match the size of the Main Circuit Breaker in the electric board

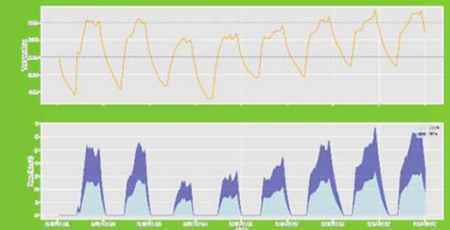
Future state - Integrated Comec



Energy saving & Power control
Multi-protocol IoT Gateway
3rd party device/sensors

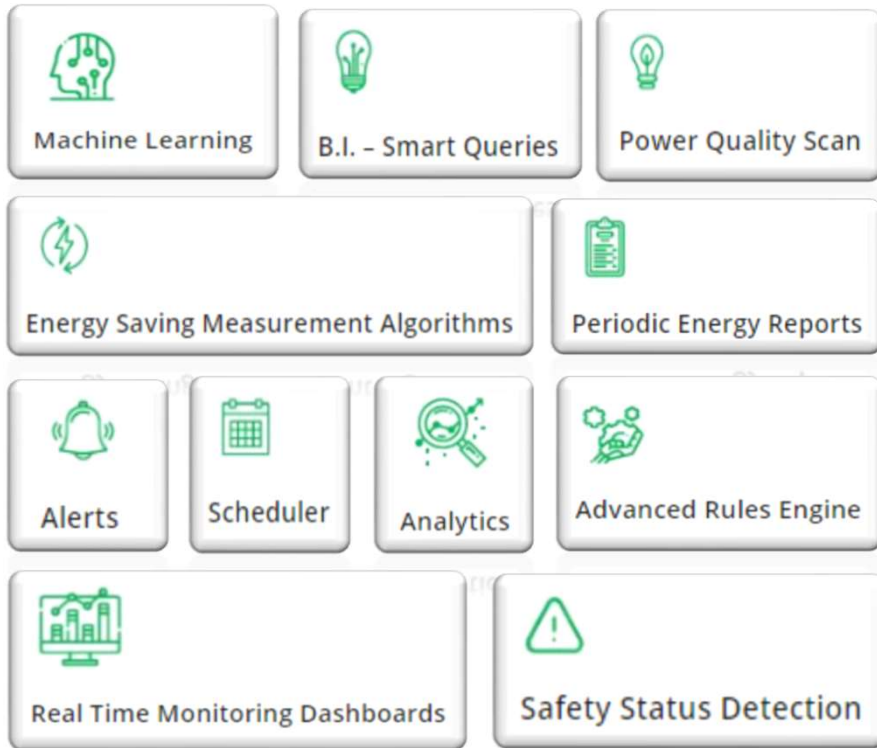


Monitoring and control
Applications based on IoT Cloud
Platform with advanced
visualization



Advanced analytics and
machine learning
algorithms

Future Comec Application





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