| Application | | Trip Class |
|---|---|---|
| Default | | 10 |
| Heavy | | 20 |
| Agitator | | 10 |
| Compressors | Centrifugal | 20 |
| | Reciprocating | 20 |
| | Rotary Screw | 10 |
| | Rotary Vane | 10 |
| | Scroll | 10 |
| Ball mill | | 20 |
| Centrifuge / Decanterbowl / Seperator - extended start needed for sizing | | 30 |
| Bow Thruster | Zero Pitch | 10 |
| | Loaded | 20 |
| Chillers | | 10 |
| Conveyor | Unloaded | 10 |
| | Loaded | 20 |
| Crusher | | 30 |
| Escalator | | 10 |
| Fan | Low inertia <85A | 10 |
| | High Inertia >85A | 30 |
| Feeder - screw | | 10 |
| Grinder | | 20 |
| Hammer mill | | 20 |

| Application | | Trip Class |
|---|---|---|
| Lathe machines | | 10 |
| Mills - flour Etc | | 20 |
| Mixer | Unloaded | 10 |
| | Loaded | 20 |
| Moulding Machine | | 10 |
| Pelletisers | | 20 |
| Plastic and textile machines | | 10 |
| Press, flywheel | | 20 |
| Pump - Submersible | centrifugal | 10 |
| | rotodynamic | 10 |
| | Reciprocating | 20 |
| | Rotary | 20 |
| Pump Jack | | 20 |
| Rolling mill | | 20 |
| Roots Blower | | 20 |
| Saw | Band | 10 |
| | Circular | 20 |
| Screen - vibrating | | 20 |
| Shreader | | 30 |
| Transformers, voltage regulators | | 10 |
| Travelators / Walkways | | 10 |
| Tumblers | | 10 |
| Wood chipper | | 30 |

## Sizing Guide

Minimum current ratings based on typical rated operation currents of motors for the corresponding rated operational powers.
Current rating optimised for kW@400V & hp@440-480V - Ref IEC 60947-4-1:2009 Table G.1

| In Line | | | |
|---|---|---|---|
| IEC | IEC | UL | UL |
| | kW [1] | | HP [2] |
| A [3] | 400V | A [4] | 440-480V |
| | | | |
| 17 | 7.5 | 17 | 10 |
| 22 | 11 | 21 | 15 |
| 29 | 15 | 27 | 20 |
| 35 | 18.5 | 34 | 25 |
| 41 | 22 | 40 | 30 |
| 55 | 30 | 52 | 40 |
| 66 | 37 | 65 | 50 |
| 80 | 45 | 77 | 60 |
| 100 | 55 | 96 | 75 |
| | | | |
| 132 | 75 | 124 | 100 |
| 160 | 90 | 156 | 125 |
| 195 | 110 | 180 | 150 |
| | | | |
| 230 | 132 | 242 | 200 |
| 280 | 160 | 302 | 250 |
| 350 | 200 | 361 | 300 |
| | | | |
| 481 | 280 | 477 | 400 |

| In Delta | | | |
|---|---|---|---|
| IEC | IEC | UL | UL |
| | kW [1] | | HP [2] |
| A [3] | 400V | A [4] | 440-480V |
| | | | |
| 29 | 15 | 27 | 20 |
| 35 | 18.5 | 34 | 25 |
| 41 | 22 | 40 | 30 |
| 55 | 30 | 52 | 40 |
| 66 | 37 | 65 | 50 |
| 80 | 45 | 77 | 60 |
| 100 | 55 | 96 | 75 |
| 132 | 75 | 124 | 100 |
| 160 | 90 | 156 | 125 |
| | | | |
| 195 | 110 | 180 | 150 |
| 230 | 132 | 242 | 200 |
| 280 | 160 | 302 | 250 |
| | | | |
| 350 | 200 | 361 | 300 |
| 481 | 280 | 477 | 400 |
| 610 | 355 | 590 | 500 |
| | | | |
| 690 | 400 | 650 | 540 |

| Trip Class 10 | Trip Class 20 | Trip Class 30 |
|---|---|---|
| AC-53a | AC-53a | AC-53a |
| 3-23: 90-5 | | |
| 3.5-17:90-5 | 4-19: 90-5 | 4-29: 90-5 |
| | | |
| SGY-101 | SGY-103 | SGY-105 |
| SGY-103 | SGY-105 | SGY-107 |
| SGY-105 | SGY-107 | SGY-109 |
| SGY-107 | SGY-109 | SGY-111 |
| SGY-109 | SGY-111 | SGY-113 |
| SGY-111 | SGY-113 | SGY-115 |
| SGY-113 | SGY-115 | SGY-117 |
| SGY-115 | SGY-117 | SGY-201 |
| SGY-117 | SGY-201 | SGY-203 |
| | | |
| SGY-201 | SGY-203 | SGY-205 |
| SGY-203 | SGY-205 | SGY-301 |
| SGY-205 | SGY-301 | SGY-303 |
| | | |
| SGY-301 | SGY-303 | SGY-305 |
| SGY-303 | SGY-305 | SGY-307 |
| SGY-305 | SGY-307 | Call |
| | | |
| SGY-307 | Call | Call |

For more information on how **synergy**™ from **Fairford Energy** can reduce your running costs and lower maintenance bills contact the numbers below;

# synergy™

## a revolution in motor control

**synergy**™

a revolution in motor control

iERS intelligent energy recovery system

For more information on how **synergy**™ from Fairford Electronics can reduce your running costs and lower maintenance bills contact your local distributor:

+ 44 (0)1752 894554

**www.fairford.com**

FAIRFORD ELECTRONICS

Ref: SynGEN_4PAG_0713 (V1)

FAIRFORD ELECTRONICS

# synergy™

a revolution in motor control

## synergy™ Redefining Motor Control

In industry as it is in life there are some people whom have pushed the boundaries of what is possible. These ideas have changed the world and the technology which we use within it. Fairford Electronics was born as a result of one of these individuals and that ethos is still at the core of its business today.

In 1979 Fairford Electronics Ltd was at the forefront of the creation of the industry which is now referred to as the soft starter market.
This industry is now worth an estimated $600 million a year and is growing at an ever increasing pace.

In the early days of this technology Fairford Electronics patented key techniques for use in motor control and supplied this in the form of PCB's and chipsets to companies such as Siemens, GE and ABB.

As the pioneer of this technology it further evolved its offering by designing and patenting the worlds first energy saving motor controller for use in fixed speed applications. This technology is now widely recognised as being a proven solution for use in 3 phase and single phase applications and is being supplied on a global basis.

Today, electric motors consume 65% of all electricity used in industry worldwide with around 60% of these being fixed speed applications, and are a major focus for energy saving initiatives. Electric motors are very efficient at full load, but this efficiency falls away as the motors become lightly loaded.

An Energy Saving Motor Controller constantly adjusts the voltage/current supplied to the motor ensuring that the motor operates at peak efficiency whatever the load. Fairford soft starters are currently used in every conceivable motor application in over 80 countries from Bow thrusters to Oil and Gas to HVAC and Fans. And that's only under the Fairford banner!

We design and manufacture for some of the worlds biggest OEM's and brand label for many additional distributors in their own name. As such we can justly claim to be one of if not the leader in bespoke solutions for the Motor control industry.



"synergy™ is redefining the rule book on motor controller size vs performance. It achieves a 54% decrease in controller size compared to competitor offerings. This performance improvement has been the result of extensive thermal modelling and the introduction of innovative and effective cooling methods. This has been made by the introduction of two patented technologies that cannot be emulated by any other motor controller.

However, synergy™ is not just about size reduction at the cost of performance and features. An industry leading human interface, extensive input / output programmability, and enhanced energy optimising features place synergy at the leading edge of motor control."

**Bob Ching** Product Development Director.

# synergy™

Keep up to date with our product launch at
**www.fairford.com/product/synergy**
You can also follow us via our social media pages

## synergy™ specification

- Up to 100Amps - 195Amps
- 3-phase SCR
- Full motor overload
- Trip class 10 3 x 23 secs or 3.5 x 17 secs 5 starts per hour
- A frames size of 95mm x 270mm x 176mm and 143mm x 318mm x 233mm
- 200, 230, 400, 460 volts
- Allowing for varying frequency 45Hz-65Hz
- IP20 / NEMA 1
- Full automatic set up choose the application and motor size 6 button process
- Control voltages of 24v AC/DC, 110/230VAC
- Enhanced Energy Optimising with Internal bypass
- In Delta / 6 wire connection
- Multiple languages factory set if required
- Inputs / Outputs:
  - 4 x programmable output relays
  - 3 x programmable digital inputs
  - Analogue input / outputs
  - USB for data logging and parameter setting/saving
  - Thermistor
  - Fully field upgradeable
  - Comprehensive data logging 2 year warranty extendable to 5 years
- Fully field serviceable fans

## Energy recovery with Internal bypass as standard

As the innovators and pioneers of the soft start industry, we have long recognised the demand for an energy saving system for fixed speed motors. **iERS** is our patented energy saving system with a combined internal bypass to save energy on lightly loaded motors.

**iERS** reduces the voltage and current supplied to a lightly loaded motor to only allow the motor to consume the exact amount of energy required to maintain the speed at that load. When the motor is at full load the internal bypass reduces the losses produced by the control element. This combined approach enables **iERS** to save more energy in more applications than any other competing technology.

**iERS** has been market proven over the past 10 years and has now reached its latest development realising even greater savings. Applications such as fans, pumps and chillers can typically see savings of around 8-40% of total energy consumption.

## Redefining Motor Control

Fairford has always been at the forefront of any major changes within the industry whether these be technology based or even that of standards and certification. Recently we have been working closely with GAMBICA and with the development of the 'EN50xxx Efficiency of Power Drive Systems' standard and contributing to the EU Eco Design Lot 30 (www.eco-motors-drives.eu) study.
As such we consider that we are in an enviable position to react to any proposed changes that may be relevant.

In 2010 Fairford Electronics Ltd saw that there were some increasing market demands on the motor control industry. Energy saving has always been important in this field however in recent years this has started to take precedent over other aspects. Smaller and more robust units are being sought but with ever increasing levels of functionality but with reduced cost. In November 2010 Fairford started work on the design and development of a new form of motor control that created a synergy between existing soft starter technology and that of Variable Speed Drives. After 6 months of specification and information gathering design of a new technology started.

synergy™ has been created with the needs of the market place and those of specific industries in mind. The first release is size one which will reach up to 100Amps and will be followed by 2 further sizes up to 1800 Amps as a standard offering. It utilises some of the existing features developed by Fairford and incorporates new requirements.