

# AMTECH News



FOR PRIVATE CIRCULATION ONLY April 2026

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Before you judge another, think of your own last mistake

Editor: Atul Suthar

## From the Desk of Managing Director



### Purpose of Reading

A curious student asked his teacher, "Sir, I have read so many books but forgotten most of them. So what is the point of reading?" The teacher did not give a direct answer, but just looked at the student in quite silence.

After a few days, both of them were sitting by a river discussing some important issues. The teacher said, "I am thirsty, please bring some water. He also instructed the student to use an old strainer only while bringing water."

The student looked at the strainer that was full of holes. He decided not to argue with the teacher and obey his instructions.

He tried several times to bring water in a strainer full of holes but could not hold a single drop.

Exhausted and frustrated, he threw the strainer and said, "I have failed to bring water." The teacher replied, "You have not failed, just look at the strainer."

The student glanced down and noticed that the strainer which was looking dark and dirty, was now shining clean. The water though it never stayed, had washed it over and over again until it cleaned.

The teacher continued, "This is what reading does. It does not matter whether you do not remember every detail or the knowledge seems to slip through like water from the strainer. While you read, your mind is refreshed, your spirit is renewed, your ideas are oxygenated, you are transformed from inside out even without knowing it."

This is the true purpose of reading. Not to fill the memory, but to cleanse the mind and enrich the soul.

Piyush Patel

**TOTAL SOLUTION DRIVE FOR SUCCESS**

<b>Motor Control</b> AC Drive, MVD & Soft Starter					
<b>Industrial Automation</b> Controlling, Driving, Operating, Networking					
<b>Power Quality</b> Active Harmonic Filter, Active Front End Converter, Active Static VAR Compensator, Wideband Harmonic Filter					
<b>Industrial Electronics</b> Design & Development for Customers in Power Electronics					

AMTECH News



Good Friday



Parshuram Jayanti



Narasimha Jayanti



Ambedkar Jayanti

Best wishes from Amtech Family

# Power Quality & Energy Conservation Group

## Harmonic Mitigation at Beverage Can Manufacturing Plant Using Active Harmonic Filter (AHF)

### Introduction

M/s Canpack India Pvt. Limited, a leading manufacturer of beverage cans, operates a state-of-the-art production facility at Waluj, Maharashtra. Like many modern industrial plants, the facility extensively uses power electronics such as Variable Frequency Drives (VFDs), UPS systems, SMPS, and LED lighting. These nonlinear loads introduce harmonic distortions into the electrical system, negatively impacting power quality, system efficiency, and equipment life.

### Objective

- To improve power quality
- To reduce harmonic distortion
- To minimize energy losses and operational inefficiencies
- To enhance system reliability and equipment lifespan

A detailed power quality audit was conducted to assess harmonic levels and their impact on the electrical infrastructure.

### Key Challenges - Issues Identified:

- Overheating of electrical equipment
- Frequent failures of electronic components
- Heating of MCBs and contactors
- Transformer overloading
- Motor overheating
- Random tripping of systems
- Limitations on generator and UPS capacity

### These issues were directly contributing to:

- Increased energy consumption
- Higher maintenance costs
- Reduced system reliability

### Nonlinear loads generate harmonic currents that lead to:

- I<sup>2</sup>R losses in cables and bus bars
- Increased eddy current losses in transformers
- Additional thermal stress on electrical components

This excess heat must be dissipated, leading to energy wastage and reduced efficiency.

### Solution Implemented

180 A, 3-phase, 3-wire (3P3W), 415 V, 50 Hz, Axpert-i-Sine Series AHF was installed at MCC Incomer – Machine Line 1. The current sensing is performed at the MCC panel and Harmonics are compensated before distribution to plant loads.

The AHF dynamically compensates harmonic currents by injecting equal and opposite currents, thereby neutralizing distortion in real time. This ensures centralized harmonic mitigation for the entire machine line.

### System Performance (Without AHF vs With AHF)

Parameter	Without AHF	With AHF
THD-I (%)	27.5...30%	2.8...4%
THD-V (%)	3...4%	2...3%
Power Factor	0.98 Lag	0.99 Lag

### Benefits Achieved

#### Operational Improvements

- Elimination of overheating issues, reduction in equipment failures, improved system stability and prevention of nuisance tripping.

#### Electrical Performance

- Near-unity power factor achieved, improved voltage quality and reduced harmonic distortion.

#### Energy & Cost Savings - Enabling Net Zero through Efficient Power Systems

- Reduction in kWh consumption, lower kVA demand, decreased I<sup>2</sup>R losses and reduced transformer and motor losses.

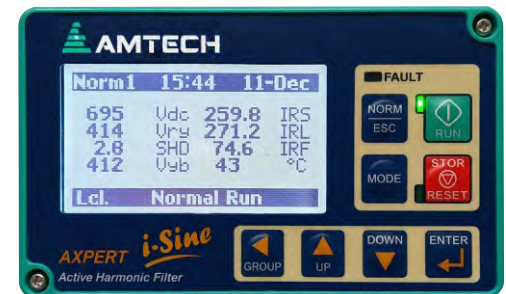
When you save energy, you help in reduction of Carbon Footprint. You save ~0.7 to 0.9 kg CO<sub>2</sub> per kWh.

#### Asset Reliability

- Increased equipment life, reduced maintenance requirements and lower spare parts consumption.

#### Capacity Optimization

- Better utilization of transformers and generators and release of system capacity for future expansion



# You Question – We Answer

## What is earthing and why is it necessary?

Earth is defined as conductive mass of the earth whose electric potential at any point is taken as zero. The earth provides a common reference for voltage measurements as it is electrically neutral and is at zero potential.







Earthing is an electrical connection to the general mass of the earth. The dimensions of “Earthing” connections are generally much larger than the electrical system under consideration.

Ground & Grounding are synonyms of earth & earthing respectively and are used in some parts of the world like North America.

Earthing is very important and essential from the view point of safety of Plant, Equipment, Property, Human life & Animal Life.

If the earthing system is not properly designed, it may lead to enormous loss of lives & property.

The main objectives of having a perfectly designed and implemented earthing system are

-  To ensure safety of human & animal life from electric shock hazards & fires,
-  To ensure that the system voltages remain within acceptable limits under fault conditions and prevent insulation breakdowns,
-  To ensure safe and satisfactory operation of protective devices under fault conditions by providing path of low impedance,
-  To provide a common platform having equal potential to the operating equipment,
-  To provide an alternative path to induced currents and to minimize electrical noise,
-  To minimize the effects of arcing burn downs.

## Product Portfolio



**AXPERT-EAZY\* SERIES  
VFD**

0.75...2100 kW (1...2815 HP)  
380...480 V, 500...600 V & 601...690 V



**AXPERT-EAZY MINI SERIES  
VFD**

400 V System (380...480 V)  
0.75...7.5 kW (1...10 HP)



**AXPERT-OPTI TORQUE SERIES  
SOFT STARTER**

15...1065 A, 3.7...1000 kW (5...1340 HP)  
200...690 V



**AXPERT-HIVERT SERIES  
MVD**

200...12500 kW (270...16750 HP)  
3.3 kV, 4.16 kV, 6.6 kV & 11 kV

# APPLICATION CASE STUDY

## Variable Frequency Drive (VFD) for Chiller Compressor Application

### Application Overview

Chillers are critical components in large-scale HVAC systems used in airports and commercial buildings. They operate on a vapour-compression cycle, where the **compressor acts as the primary driver of the refrigeration process**.

In centralized cooling systems, chilled water is circulated across multiple zones, enabling efficient temperature control over large areas. For such applications, **precision control, energy efficiency, and reliability are essential**.

### System Description

At Commercial Infrastructure (Airport HVAC) of **Chennai International Airport**, Carrier make **Chiller of 1000 TR capacity is operating at 185 PSI**. It uses 680 kW, 1105A, 415V, 2980 RPM motor.

### Key Challenges

The application posed several technical and operational challenges:

- ✓ **High Reliability Requirement**  
Airport HVAC systems are mission-critical and require uninterrupted operation.
- ✓ **Smooth Process Control**  
Compressor operation must be stable to avoid pressure fluctuations and mechanical stress.
- ✓ **Equipment Protection**  
Protection against electrical faults, overloads, and supply disturbances.
- ✓ **Operational Flexibility**  
Ability to modulate cooling capacity based on varying load conditions.
- ✓ **Remote Location Support**  
Need for rapid diagnostics and service due to critical infrastructure dependency.

### Solution Implemented

The Axpert-Eazy+ Series VFD, model AMT-1265A-4, Heavy-duty industrial VFD for high-power applications is used to address the above challenges effectively. The Axpert-Eazy+ Series is a highly reliable VFD, immune to power fluctuations and designed for 50 °C (122 °F) ambient temperature.

The VFD offers core functions like,

- **Adaptive Speed Control** - enables compressor speed variation based on real-time cooling demand.
- **Robust Design for Indian Conditions** - Engineered to handle voltage fluctuations and harsh grid conditions.
- **Advanced Protection Features** Includes Overcurrent and overload protection, Voltage imbalance protection, Thermal protection for motor and drive.
- **Seamless DCS Integration** - Communication with DCS/SCADA systems, Real-time monitoring of parameters, Remote control capability
- **24x7 Service Support** - Remote diagnostics tools, Quick response for troubleshooting

### Benefits Achieved

The implementation delivered measurable operational improvements:

- **Enhanced System Reliability** - Stable compressor operation with reduced mechanical stress
- **Energy Efficiency** - Significant reduction in energy consumption due to load-based speed control
- **Reduced Maintenance** - Lower wear and tear on mechanical components
- **Improved Process Control** - Precise temperature regulation across airport zones



# AMTECH POWER PRODUCT OVERVIEW

## BE1-FLEX Protection, Automation, and Control System

**Overview**

The BE1-FLEX Protection, Automation, and Control System is configurable for nearly any Power System application. The BE1-FLEX covers a wide application spectrum as it can be configured for any combination of available functions. The large configurable touchscreen provides an application-specific user interface. To support unknown future needs, the BE1-FLEX can simply turn on extra functions, change or upgrade boards, field upgrade non-hardware style options, and securely update firmware all without needing to remove it from the installation.

### Benefits

- A single, cost effective device for nearly any protection, automation or control application that minimizes future design methodology changes. As changes are needed, simply enable or modify the required functionality.
- Consolidate system designs from hundreds of devices into one, which greatly reduces training requirements while increasing system knowledge.
- Reduce sensory and device overload by displaying and utilizing only what is needed for an application.
- Prioritize and ensure function confidence with Basic and Advanced views of many features.
- The HMI Home Screen provides system status and control to avoid HMI navigation and changing system condition issues.
- Reliability and lead times are optimized by consolidated build options.
- Automatically configured reports ensure an event is always recorded to simplify root cause analysis.
- Fine tune protection and control with multi-zone configurations.
- Security logs automatically record potential undesired access attempts.
- See inside the box with Live Logic Metering to visualize all input and output functions from a single BESTCOMSPPlus® screen.
- Easily view logic from the HMI with pinch-to-zoom functionality.

### Features

- Large, intuitive, customizable, touchscreen HMI (Human-Machine Interface)
- Multi-breaker automation and control with Trip Circuit Monitoring and Breaker Monitoring
- High analog and digital input/output counts: Up to 28 CT, 16 VT, 72 contact sense, 48 outputs or 3 Ethernet ports (pending configuration, counts not cumulative)
- Auxiliary analog inputs
  - ✓ 4 to 20 mA, 0 to 10 V, 50 to 100 mV, and RTD
- Field upgradable hardware and software
- Advanced cybersecurity features
- IRIG-B, NTP, and DNP synchronized clock with battery backup
- USB-C, RS-485, copper Ethernet and fiber Ethernet ports
- Protocol Support: Modbus®, DNP, Synchrophasor, BESTnet™ Plus remote HMI, and email alerts. IEC61850 coming soon.
- Advanced recording
  - ✓ Targets and alarms
  - ✓ 30+ million data point Oscillography log (COMTRADE format) with Fault Summary
  - ✓ 8,000-record Sequence of Events log
  - ✓ Load profile recording
  - ✓ Transformer Damage (51TF)
  - ✓ Diagnostic log
  - ✓ Demand
  - ✓ Power quality
  - ✓ Energy

21P	21N	24	25	25A	27	32	37	40Q
40Z	43	46	47	49 RTD	50	50BF	51	51TF
52	55	59	60	62	64	76	78V	78 OOS
79	81	86	87	87FB	87N	Configurable		

### SMART HEATING. OPTIMIZED PERFORMANCE.

In modern industrial heating systems, efficiency, reliability, and precision are critical. The Axpert-Opti power Heater Controller delivers all three through its advanced Load Sequence Control functionality.

This intelligent feature ensures optimal utilization of multiple heater loads while minimizing electrical and thermal stress.

### WHAT IS LOAD SEQUENCE CONTROL?

Load Sequence Control is an intelligent method of managing multiple heater elements by switching them ON/OFF in a defined sequence based on power demand.

Instead of activating all heaters simultaneously, Axpert-Opti power Gradually adds loads as demand increases - Sequentially removes loads as demand decreases - Maintains precise temperature control.

### HOW IT WORKS

The controller uses Relay Outputs (Relay 1, Relay 2, Relay 3) as well as Digital Outputs to control individual heater banks.

Each output is assigned to a specific load, enabling step-wise power control.

#### Intelligent Control Logic

- Power demand is divided into equal steps
- Each step corresponds to one heater load
- Thyristor firing ensures smooth power modulation within each step

### KEY CONFIGURATION PARAMETERS

Parameter	Description
C801	Number of heater loads (stages), for example 4 Heater Loads
C802	Hysteresis level to prevent frequent switching, for example 2% hysteresis
C803	Time delay for load switching, for example 2 seconds switching delay

### KEY BENEFITS

- ✓ **Energy Efficiency**
  - Only required loads are activated, reducing unnecessary power consumption.
- ✓ **Extended Equipment Life**
  - Reduced inrush current
  - Lower thermal stress
  - Longer heater lifespan
- ✓ **Stable Process Control**
  - No oscillations
  - Smooth transitions between load steps
- ✓ **Reduced Electrical Stress**
  - Avoids sudden full-load switching
  - Protects upstream electrical systems

### APPLICATIONS

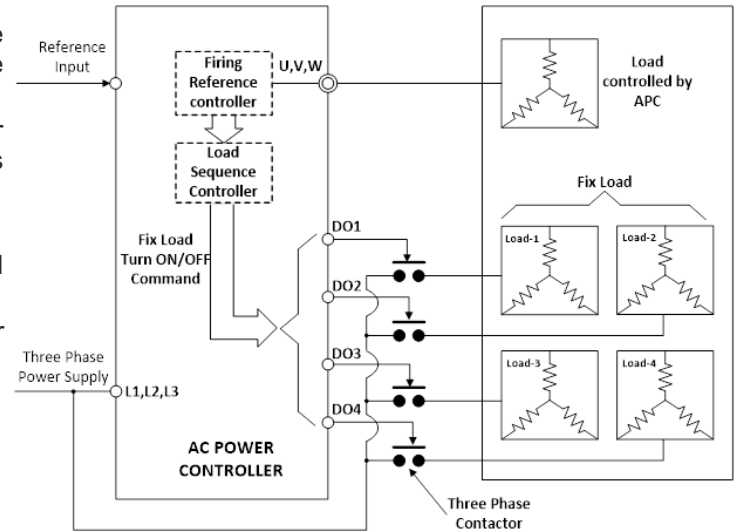
- Industrial Ovens & Furnaces
- Plastic Processing Machines
- Dryers & Curing Systems
- HVAC & District Heating Systems

### WHY Axpert-Opti power Heater Controller?

- Built-in load sequencing (no external PLC required)
- Faster commissioning
- Reduced wiring complexity
- High system reliability

### YOUR PARTNER IN SMART HEATING CONTROL

Axpert-Opti power is a high-end Heater Controller, having fully digital control with many state-of-the-art functions like **impedance relay**, **3-phase output control** with capability of individual phase voltage control, **universal control supply** and many more. With Axpert-Opti power, you don't just control heaters—you optimize performance, efficiency, and reliability across your entire heating system. To know more about Axpert-Opti power, visit [www.amtechelectronics.com/axpert-opti-power.html](http://www.amtechelectronics.com/axpert-opti-power.html)



**AXPERT-OPTI POWER SERIES  
POWER CONTROLLER**



## SAGAR CEMENTS LIMITED

Date: 11-10-2025

### WORK COMPLETION CERTIFICATE

**Subject:** Supply, Installation & Commissioning of Amtech Make Axpert Eazy+ Series VFD Engineered Systems for Various Fan Applications

This is to certify that M/s Amtech Electronics (India) Limited has successfully undertaken the design, engineering, manufacturing, supply, installation, and commissioning of the Axpert Eazy+ Series VFD system, comprising the following model numbers:

- AMT-0155A-4
- AMT-0260A-4

A total of 5 No's VFD units have been installed for different fan applications.

We express our sincere appreciation to Amtech Electronics (India) Limited for the timely and successful execution of the project and for the professional commissioning of the Axpert Eazy+ VFD systems.

The performance of the installed VFD systems has been satisfactory since the date of commissioning.

With Regards,

K. Prasad Reddy

GM (Inst)



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Gudipadu Village, Yadiki Mandal, Ananthapur District, Andhra Pradesh State - 515408. Phone: 08558-200272 GSTIN : 37AACC8680H1ZX  
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# PRESENCE ACROSS THE GLOBE

AMTECH News

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- ▲ Branch Office
- Dealer
- System Integrator
- ⓘ Resident Engineer
- Global Distribution

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To

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