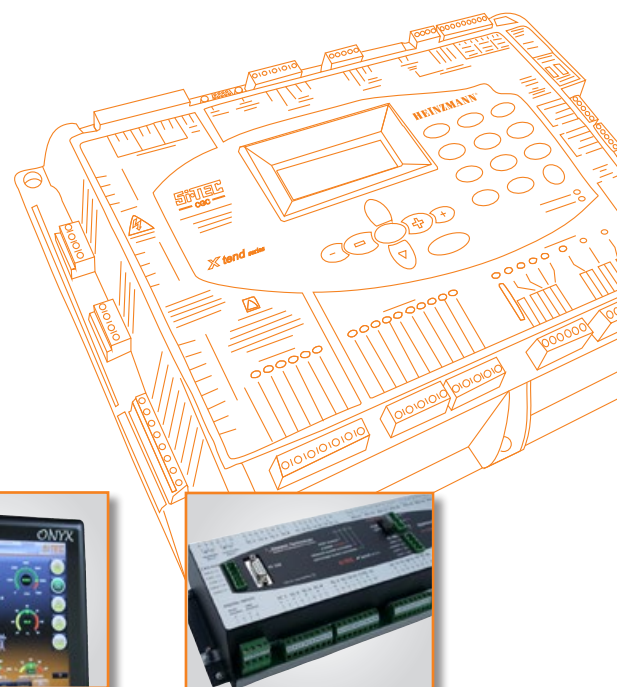




Steam Turbine Controls

HEINZMANN **SiTEC**



Controls



Actuators



Displays



Accessories

EXPERTISE IN STEAM TURBINE & POWER GENERATION CONTROLS

With the acquisition of DAWSON TECHNOLOGY, the HEINZMANN Group has gained a market leader in steam turbine controls and power generation applications. The Australian company has been serving both local and international markets for over 30 years and now operates under the name of Heinzmann Australia Pty Ltd.

Together with steam turbine control solutions, HEINZMANN Australia develops, produces and provides grid-parallel controls, hydraulic actuators and control accessories. HEINZMANN Australia also provides professional engineering and commissioning services.

HEINZMANN Australia is committed to achieving the highest quality standards in every aspect of their process (including design, engineering, manufacturing, sales & after-market service support).

HEINZMANN Australia has attained ISO 9001:2008 quality management standard accreditation.



HEINZMANN AUSTRALIA PRODUCTS



Controls

Controls for various steam turbine applications including generator control and variable speed control applications



Actuators

Electric and hydraulic actuators tailored for steam turbines



Displays

Steam turbine, generator and utility master displays



Accessories

Extensive range of steam turbine control accessories



Software

Smart software for annunciation, configuration and diagnostics

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Services

Installations

Steam Turbine Controls

SI-TEC CONTROL SERIES

Heinzmann Australia Pty Ltd manufactures the exceptional range of Si-TEC controllers for steam turbine applications. The Si-TEC range of controllers integrate seamlessly into the majority of mechanical drive and generator drive steam turbine applications.

Development of the Si-TEC controller family commenced in 1992, and as technology has evolved, several new generations of turbine governors and generator controls have been introduced. Today, more than 4000 Si-TEC systems are in operation worldwide

Coupled with the sale of Si-TEC products, HEINZMANN Australia offers professional engineering and commissioning services, delivering excellence in customer support from project concept through to practical completion.

For detailed product information, please refer to our product data sheets available at: www.heinzmann.com.au/download

HEINZMANN Australia provides:

- ▶ **Condensing & Backpressure Turbine & Generator Controls**
- ▶ **Extraction Turbine & Generator Controls**
- ▶ **Governors for Mechanical Drive Applications**

STEAM TURBINE CONTROLS

HEINZMANN Australia steam turbine controls comprise of the following features:

Key features

- ▶ Precise speed governing
- ▶ Dual redundant MPU inputs
- ▶ Automatic turbine start sequence
- ▶ Comprehensive actuator interface support (incl. HEINZMANN all-electric)
- ▶ Wide range of PIDs
- ▶ Comprehensive AVR interface support
- ▶ Auto synchronising
- ▶ kW control & load share (3-phase)
- ▶ kVAr/PF control & load share
- ▶ Process control (e.g. inlet pressure, exhaust pressure)
- ▶ Actuator/valve linearization curves
- ▶ Flexible configuration
- ▶ User-friendly tuning software (PC tune)
- ▶ Extensive system diagnostics
- ▶ Optional I/O expansion

VARIABLE SPEED APPLICATIONS



ADG Advanced Digital Governor

ADG controllers for steam turbine mechanical drive applications (i.e. pumps, compressors, fans, shredders, etc.). Utilised for constant and variable speed "single drive" application, and for "dual drive" (tandem) load sharing applications.

Si-TEC *Xtend* ADG is available in 2 variations:

- ▶ **ADG-T**
For single steam turbine drive applications
- ▶ **ADG-TT**
For tandem (dual) steam turbine drive applications

GENERATOR APPLICATIONS



CGC Co Generator Control

The CGC is used for condensing and back-pressure steam turbine generator applications.

Digital governor functions are fully integrated with generator control functions (i.e. synchronising, kW load control, kVAr/PF control, process, etc.)

Si-TEC *Xtend* CGC is available in 4 variations:

- ▶ **CGC-T**
Condensing/Backpressure Turbines
- ▶ **CGC-TS**
Condensing Turbines – Split Range Actuators
- ▶ **CGC-TSX**
Condensing Turbines – Split Range Actuators & extended I/Os (via PCU)
- ▶ **CGC-SST**
Condensing/Backpressure Turbines – Split Shaft



CGC-ET Generator Extraction Control

The CGC-ET is used for single controlled extraction steam turbine generator applications. Digital governor functions are integrated with generator control functions (i.e. synchronising, kW load control, kVAr/PF control, extraction, etc.)

Si-TEC *Xtend* CGC-ET is available in 3 variations:

- ▶ **CGC-ET**
Controlled Extraction Turbines
- ▶ **CGC-ETX**
Controlled Extraction Turbines with extend I/Os (via PCU)
- ▶ **CGC-AT**
Controlled Admission Steam Turbine Applications available



GSM - Generator System Master

The GSM is used to control multiple generators for either grid-paralleled, or islanded power generation applications.

Includes auto synchronising, import/export control, kW & kVAr control, grid volt control, kVA limiting, true time error correction, etc.

Si-TEC *Xtend* GSM is available in 2 variations:

- ▶ **GSM-T**
For master control of steam turbine generators
- ▶ **GSM-BTB**
For bus tie breaker control

Actuators

HEINZMANN ACTUATORS

For more than 100 years, HEINZMANN has been developing and manufacturing high-performance actuators. The portfolio encompasses electric actuators for any type of turbine or engine, for original fitment, or retrofitting.

Recognised for their fast and precise performance, HEINZMANN actuators are renowned for their robust and reliable design - reflecting the highest quality demands we make on our products.

HEINZMANN Australia has developed a range of mechanically and electrically controlled hydraulic amplifiers capable of providing the force to operate the control valve of steam turbines or fuel control linkages of large reciprocating engines.

HEINZMANN Australia provides:

- ▶ **Electric Rotary Actuators with Gearing**
- ▶ **Hydraulic Actuators Mechanically or Electrically Controlled**

ELECTRIC ACTUATORS

The powerful HEINZMANN range of actuators have been extensively applied on turbines where forces up to 180 Nm are required to control the fuel rack or fuel metering valves. This series of gear-type all-electric actuator is based on a DC disc motor and gear transmission, with options for 36° or 42° travel.

Key features

- ▶ Easily fitted to any turbine
- ▶ Proven reliability and long-life cycle
- ▶ Covering any field of application



StG 16/30/40 Electric Actuator

Electric actuators used for steam turbine applications (typically positioning hydraulic amplifier/pilot valve). Fast and efficient performance with position feedback.



StG 64/90 Electric Actuator

Electric actuators for steam turbine applications (typically direct throttle positioning of steam governor valve). Fast and efficient performance with position feedback.

HYDRAULIC AMPLIFIERS

HEINZMANN Australia provides hydraulic amplifiers for large steam turbine control valve actuation/positioning, via mechanical input (i.e. with electric actuator) or electrical input (i.e. with in-built electro-hydraulic actuator).

Key features

- ▶ Minimal overshoot
- ▶ Shock resistant cast iron casing
- ▶ Billet power piston & output shaft
- ▶ Output shaft support bush (oil fed)
- ▶ Wear preventative coating for extended service life



HA14M/HA22M Hydraulic Amplifiers

The mechanically controlled HA14M/HA22M amplifiers are pilot operated linear servo actuators, which interface with the actuator/governor output shaft via a mechanical linkage.



HA14E/HA22E Hydraulic Amplifiers

The electrically controlled HA14E/HA22E amplifiers are pilot operated linear servo actuators, which are used in conjunction with the Si-TEC *Xtend* CGC/CGC-ET governor (0 – 200 mA output), Woodward electronic governors, etc..

I-H CONVERTERS

The HPC (Hydraulic Pressure Converter) is an electrohydraulic pressure-regulating control valve designed for use in positioning single-acting steam turbine valve servos. The HPC has been specially designed with extra attention to accuracy, response, resolution and is ideal for both inlet and extraction steam turbine control valves relating to turbine speed, load and process control.

Key features

- ▶ Precise hydraulic pressure control
- ▶ Designed for hazardous location applications



HPC Current to Hydraulic Pressure Converter

"Proportional" current (4-20 mA) to hydraulic pressure converter (e.g. 100 - 500 kPa) for turbine applications that require precise hydraulic pressure control for servo valve positioning.

The reliable robust design of the HPC with its IP66 corrosion-resistant housing, super strong rotary actuator driving our linear pilot valve makes it ideal for the most challenging of applications where dirty or contaminated oil may be present.

Displays & Control Accessories

SYSTEM COMPONENTS

HEINZMANN Australia is your single source partner, providing all system components for complete, fully integrated solutions from a single supplier.

In addition to controllers and actuators, we develop, produce and supply remote displays (for metering of generator parameters or temperature readings), temperature scanners, I/O units and overspeed protection devices.

HEINZMANN Australia provides:

- ▶ Generator Displays
- ▶ Utility Master Displays
- ▶ Temperature Displays
- ▶ Temperature Scanners
- ▶ I/O Expansion Modules
- ▶ Speed Sensor Expanders
- ▶ Smart Software & Diagnostics

DISPLAYS

The HEINZMANN Australia range of displays provides comprehensive and user-friendly information for operators, providing a generator metering panel, along with monitoring & protection.



ONYX Touch Screen Display

12 or 15 inch capacitive touch screen display for Si-TEC *Xtend* controls. Clear and precise engine/generator information. Multiple user logins for security. Includes start/stop, CB control, raise/lower, auto/manual and data trending functions.



Opal II Generator Display

Remote display of the Si-TEC *Xtend* control (via CAN bus interface). Metering of essential generator parameters that include generator "voltage", "frequency", "real power", "power factor" (lag & lead). Includes overspeed protection.



Ruby Display

Basic remote display for Si-TEC *Xtend* TGC, CGC & GSM controls (via CAN bus interface). Metering of essential parameters. Wide range of alarm displays and other annunciation.



TDU Temperature Display

Remote display of the temperature scanner (via CAN bus interface). Display of all temperature readings, with navigation based on either manual scroll keys or via auto scrolling of temperature readings.

CONTROL ACCESSORIES

HEINZMANN Australia also provides a range of control accessories that seamlessly integrate with the Si-TEC range of controllers. These include remote I/O modules for digital and analogue I/O expansion. Also included are stand-alone devices such as MPU signal expanders, temperature scanner (32-ch) and the new Sapphire II protection device.



Temperature Scanner

Temperature monitoring unit up to 32 channels (T/C, RTD or "Combo" units). Also includes alarm output and Modbus RS485 comm. port for remote (DCS) monitoring.



Mini RIO Digital I/O Expansion Module

Expanded remote digital I/O unit for Si-TEC *Xtend* control (via CAN bus). User configurable logic inputs and relay outputs for a wide range of functions.



MPU Speed Sensor Expander

MPU signal isolator with 1-channel input/3-channel output for turbine speed readout. Also includes "failsafe" relay output for MPU signal failure.



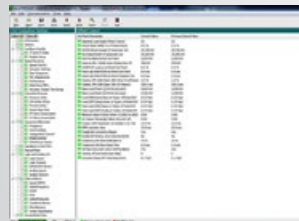
Sapphire II Dual Redundant Overspeed Trip

Precise "overspeed protection" detection for optimum safety of steam turbine. Includes on-line simulation testing & trip valve health monitoring to verify system functionality and integrity.

Software & Diagnostics

SOFTWARE SOLUTIONS

HEINZMANN Australia delivers smart software for data view, monitoring, configuration and diagnostics of steam turbine control and generator control systems.



Configuration Software - pcConfigure

User-friendly configuration for Si-TEC control parameters, along with storage, retrieval and printing of parameters.

pcConfigure provides the facility to edit all set points, save to PC file, upload and download to Si-TEC modules, provide hard copy of the Si-TEC controllers and edit accumulated values.



Tuning Software - pcTune

Complete turbine and generator control system tuning software, with graphical user interface and intuitive user-friendly functions.

pcTune is a real time tuning and diagnostic tool, providing high-speed data and graphic updates, including extensive operating parameters and all PIDs. Data may be saved, loaded, reviewed, exported, etc.. Additional screens provide instrument panels, dead bus operation, and much more.



Temperature Scanner Software - pcScan

pcScan is a dedicated program for Si-TEC temperature scanning modules providing configuration, and real time data graphics for diagnostics.



Logging Software - DataView

DataView is a dedicated data logging and monitoring program developed specifically for the Si-TEC range of controllers. The system has capability to support 99 data points for 24 nodes on a 400 msec update rate for all data, making it ideal for logging, trending & archiving data. Data can be exported as CSV (i.e. Excel) file.



Data Hub Gateway

Data Hub allows high-speed Ethernet Modbus TCP/IP communication of up to 8 Si-TEC Xtend control modules simultaneously per Data Hub unit. Facilitates remote logging, diagnostics and turning via (ADSL) networks.

For detailed information please refer to product information on www.heinzmann.com.au

Design & Production

CONTROL SYSTEM DESIGN & PRODUCTION

HEINZMANN Australia designs and assembles all steam turbine control and generator control systems in-house. The entire process including hardware and software design, assembly and testing takes place in our Brisbane premises.

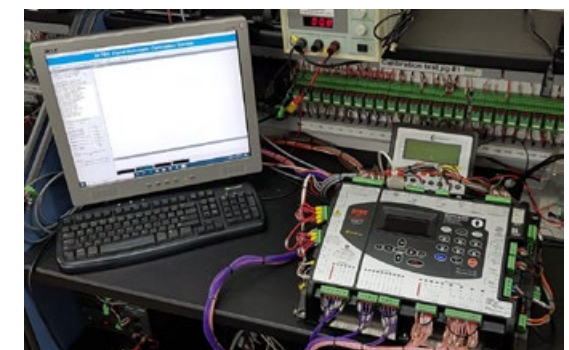
Our qualified team of engineers and state of the art production machines and test equipment ensure reliable and high quality products.

HEINZMANN Australia provides:

- ▶ Entire process including design (hardware & software), assembly, testing, sales, and service conducted in-house.
- ▶ "Ultimate control" over quality which guarantees the customer consistently gets a product of very high quality and reliability.
- ▶ 100 % testing of all circuit boards prior to assembly.
- ▶ Test conformance report issued to customer.
- ▶ Test & calibration equipment is NIST accredited (ISO/IEC 17025 compliance).



Local in-house R&D at HEINZMANN Australia Brisbane facility



Test and calibration equipment for testing all products

Services

COMPLETE R&D AND TECHNICAL SUPPORT

HEINZMANN Australia provides a number of services to support its growing range of products. We place a high priority on back-up support to our customers including a range of in-house services and national/international on-site support.

HEINZMANN Australia provides:

- ▶ **Complete design performed by our R&D engineers.**
- ▶ **Si-TEC *Xtend* software developed and tested on simulators and real engines.**
- ▶ **Windows® software tools developed in-house.**
- ▶ **R&D is an on-going effort with continuous focus on development of new features through valued feedback & innovative ideas.**
- ▶ **Diagnostics/tuning may be performed remotely via Data Hub (Ethernet gateway).**
- ▶ **Secure and quick access, ensuring diagnostics in a safe controlled environment, and reducing downtime.**

QUALIFIED & EXPERIENCED TEAM

Our team are highly trained, many of which have numerous years of hands-on experience over a wide range of products and applications. We enjoy the opportunity to work with consultants, authorities and end users in the early stages of system design to ensure the best possible solution is achieved for any given application.

Generator Application Design

HEINZMANN Australia can assist customers and consultants with best practice application engineering, and design and integration of steam turbine control systems to suit specific customer needs. Once the operating criteria for the specific application is defined, the control system can be tailored to customer requirements, minimising initial capital costs and providing maximum plant availability, while reducing maintenance and running costs.

Power Generation System Design

Many applications have a range of different generator types. This may be a mix of prime movers, be it turbines and/or reciprocating engine driven generators, alternators of different ratings in the active and reactive power capacities, connection to split busses, multiple parallel utility grid feeders. Combine this with changing operating criteria which may be preferred fuelling systems, split bus system loadings, process control, and process steam requirements. HEINZMANN Australia can assist with design to provide the most suited generator control system for the project.

Training

HEINZMANN Australia provides comprehensive training on our full product range at our Brisbane facility. Our training packages can also be customised to suit specific client requirements and includes working with our generator system.

We also offer on-site training services.



Trouble Shooting 'ON-LINE'

Where the optional hardware is installed, we can access the controller remotely and provide detailed technical support to your site engineers.

Detailed product information is available at:
www.heinzmann.com.au/products/software/data-hub-gateway

Trouble Shooting – Software

We have a range of proven software packages which greatly assist in trouble shooting.

Detailed product information is available at:
www.heinzmann.com.au/products/software/dataview

Retrofit Engineering

HEINZMANN Australia has successfully designed retrofit packages and solutions for many makes of steam turbines, gas turbines, diesel engines and gas engines. In many cases we manufacture all components in-house in our advanced machine shop.

Services and Repair

HEINZMANN Australia provides a complete service and repair facility for all its manufactured products from our Brisbane facility.

Installations

INSTALLATION EXAMPLES

HEINZMANN Australia has more than 4000 Si-TEC Control Systems in operation throughout the world. This includes steam turbine digital governors, generator and grid-parallel controls, hydraulic amplifiers, control accessories and smart software tools. We cover an extensive range of steam turbines used in various applications including sugar, ethanol, palm oil, pulp & paper, refineries, oil & gas, mining and utility generation.

Dresser-Rand – 26 MW T/G

Condensing Extraction T/G
(Isis Sugar Mill Co-Gen Plant, QLD Australia)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-ETX, Opal II Display & HEINZMANN StG 30 Actuators



Elliott – 3.5 MW T/G

Condensing T/G
(New Britain Palm Oil, PNG)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-T, Opal II Display & HEINZMANN StG 40 Actuator



SNM (Shin Nippon) – 16 MW T/G

Condensing Extraction T/G
(URC Sonedco, Sugar Co-Gen Plant, Philippines)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-ETX, Opal II Display, HEINZMANN StG 16 Actuators & HA22M Hydraulic Amplifiers



NG Metalurgica – 30 MW T/G

Condensing Extraction T/G
(RSSC Simunye Mill, Swaziland)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-ETX, Opal Display & HA22E Hydraulic Amplifiers



G.E. – 11 MW T/G

Condensing T/G
(Newcrest Lihir Geothermal Plant, PNG)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-TS, Opal II Display & Parker I/H Converters



Siemens – 39 MW T/G

Extraction Backpressure T/G
(Wilmar Sugar - Invicta Mill, QLD Australia)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-ETX, Opal II Display & Voith I/H Converters



Shinko – 10 MW T/G

Backpressure T/G
(Nghe An Sugar Mill, Vietnam)
Equipped with HEINZMANN Si-TEC *Xtend* CGC-T, Opal II Display, HEINZMANN StG 30 Actuator



HEINZMANN Group

*Quality & Precision
since 1897*

*The Group started in 1897 with
Heinzmann GmbH & Co. KG,
and now includes
HEINZMANN UK,
HEINZMANN China,
HEINZMANN Korea,
HEINZMANN India,
HEINZMANN Australia,
HEINZMANN AUTOMATION,
REGULATEURS EUROPA,
and CPK Automotive
as member companies.*

*The HEINZMANN Group
operates numerous global
subsidiaries, including eight
production sites and an
international distributor network.*

*Our product portfolio comprises
engine management system
solutions, as well as exhaust
gas aftertreatment solutions,
for industrial combustion
engines and turbines. It also
encompasses automation
systems, primarily for the
shipping industry.*



● Subsidiaries ● Distributors and dealers

HEINZMANN Australia – Specialists in Steam Turbine and Engine Generator Controls

HEINZMANN Australia are experts on steam turbine and engine generator controls and have been a member of the HEINZMANN Group since 2014.

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