Intelligent Motor Controller
Topics

• What is the Powerboss?
• How the Powerboss Works
• Powerboss vs VFDs
• Application for Data Centers
• Demonstration
What is the Powerboss?

- The Powerboss is an intelligent motor controller that works on AC induction motors with variable load conditions.
Powerboss Advantages

Accurate Control Of Motor Current
Match Motor and Load Torque

Smooth Acceleration - \textit{soft-start}

\textit{soft-stop} - on Pumps

Energy Saving Load Optimization
• Without Soft Starting  • With Soft Starting

Y Nominal Current

X

Time in Milliseconds

S O M A R

NewEnergyAdvantage
CREATING AN ENERGY EFFICIENT FUTURE

profit through intelligence

powerboss
Software Programmer
Main Menu - Standard Soft Start

Actual Pump Profile with Ramp Down

DOL Start → Soft Start → DOL Stop → Soft Stop

Start → Run → Stop
How Powerboss Works
208A − 133A = 36% less Kva

21 Kw − 18Kw = 14% less Kw

141 Kvar − 84Kvar = 40% less Kvar
Example
Resultant Power Triangle with Powerboss
Advantages of Kvar Savings

1. Will have an impact of up to 40% savings on Peak Demand.
2. Less Kvar means Less Heat within motor and cables
3. Improves Motor Efficiency - Motor will last longer 2-3 times longer
4. Some utilities measure and charge separately for Kvar
Advantages of Kva Savings

- Less Heat Loss through motor and associated equipment.
- Associated equipment - i.e. cables, fuses, contactors and overload.
- Less Strain on the total supply as current is reduced.
- A Reduction in Kva will have a direct impact on Energy Consumption
Variable Frequency Drives

Vs.

Powerboss
Variable Frequency Drives

Pros

• Ideal when speed control is required
• Soft starter capability
• Cheaper than DC Motors
• Relatively Easy to Implement
• Proven Technology
Variable Frequency Drives

Cons

• Causes unnecessary heat in motors - decreasing motor life
• Requires 3%-6% increase in energy consumption due to inverter and rectifier
• Requires manual reset after power outages on less expensive models
• Not cost effective if used only for soft starting function
• Not an optimization device
• Does not save any operational KW dollars w/o causing long-term damage to the motor
• Causes heavy harmonic distortions (8 and 16 pulse drives)

Inherently a switching power supply, these devices cause EMI and RFI interruption in the electrical system
Pros

• A cost effective solution to many problems associated with motors: start up torque, currents and spikes, and operational kW consumption.
• 20%-30% less than the cost of VFD’s
• Soft starter capability AND Optimization
• Can be applied to motors without regard to their age or insulation class
• Perfect for retrofit, and much smaller than VFD’s
• Can replace contactor and shading coil (motor starter), eliminating a failure point
• Significantly reduces the motor heat (by upwards of 35%) as a result, doubling the life of the motor
• Proven technology in over 100,000 installations worldwide
Powerboss

Cons

• Can’t control speed – constant speed only
• Cannot be combined in concert with VFD’s
Applications in Data Centers

- Pumps
- Compressors
- Fans
Conclusion

Electrical Benefits

- Reduces Starting Current
- Improves Supply Stability
- Allows More Equipment to be Connected to Supply
- Reduces Overall Power Bill
Conclusion

Mechanical Benefits

• Reduces Starting Torque Stress
• Prolongs Life of Driven Equipment
• Reduced Maintenance Costs and Mechanical Failures
• Improves Motor Life by 2–3 Times
Optimization Demonstration

Visit the New Energy Advantage Booth for a Powerboss demonstration.
Thank you for your attention!

The End