

Ark Smart Voltage Energy Saving Unit



What is ARK Smart Voltage?

The Ark Smart Voltage ESU is a high performance energy saving unit for industrial and commercial energy users. It saves energy across lighting, general power and motor loads. Depending on the type of equipment at your site, whole site energy saving of over 20% can be achieved. Typical savings at most sites are in the range of 8 - 14%, with a financial payback of 2-3 years.

A Proven Technology

The Ark's core component has a 10-year warranty period and a projected 50-year lifespan. It is a set and forget product, manufactured and commissioned to the highest quality standards. The core components are manufactured and customised in an Australian ISO9001 accredited manufacturing facility. The Ark has been successful in receiving Australian government funding for numerous client installations, through the New South Wales Climate Change Fund and the AusIndustry Clean Business Australia program. Some of these installations have required extensive verification testing as part of the funding requirement. In each situation, the verification testing results have demonstrated higher than estimated savings as a result of the Ark ESU installation.

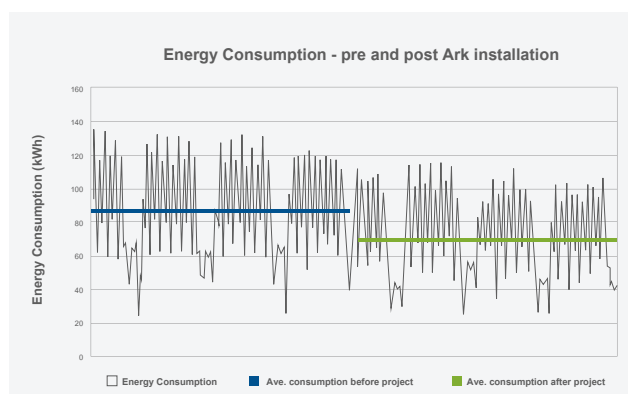
Monitoring and Verification

The Ark Smart Voltage ESU is equipped with an Energy Monitoring System that collates real time energy data from multiple sources. The 4 Channel (12 Sub-circuits) Energy Monitoring System is an integral part of every Ark Smart Voltage ESU. In addition to its highly accurate on-board metering capability, it delivers critical information via easy to understand graphics.

As such the Ark Smart Voltage offers the world's first truly integrated energy savings solution and energy monitoring ecosystems with Customisable Reporting Tool and Energy Alerts 24/7/365. The data is available across networks, to be viewed on any computer, or across a range of portable devices, from anywhere in the world. The information is displayed in a language you will understand, be it kWh's, cost, voltage or carbon.

Our solution uniquely delivers the following:

1. Energy Savings and Conservation.
2. Power Factor Correction.
3. Harmonic Filtering.
4. Phase Balancing.
5. Three phase voltage reference.
6. Multi-circuit monitoring with Ethernet connectivity.
7. Real-time energy monitoring system for immediate measurement and verification.



What is the ARK Smart Voltage?

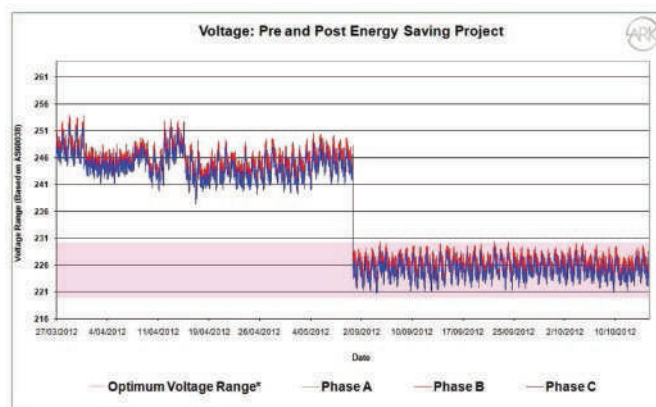
What is Voltage Optimization?

In order to ensure that all buildings within the grid receive the minimum allowable voltage level, the utility provider commonly transmits a higher voltage across the grid to account for transmissions losses. This is the nature of the electricity grid to ensure all customers and users receive the allowable range of electricity.

What this means is that, unless your building is located on the extremities of the grid, you are receiving a higher energy voltage than your building actually needs. As a result, a majority of the electrical equipment is consuming more energy at higher voltages than it actually needs to operate normally. This ultimately inflates your electricity bills!

Hence, voltage optimization reduces the voltage of the electricity supplied to equipment, minimizing energy consumption, while remaining within the operating conditions specified by the equipment manufactures. This is illustrated in the chart below, with the pink band reflecting the optimum voltage range for most equipment.

Intrinsic within the design of the Ark Smart Voltage are other power quality benefits, including protection from transients, short term power surges and harmonics, improvements in power factor (unused energy that flows back and forth in the electrical system.)



The Ark will help you:

- Align your electricity supply to the level your equipment is designed to operate most efficient at
- Reduce electricity expenditure and carbon emission by 8 - 14% on average
- Increase business profitability
- Reduce heat within your equipment and extend the lifespan of motors, lightning and appliances.
- Reduce the maintenance cost on your equipment
- Typical Return of Investment of 30 - 50% p.a.
- Hassle free energy savings

Construction

Grain oriented silicon steel (GOSS) core
Cold rolled high efficiency core
High conductivity copper windings
Dry type

Electrical Ratings

Overload Capacity	200% current for 2 minutes 120% for 6 hours
Insulation Value	Class H (180°)
Withstand Voltage	3000V@60sec
Insulation Resistance	100M Ω (DC 500V)
Frequency	50 or 60 Hz
Wave form Distortion	Nil
Fault Level Capavbility	50,000A

Energy Monitoring System

Eniscope 4 Channel	4 Channel (12 Sub-circuits) Realtime energy metering with communication
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Environmental Ratings

Ambient Operating Temperature	0°C to 50°C
Humidity	0 to 100% RH

Voltage

Rated Input Voltage	415V
Maximum Input Voltage	25% above rated voltage
Voltage Taps	0% plus a selection of 4 tapping levels appropriate for each site

Power Quality

Voltage Phase Balancing	Improved via unreferenced star point connections and magnetic pressure
Harmonic Attenuation	Improvement in 3rd and 5th harmonics
Transient Protection	Protection against most common transients and surges
Power Factor	Improvement of 5 to 10% in power factor (assuming no PFC equipment already installed)

Enclosure

Internal Protection Rating	IP21 up to IP65
Enclosure Dimensions	Customized for unit size and site requirements

Testing

Routine Testing conducted on every unit	Insulation/power frequency test (at 3,000V) Voltage ratio No load current No load power Auto-voltage bypass switching
Type Testing conducted in accordance with AS60076.11	Load efficiency test (25, 50, 75, 100, 125% loadings) Temperature rise test

Certification

Complies with AS 60076
NATA Testing and Certification Australia
Office of Fair Trading Certificate of Suitability

Maintenance

Annual visual check and heat scan

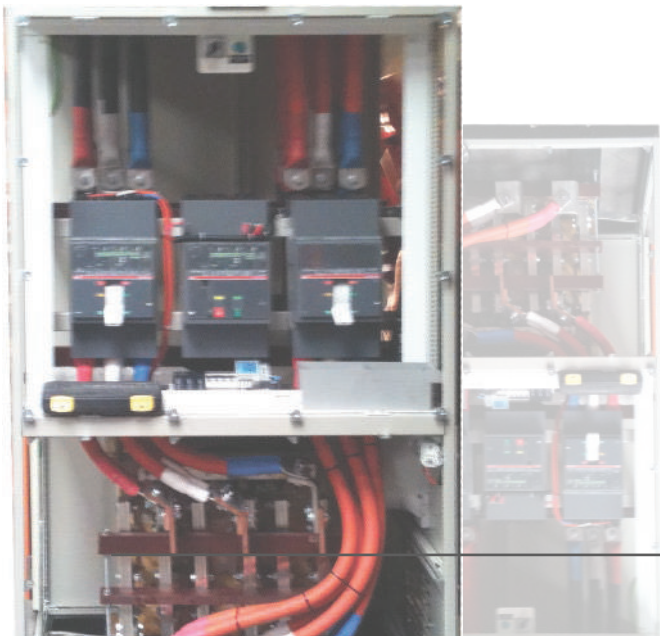
Efficiency

25% load	99.95%
50% load	99.94%
75% load	99.93%
100% load	99.91%

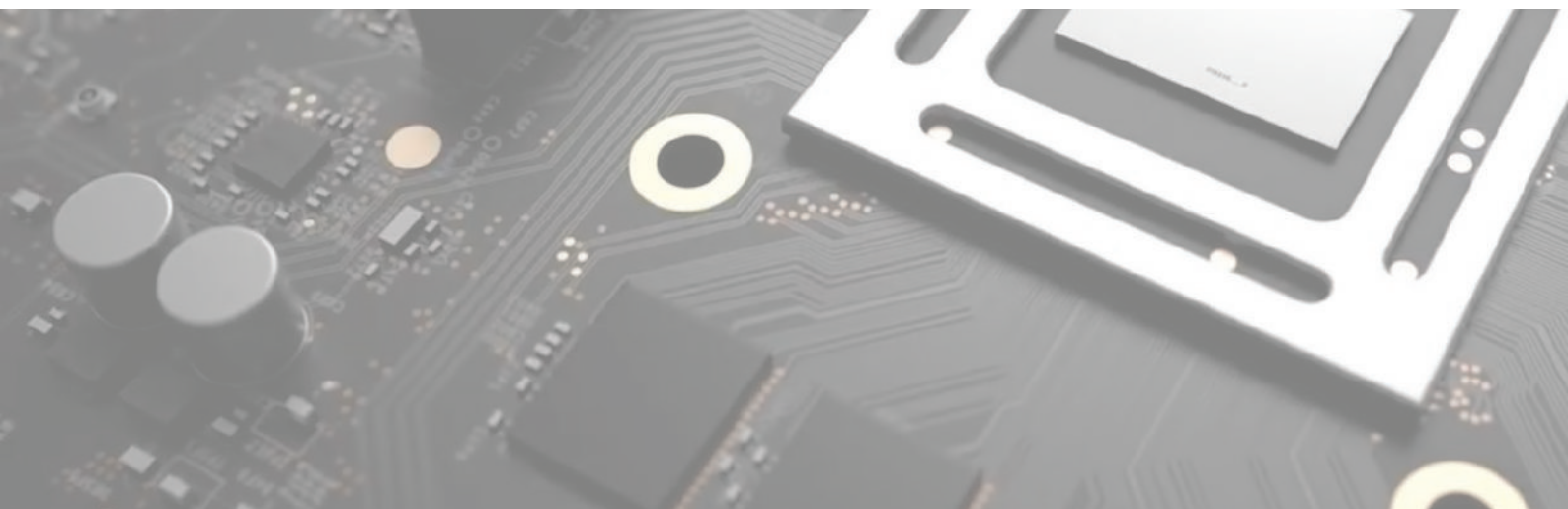
Primary Safeguard

Manual Bypass
(3 X Circuit Breakers/Isolators)
Circuit Breaker protects core component and cabling of installation
Manual Bypass enables quick and safe bypassing of the Voltage Optimization core component

Auto-voltage Bypass
Automatically engages when there are low-voltage events from the supply network

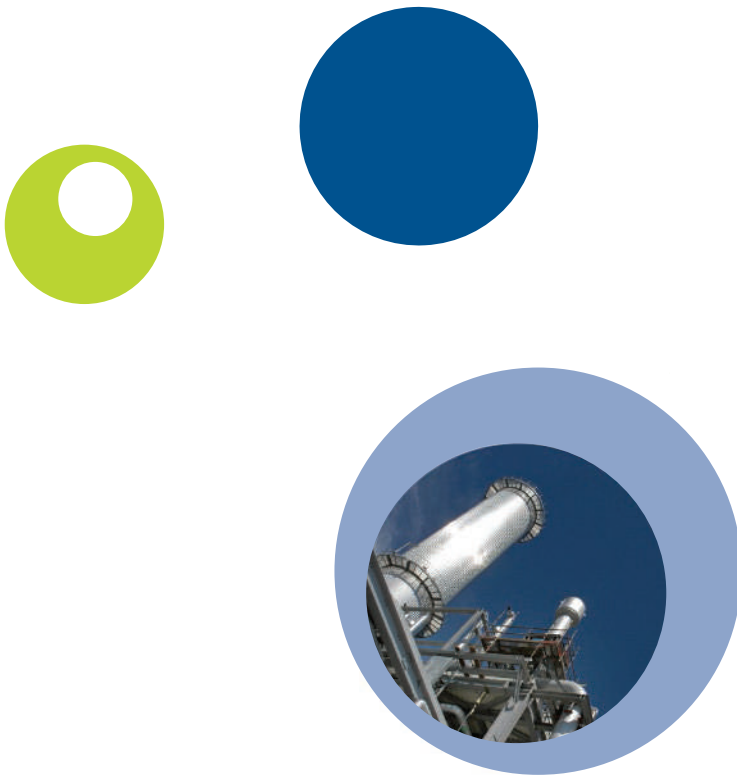


Model Number	Electrical Rating (Amps)
ARK-30	42
ARK-45	63
ARK-60	85
ARK-75	105
ARK-100	139
ARK-115	160
ARK-150	209
ARK-178	250
ARK-200	278
ARK-250	248
ARK-288	400
ARK-300	417
ARK-400	556
ARK-453	630
ARK-500	695
ARK-570	800
ARK-719	1000
ARK-800	1112
ARK-895	1250
ARK-1000	1390
ARK-1152	1600
ARK-1300	1807



Contact Us

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For more information on the Ark Smart Voltage ESU, or to arrange a Proof of Concept at your chosen facility, please contact Arustrik directly

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