

# Capability Statement





# It's time to clear the air

*Exhaust Control Industries (ECI) has been inventing and developing innovative exhaust treatments and noise pollution control technology for over 40 years.*

Since 1982, ECI has fabricated and installed exhaust treatment systems in Australia, South Pacific and Southeast Asia to address local and international emission requirements, safeguarding people and the environment.

ECI's core business includes design, manufacture and installation of diesel and gas power generation equipment, plant rooms acoustic treatments, attenuators, canopies, container solutions, bespoke fuel systems, thermal insulation, waste heat recovery, glasshouse CO2 enhancement, and vibration isolation.

ECI delivers an end-to-end solution, which provides front-end engineering design and consultation, through to fabrication, delivery and installation.

We are the emission industry experts in the development of new environmental technology and industry leaders in aftermarket emission solutions.

ECI partners with consultants, builders, suppliers and industry leaders to provide commercially viable turnkey solutions that address environmental challenges.

ECI works closely with regulatory bodies such as the EPA, federal, state and local governments, and the government advisory body, Clean Air Society of ANZ, to provide compliant future-proof installations. We are proud to have developed technologies adhering and exceeding strict US Tier 4 Final emissions regulations: reducing hydrocarbons, carbon monoxide, diesel particulate matter and NOx from diesel and gas-powered equipment.

The world is changing and so are our environmental standards. Stay ahead of the curve with leading-edge environmental health & safety technology and stay compliant with current air quality requirements, so you are ready for whatever the future holds.





# Our products

*Creating a cleaner workplace results in increased productivity, efficiencies, profitability and adherence to current and future changes in regulations.*

ECI provides an extensive, highly-developed range of products, which are integrated into varying solutions for fuel, sound and exhaust pollution challenges.

We continue to innovate and develop a range of customised solutions that improve the environment whilst maintaining critical product performance

All ECI products can be retrofitted or applied to new pre-packaged solutions, reducing your Global Warming Potential (GWP).

# Exhaust Silencers and Components

*ECI design and manufacture high performance exhaust silencers and components that can be self-assembled, or we can install a fully customised exhaust system into new or existing applications.*

We provide an engineered solution for all off-highway diesel and gas engines used in commercial and industrial applications, as well as mobile plants across all industry sectors.

ECI designs packages that allow maximum engine performance with the least amount of impact on the ambient environment – addressing OEM engine requirements, protecting equipment warranties and ensuring compliance with regulatory bodies.

Our solutions can include additional safety features incorporating ECI thermal insulation products such as heat shrouds, safety guards, exhaust blankets, textile wraps and encased insulated lagging.

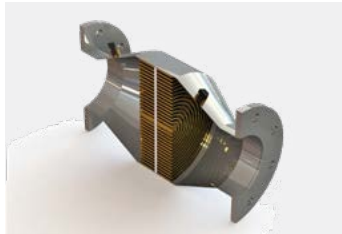
Australia's industry leader for industrial exhaust systems for four decades, providing:

- Intake and Exhaust Silencers
- Components - Piping, Flanges, Gaskets, Mounts, Bends and Discharge Cowls
- Thermal Insulation Products
- Supporting Heat and Acoustic Treatments to Plant Rooms and Risers
- Full Design Engineering
- Installation Service



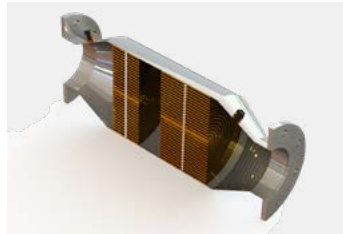
# Emission Treatment Options

*Reducing harmful emissions in diesel, chemical and industrial operations, ECI is the major producer of universal catalytic converters and direct fit models in the APAC region. Customised options are available in the design of diameter, length, cell density, wash coat type and loading.*



## **Diesel Oxidation Catalyst (DOC)**

A purifier designed to reduce harmful gases such as carbon monoxide (CO), hydrocarbons (HC) and diesel particulate matter from diesel engines, forklift trucks, generators, stationary engines, mobile plant and off-highway vehicles. A DOC is your entry level emission reduction solution.



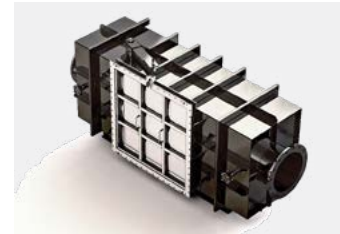
## **Predator™ Particulate Oxidation Catalyst (POC)**

Open filter structure that traps up to 60% particulate matter in diesel and gas engines, as well as treating Carbon Monoxide (CO), Hydrocarbons (HC) reductions.



## **Armour Tech™ Diesel Particulate Filters (DPF)**

A filter specifically designed to further reduce harmful emissions in areas to residential populations, workers and sensitive environmental workplaces. These self-cleaning units remain active for thousands of hours, and provide controlled decreased particulate emissions. Available in silica carbide or mullite. Our DPFs are available for passive or active regeneration.

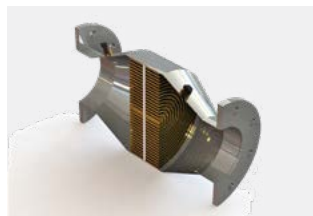


## **Selective Catalytic Reduction (SCR) for NOx Abatement**

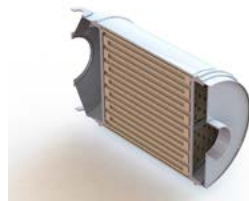
A bespoke system designed to measure, manage and reduce NOx, which is the major contributor to smog and acid rain.

The SCR system works by introducing ammonia (NH<sub>3</sub>) into the exhaust stream, when it combines with oxygen (O<sub>2</sub>) and NOx, it creates a chemical reaction within our specialist catalyst that results in up to 98% reduction in NOx. Therefore, harmful greenhouse gas emissions are converted to harmless nitrogen (N<sub>2</sub>) and water (H<sub>2</sub>O).

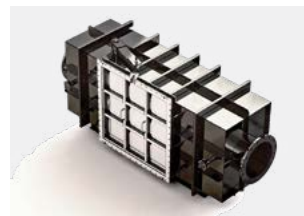
# Tier 4 Emission Treatment



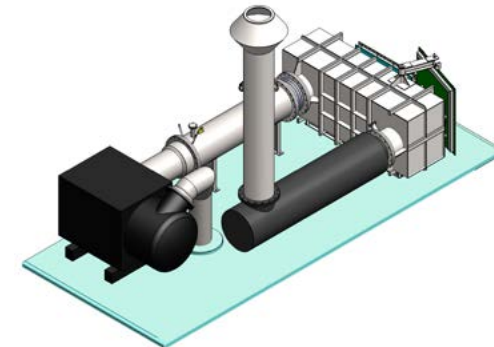
DOC



DPF Active & Passive



SCR



Tier 4 Solution

## ECI Tier 4 Package - Preparing For a Cleaner Future

US EPA Tier 4 and Euro 5 regulations are some of the most stringent in the world. ECI technologies are designed to meet these strict regulations, making ECI the emissions experts across APAC.

ECI is at the forefront of reducing harmful emissions from diesel and gas engines; providing tailored solutions that exceed current regulatory requirements.

An ECI Tier 4 system combines Selective Catalytic Reduction (SCR), Diesel Particulate Filter (DPF) and Diesel Oxidation Catalyst (DOC). It is the most effective way to reduce emissions, exceed today's regulations and meet future requirements, which are fast approaching.

Combined with an ECI Continuous Emissions Monitoring Systems (CEMS), reports and real-time emissions data with live logging are produced. Exceed your local EPA requirements and future proof your operations with the best available technology, meeting your General Environmental Duty (GED).

## Tier 4 emission standards - Engines above 560kW. g/kWh (g/bhp-hr)

Year	Category	CO	NMHC	Nox	PM
2011	Generator sets > 900kW	3.5 (2.6)	0.40 (0.30)	0.67 (0.50)	0.10 (0.075)
	All engines except gensets > 900kW	3.5 (2.6)	0.40 (0.30)	3.5 (2.6)	0.10 (0.075)
2015	Generator sets	3.5 (2.6)	0.19 (0.14)	0.67 (0.50)	0.03 (0.022)
	All engines except gensets	3.5 (2.6)	0.19 (0.14)	3.5 (2.6)	0.04 (0.03)

# Fuel Systems

*ECI's turnkey fuel systems for power generation and emergency diesel fire pumps. Provided as a full installation or as components only, all systems are custom designed in house to suit your individual specification, site requirements and relevant industry standards.*



## Above Ground Fuel Storage

ECI provides a full range of diesel fuel storage tanks to meet your application. From stand-alone fuel cubes and day tanks, bulk, custom-packaged and fire-rated bulk storage tanks, ventilation treatments and remote fuel fill cabinets. We can design, supply and install a compliant system to your specifications.



## Underground Fuel Storage

When large volumes of fuel storage are required for emergency diesel engines, ECI can provide a full turnkey package that meets with local EPA and state regulations, as well as installation in accordance with governing Australian Standards for dangerous goods.



## Fuel Transfer and control

ECI provides design, manufacture and installation of all associated plumbing, pumps, filtration, cabinets, remote fill connection, fuel logic, signage and PLC integration equipment to deliver a seamless transfer from fuel storage to engine. We can also incorporate fuel polishing systems, redundancy, leak and overfill protection into our designs, for a safer work environment.



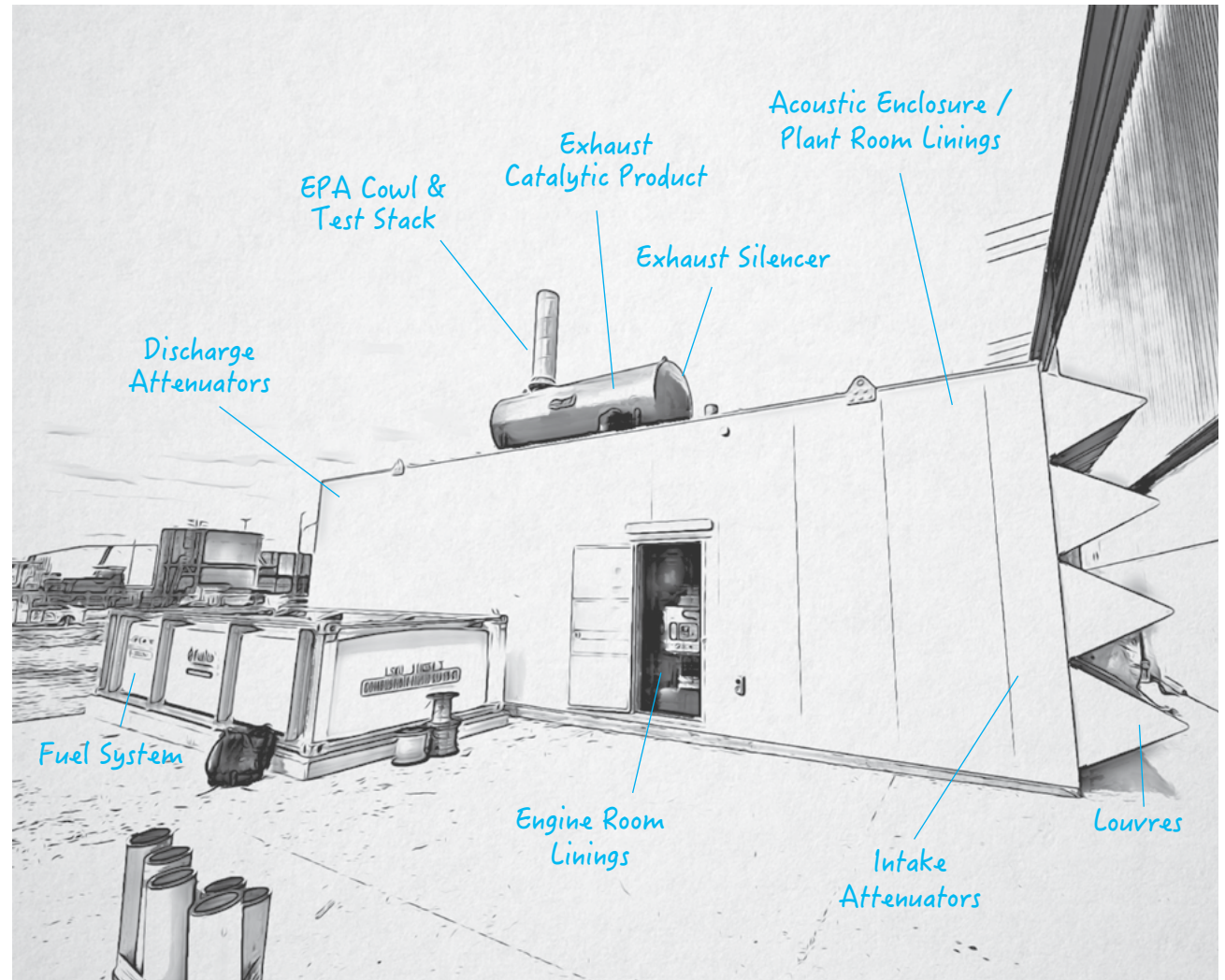
## Fire Detection

Automated monitoring, shutdown, alarm and isolation in the event of fire or flame. These systems are applied to acoustic canopies, generator containers and industrial plant rooms.

# Noise Reduction Products

Pollution doesn't just come from exhaust emissions. ECI provides solutions to further reduce noise and sound outputs. Enclosures, ventilation silencers, acoustic doors and linings, noise barriers, paneling and noise attenuation louvres reduce outputs to acceptable levels.

- Custom engine canopies and containers
- Plant rooms for generators, compressors and diesel fire pumps
- Acoustic barriers, linings and treatments
- Silencer cowls for exhaust breakout
- Attenuators and plenums
- Canopies also available in modular form for assembly onsite





# Large Projects and Installations

*ECI solutions are trusted by large engine OEMs and corporations worldwide - used in highly sensitive installations for governments, mining, corporations, techs and storage.*

ECI provides an extensive range of products for fuel, sound and exhaust pollution. We have invented and developed a range of customised products that improve the environment whilst maintaining critical engine performance; providing solutions that meet business needs, emissions targets, environmental requirements and the health and well-being of people.

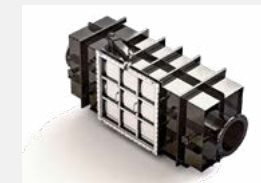
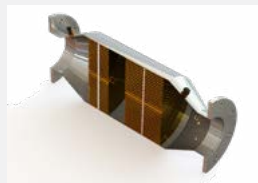
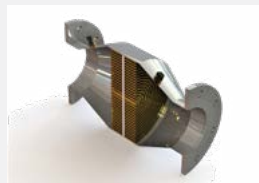
Cogen, Trigen and Waste Heat Recovery Options Waste heat from diesel and gas generators is recovered and used for making steam or hot water in hospitals, commercial buildings and power plants. ECI manufactures a comprehensive range of heat recovery systems to the AS 1210 standard. Complete integrated packages are available including the total mechanical installation of the generator set and its ancillary equipment.



# Emission Reduction Treatments



## Maximum Emissions Reduction\*



**Diesel Oxidation Catalyst**



**Particulate Oxidation Catalyst**



**Diesel Particulate Filter**



**Catalysed Diesel Particulate Filter**



**Selective Catalytic Reduction**

Hydrocarbons (HC)

**80%**

**85%**

**60%**

**85%**

Carbon Monoxide (CO)

**90%**

**95%**

**60%**

**95%**

Particulate Matter (PM)

**20%\***

**60%\***

**99%\***

**99%\***

Nitrogen Oxide (NOx)

**99%\***

\* Up To Maximum Levels - results may vary based on application.

# Project Partners

*ECI provides a full service: Front-End Engineering Design (FEED), consultation, through to fabrication, delivery and installation. We deliver noise and pollution control solutions for small and large projects.*

We partner with Equipment OEM's, consultants, building corporations and industry leaders to provide commercially viable turnkey solutions that address environmental challenges.

ECI provides the most practical emissions packaged solution that will reduce operational and installation costs, as well as exceed EPA, site and local council requirements. Through continued development and testing, we deliver the most suitable design specifications using the most effective, reliable products on the market.

ECI is the recognised packaging leader in emissions and air pollution control throughout Australia, the Pacific and South East Asia. We deliver compliant future-proof installations for our partners.



# Our proven and extensive capabilities



- ✓ **Commercial installations with diesel and gas engines** of exhaust emission treatments, including trigeneration
- ✓ **SCR treatments** used in urban areas, universities, datacentres, power stations, commercial & residential buildings, and critical infrastructure. Providing regulatory compliance up to Tier 4 standard.
- ✓ **Diesel retrofit** projects for tunnel use, plant equipment and on-highway transport vehicles
- ✓ **Acoustic treatments** for urban utilities, warehousing and logistics operations
- ✓ **Power generation installations in commercial buildings** with exhaust emission treatment options
- ✓ **Datacentres and Communication Centres packaging and emissions treatments**
- ✓ **Power generation installations in Hospitals and Aged Care** with exhaust emission treatment options and acoustic solutions
- ✓ **CO2 generation for commercial hot houses using gas power generation**, providing significant operating cost reductions to commercial growers
- ✓ **Commercial diesel power stations** fitted with NOx abatement treatment up to 170 Megawatts
- ✓ **Aquaculture DPF Solutions** to limit carcinogenic exposure to pens, tanks and growing ponds
- ✓ **Marine Silencer Packages and IMO3-compliant emissions treatments**
- ✓ **Underground mining** with diesel particulate filters for plant equipment and vehicles
- ✓ **Construction phases of underground tunnels** retrofitting of exhaust treatments to plant equipment, in order to protect operational staff
- ✓ **SCR solutions for OEM engine test cells** for clean engine testing as required by governments internationally
- ✓ **Commercial and residential towers** providing SCR and oxidation catalyst solutions
- ✓ **Remote power stations** packaging and emissions treatments
- ✓ **Fuel system fabrication** of bulk tanks, base tanks, day tanks, PLC automaton, polishing systems - AS1940 compliant site installation
- ✓ **Landfill gas sites** with AS1210 and AS1375 certified explosion-resistant silencers
- ✓ **Eco2 Pro CO2 Capture** gas engine utilisation treatments to enhance the productivity and profitability of green houses for growers.
- ✓ **Cogen, Trigen & waste heat recovery from diesel & gas generators**

Safeguarding your people, our environment and the future.

We are committed to continually improving the environment and are proud to have developed technologies that reduce carbon and greenhouse gas emissions worldwide.

# Industries and Applications

*ECI designs, fabricates, installs and services applications across APAC, providing noise and emission solutions to all forms of industry:*

- Aged Care
- Agriculture
- Aquaculture
- Commercial & Residential High-Rise Buildings
- Construction
- Data And Communications Centres
- Defence
- Education
- Finance
- Food And Beverage
- Gas Turbine
- Government
- Health
- Industrial
- Marine
- Materials Handling
- Mining
- OEM Packaging
- Oil & Gas
- Power Generation - Standby, Prime, Critical & Continuous, Landfill, Peak Lopping & Demand Response
- Pumping & Dewatering
- Quarrying
- Rail And Allied Services
- Transit Buildings - Airports, Stations, Terminals
- Transport Test Facilities
- Tunnelling Solutions
- Utility - Power, Water, Gas, Sewerage & Telecommunications
- Warehousing & Distribution
- Waste & Landfill Power Generation



*Australian manufactured, owned and operated  
– delivering our innovation and expertise across  
Australasia, South Pacific and Asia.*



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