



# Cutting Electricity Costs and **Reducing Environmental Impact** With **Voltage Optimisation**

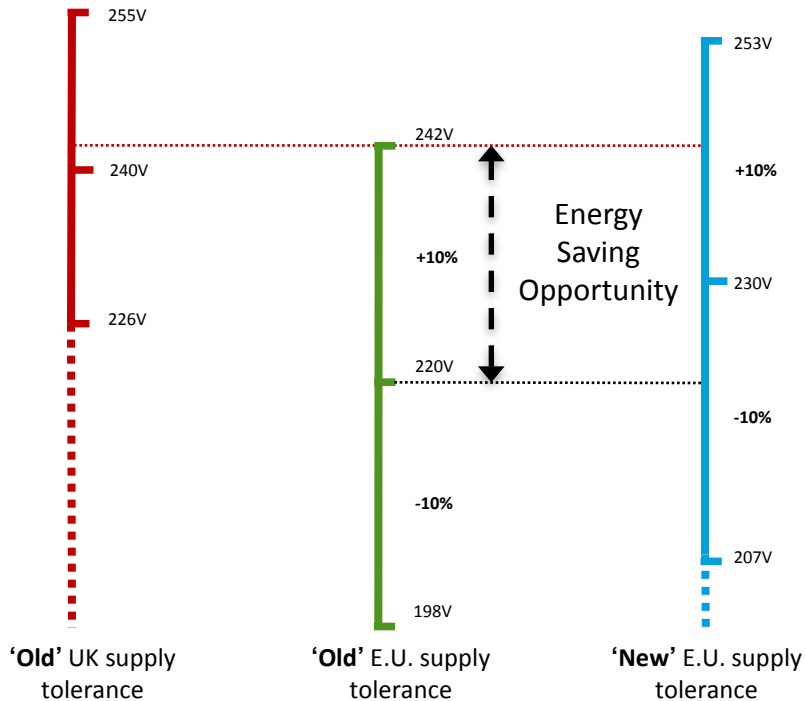


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Neil Underwood  
Sales Director for iVolt

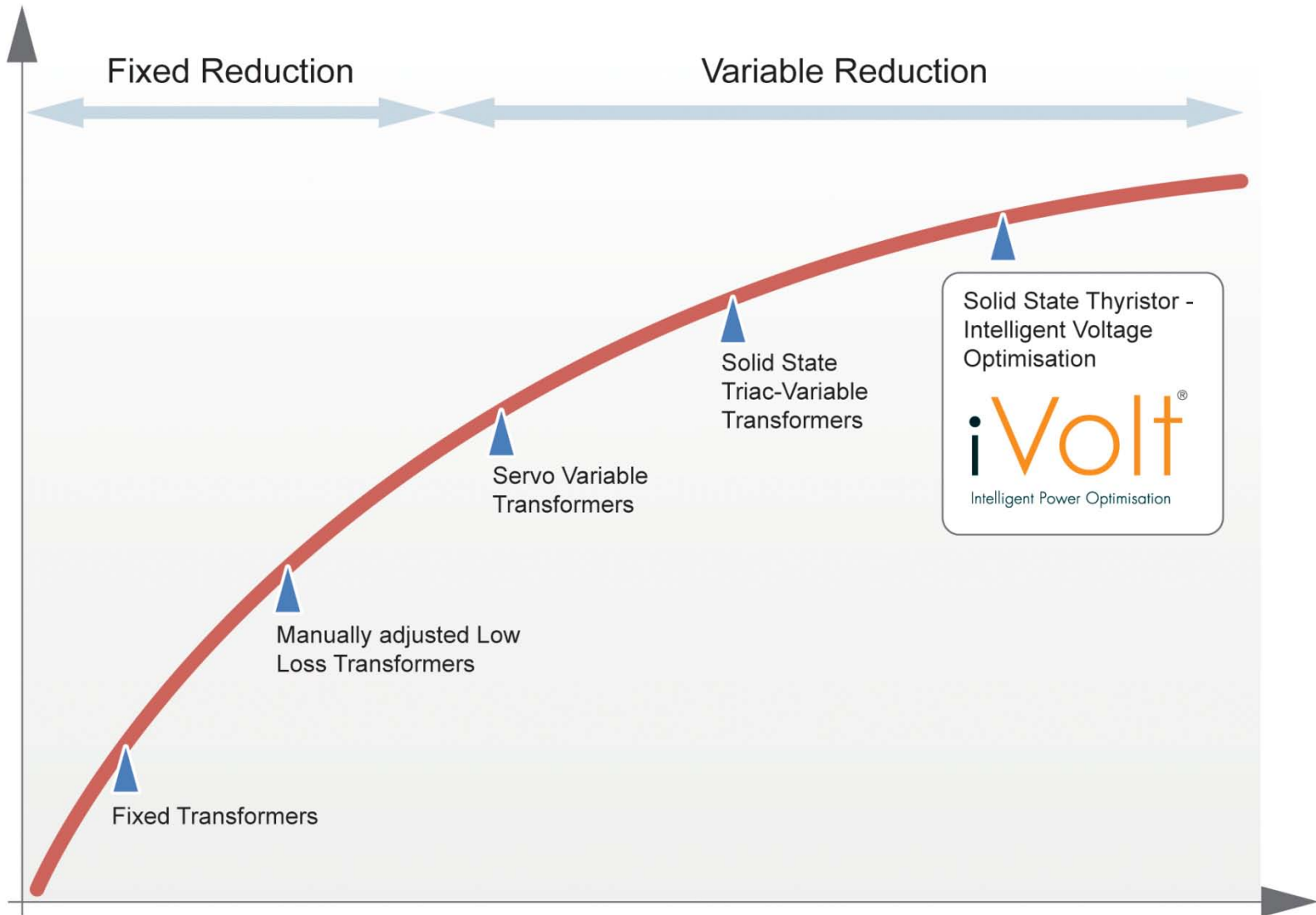
# What is VO and How Does it Work?

“Reducing mains voltage to save energy and reduce costs”



- UK generating infrastructure at 240V
- Equipment all designed for 220V European Market
- Voltage reduction from 240V to 220V saves energy
- Voltage reduction has additional benefits:
  - Increased equipment efficiency
  - Increased equipment lifespan
  - Lower maintenance costs

# Evolution of Voltage Optimisation



# Key Differentiators of Intelligent Power Optimisation

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- Up to **30%** more energy savings than fixed voltage optimisation
- Output voltage stabilised for all incoming voltages above 217V
- Increases life expectancy of electrical equipment
- No moving parts and no annual maintenance
- Automatic failsafe features to ensure continuity of supply
- Independent balancing of the 3 phases
- **IRT Energy Monitor<sup>®</sup> for accurate savings measurement**

# 30 Years of Experience in Power Stabilisation

- Founded in 1983 in the UK 
- Offices in 14 countries, active distribution in 24 more
- World leader in voltage protection and stabilisation
- Thousands of voltage stabilisers sold worldwide
- UK based R&D team
- Global manufacturing facilities
- ISO9001:2008 Certified

*A selection of our international clients:*

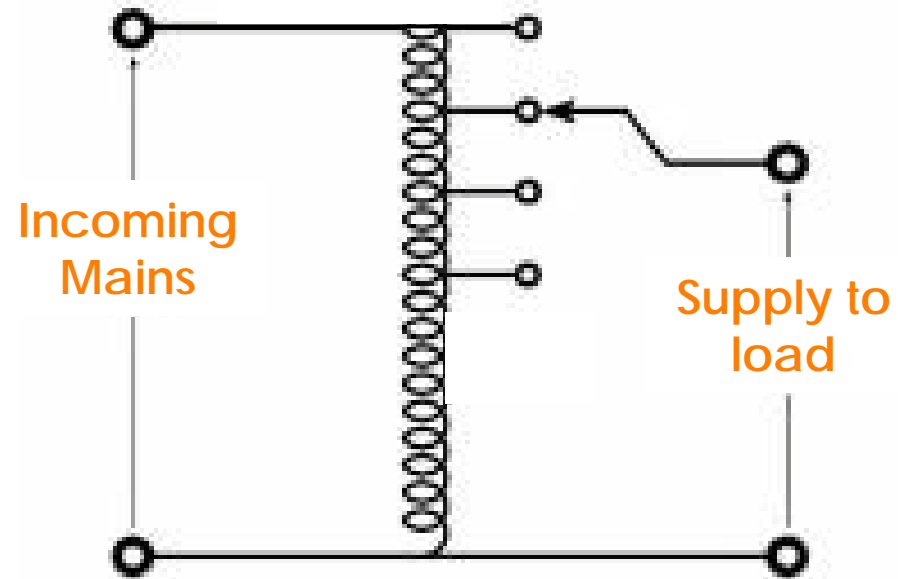


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Richard Brown  
Chief Electronics Engineer  
for Sollatek Group

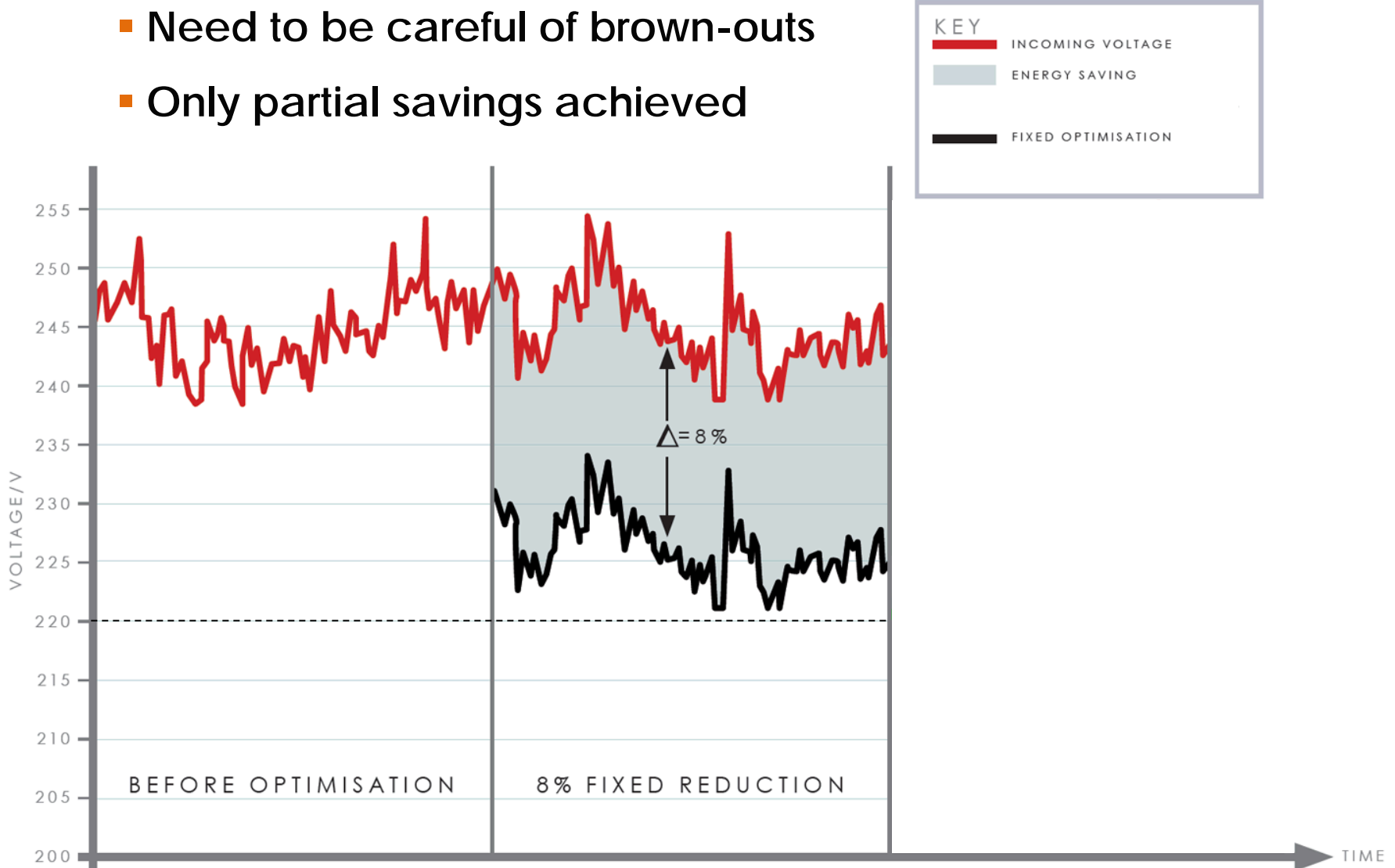
# A Brief Overview of VO Technology

- Main function is voltage reduction
- Step-down auto transformer
- Fixed ratio
- Manual adjustable
- Three phase or single phase
- Different configurations possible



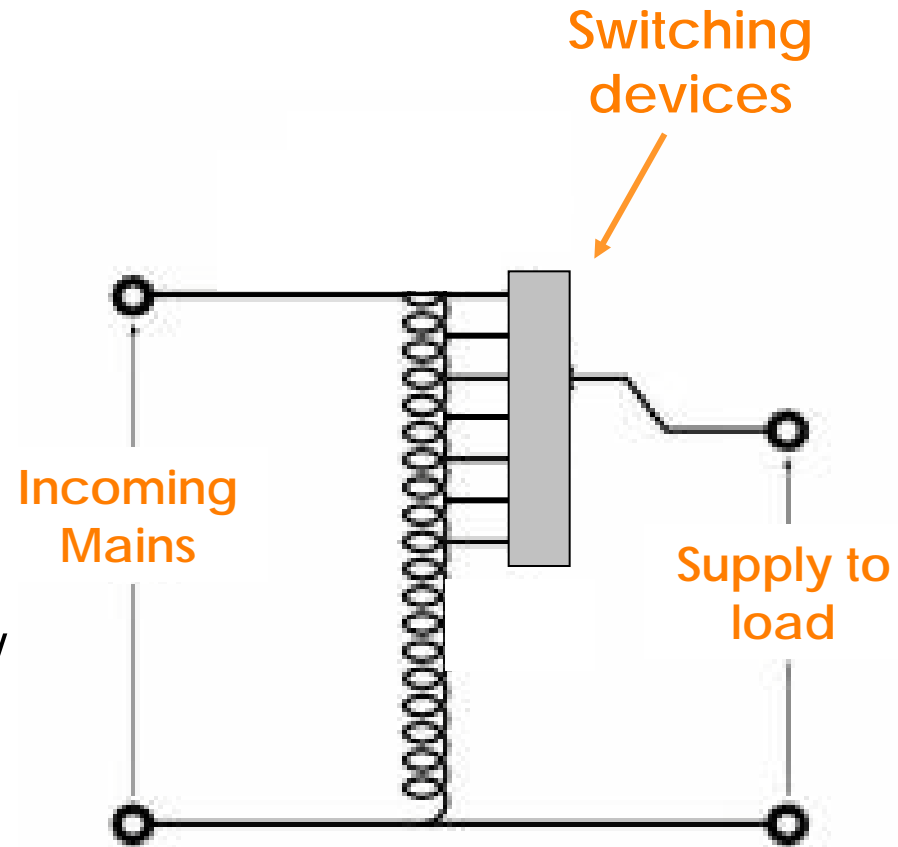
# Fixed Voltage Reduction

- Need to be careful of brown-outs
- Only partial savings achieved



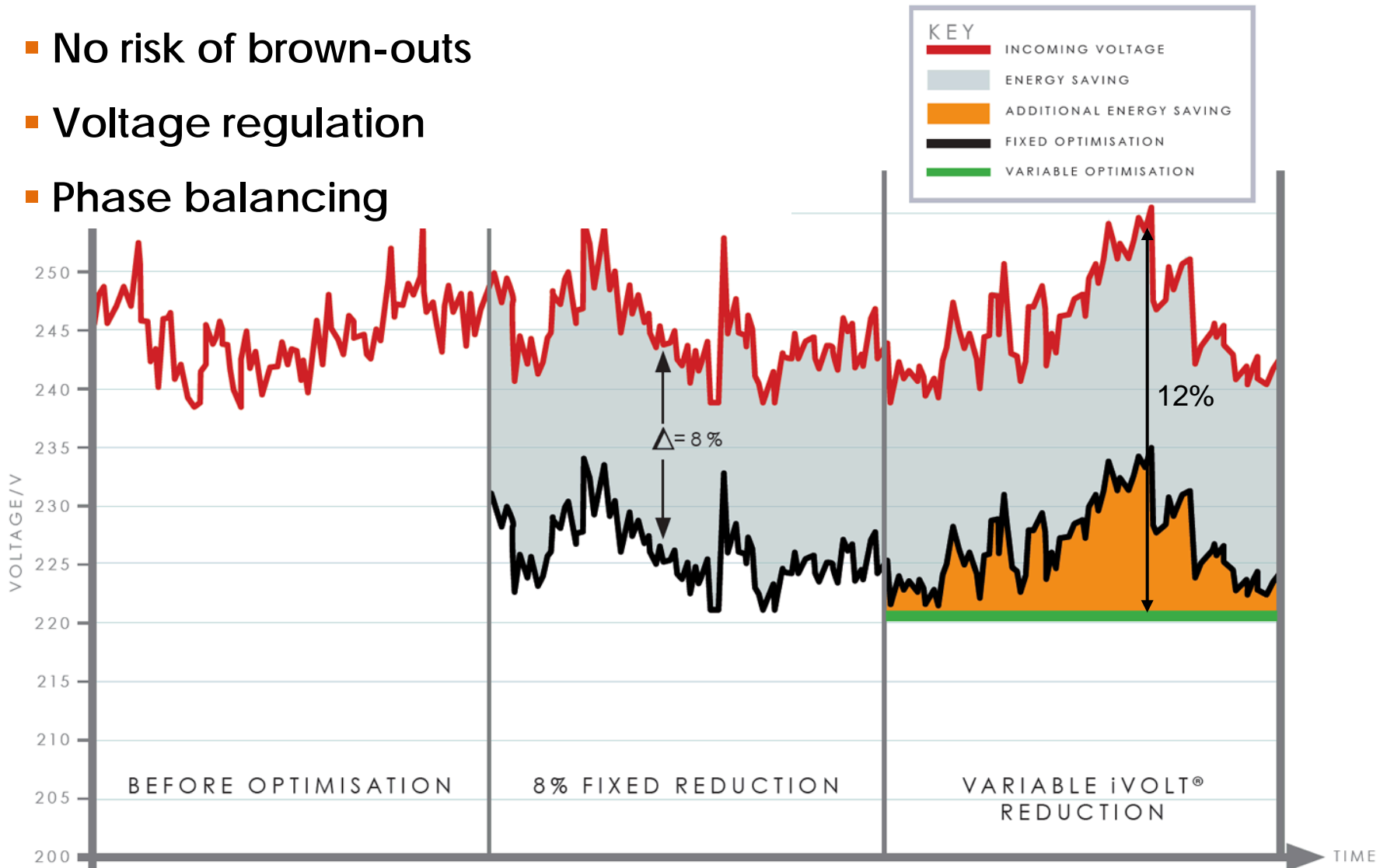
# Variable Automatic Adjustment

- Output voltage is measured
- The tap is changed automatically
- Output is maintained at optimum voltage
- Typically 220V +/- 1% or 2%
- Maximum saving achieved
- Slight reduction in efficiency far outweighed by increased saving
- Full 12% reduction to cope with 254V and above input voltage



# Variable Automatic Adjustment Savings

- Maximised savings up to 30% more
- No risk of brown-outs
- Voltage regulation
- Phase balancing



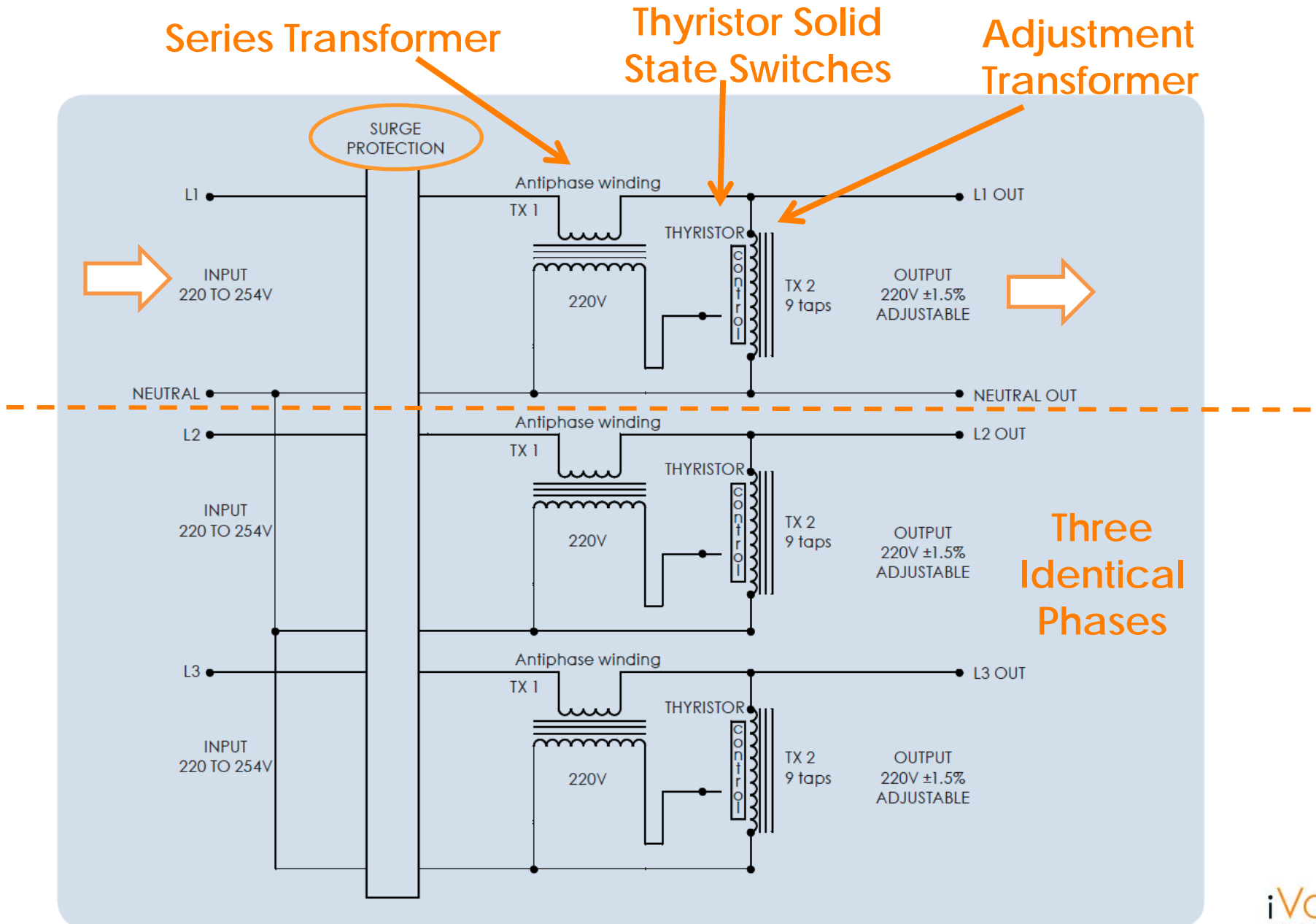
**How iVolt Saves You More**

# Methods of Automatic Regulation

- Servo
- Contactor
- Solid-state – Thyristor
  - Quiet operation
  - Fast response
  - Smooth, clean power control
  - No moving parts
  - Maintenance free



# iVolt Basic Schematic



# Intelligent Control

- Microcontroller based, not an add-on control or measurement unit but integrated
- True RMS voltage, current and power measurement
- Noise filtering
- Temperature measurement
- USB, RS485, Ethernet
- Alarm detection
- Remote control
- Data logging, RTC, EEPROM
- And something else...



# How Do You Know What Savings You're *Really* Achieving?

- Energy Managers challenge: achieving ROI
- Power measurements?
- Theoretical modelling?
- 'Before' and 'after' electricity bills?
- IRT – Intelligent Real Time saving measurements



# IRT – Intelligent Real Time Energy Measurements

- Regular ongoing live measurements of the real savings
- Automatic 'with' and 'without' comparisons switching smoothly between optimised and non-optimised
- Power measurements and calculation of savings
- Only possible due to the intelligent, integrated control
- Results are stored and can be downloaded
- Full confidence of the actual savings you are making
- Patented Technology No. 1101871.0

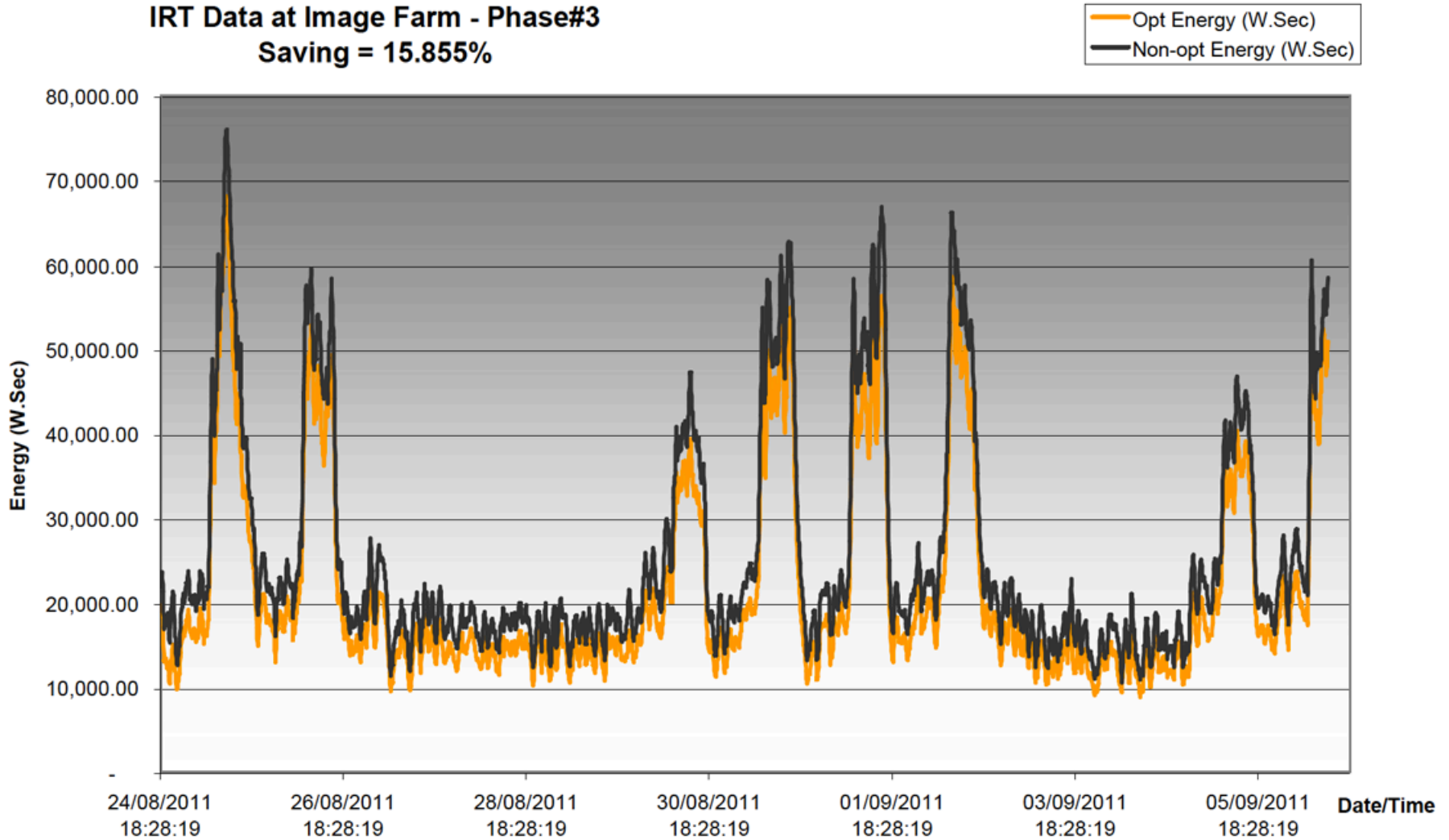
14.9%

12.3%

15.6%

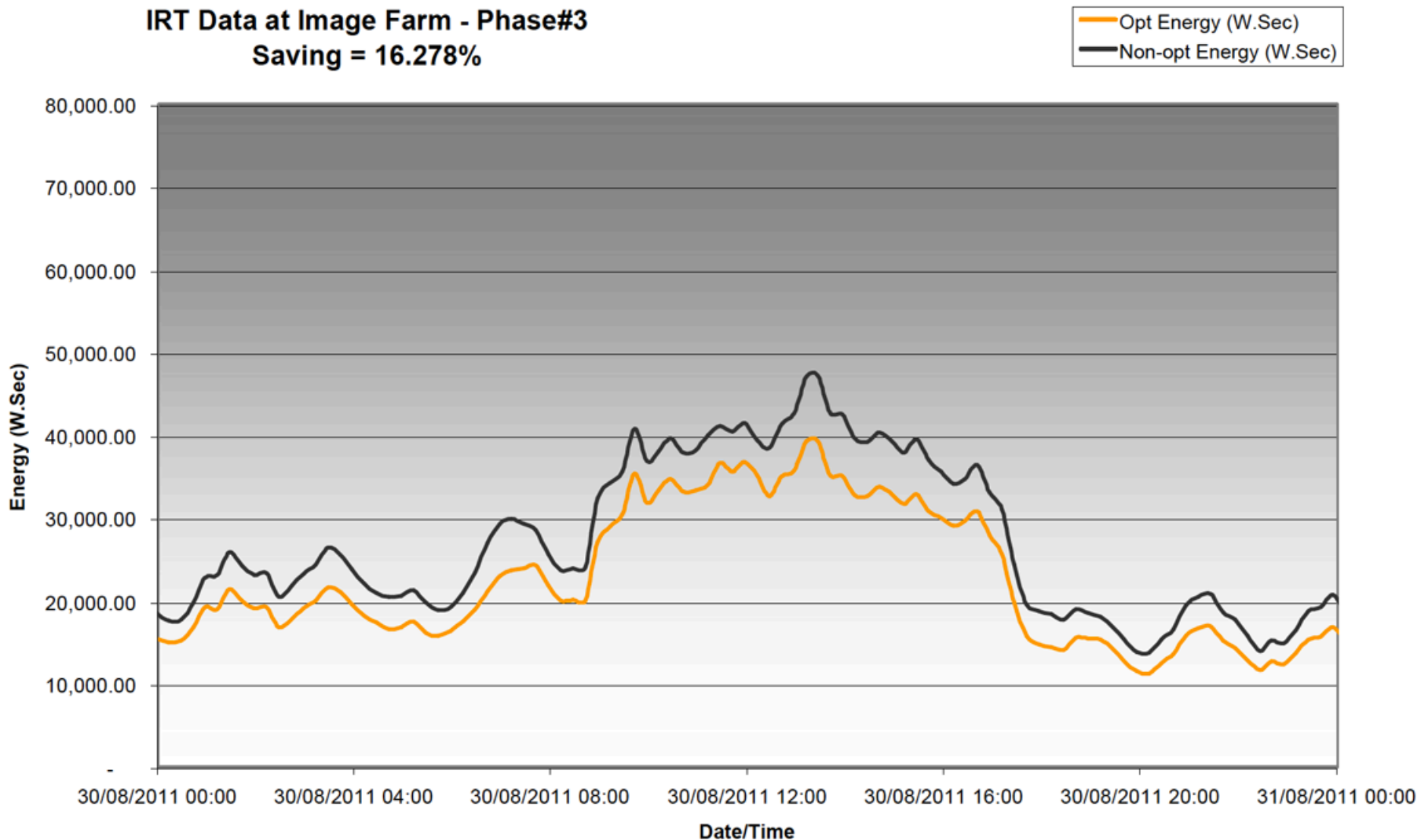
# IRT Data Showing Real Savings

**IRT Data at Image Farm - Phase#3**  
**Saving = 15.855%**



# IRT Data – Zoom in over 24 hours

**IRT Data at Image Farm - Phase#3**  
**Saving = 16.278%**



# I/O Technology for the Future - Summary

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The requirement then is for:

- Variable adjustment
- Automatic operation
- Wide range reduction (12%)
- Solid state
- Integrated, intelligent control
- Data logging and remote control
- Intelligent Real Time energy savings data – **IRT**<sup>®</sup>

**Our Technology- Your Future** **iVolt**



Any questions, please?

Thank you for coming to the seminar, please come and visit us at stand

**E100**

