

AERIS ENVIRONMENTAL LTD

ABN 19 093 977 336

Annual General Meeting 2015





Mr Maurie Stang

Non Executive Chairman



Core Technology Platforms

- ✓ **SMARTENERGY** delivers validated energy savings and improved efficiency across air-conditioning and refrigeration systems, with immediate cash flow improvements.
- ✓ **SMART COATINGS** prevent mould and bacteria growth for the life of the product with both OEM and in-field applications.
- ✓ **SMART WATER** leads to the remediation of biofilm in circuits, including beverage and brewery.
- ✓ **SMART SURFACE** disinfection solutions have proven long-term residual efficacy.
- ✓ **SMART POLYMERS** have permanent microbial resistance, whilst being environmentally-friendly.



Financial Snapshot

Aeris Environmental Ltd

Stock Exchange:

Share price (26 November):

Shares on issue:

Market capitalisation (26 November):

AEI:ASX

45 cents

151,428,722

\$68.14 Million

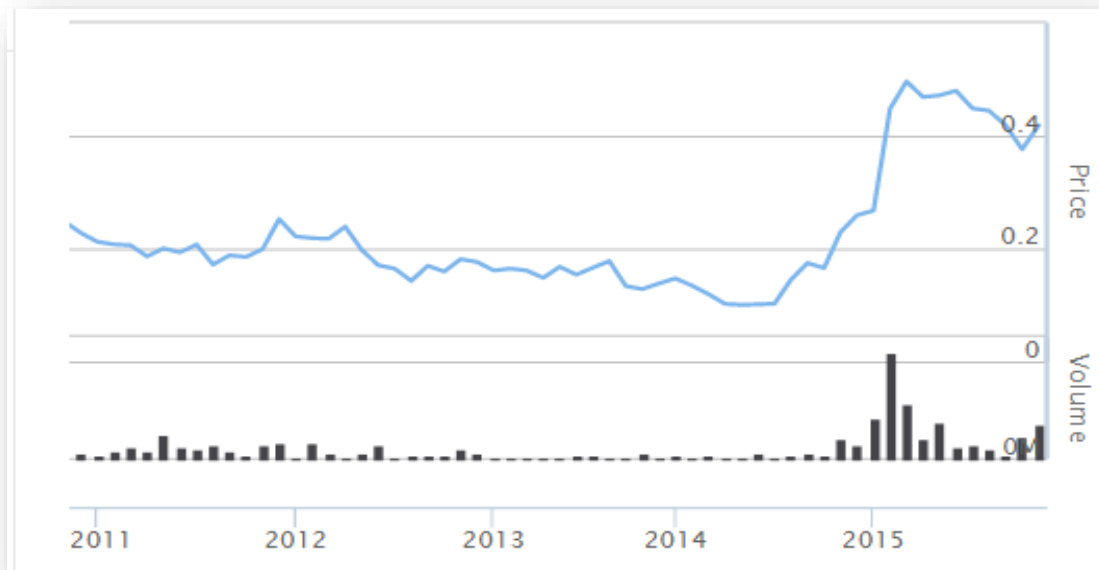
Financial:

	2015	2014
	\$	\$
Income	874,389	487,121
Expenses	(2,891,301)	(1,555,014)
Loss after income tax	(2,016,912)	(1,067,893)
Profit / (loss) from discontinued operations	-	-
Net Loss for the period	(2,016,912)	(1,067,893)

- ✓ Year-on-year revenue growth of 64% to \$800,886
- ✓ Year-on-year cash receipt increase of 94% to \$820,000
- ✓ Sales pipeline in excess of \$10,000,000, with continual successful customer engagement
- ✓ Cash-on-hand of \$7,500,000 representing approximately 36 months of cash at current expense burn rate

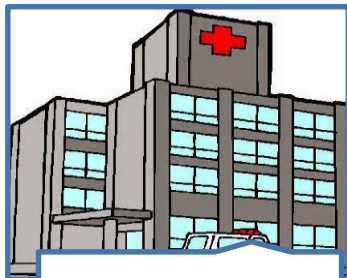
Creating Shareholder Value

AERIS ENVIRONMENTAL LTD. ORD.



- ✓ Total capital raised of \$10,025,444 through the issue of 32,792,018 shares in two tranches.
- ✓ Raised significant capital and successfully broadened its shareholder base to now include leading institutions.
- ✓ Shareholder approval sought for Directors to convert \$1,500,000 million of the Director loans into Aeris shares at the last placement price of \$0.50 per share.

Priority Vertical Markets



Health Care



Hotel



Retail



Commercial



REIT/Facilities

AerisGuard™ Cleaners

AerisGuard™ Bioactive
Enzyme Coil Cleaner

AerisGuard™ Bioactive
Surface Cleaner

AerisGuard™ Treatments

AerisGuard™ Bioactive
Coil Treatment

AerisGuard™ Bioactive
Filter Treatment

AerisGuard™ Bioactive
Surface Treatment

AerisGuard™ Bioactive
Water Treatment

AerisGuard™
Condensate Pan Tablet

Aeris Sealants and Coatings

Aeris Antimicrobial
Duct Sealant

Aeris Range Hood Coating

Corrosion Resistant
Coil Coating

SmartENERGY

Technology platform
for Compressor optimisation

Regional Focus

- ✓ Successful major account acquisitions
- ✓ Expansion of Asian sales and technical resources
- ✓ Forging of strategic relationships in Thailand
- ✓ Developing platinum partnerships in Hong Kong, Singapore and New Zealand
- ✓ Growing revenue run rate in Philippines, Japan, United States, Taiwan, China, Europe and the Middle East



SmartENERGY

- ✓ Establishment of the SmartENERGY platform with key stakeholders across assets and facilities management, electrical contractors, energy retailers, air-conditioning and refrigeration suppliers, and the property sector.
- ✓ Validation of commercial and technical success of SmartENERGY in key reference sites.
- ✓ Independent accreditation of the SmartENERGY platform, including NSW Government ESS accreditation, demonstrated in a high-profile, national retailer's building.

SPOTLIGHT

- ✓ SRG and AEI are now planning for the next phase rollout of SmartENERGY efficiency solution across its portfolio of Spotlight and Anaconda buildings around Australia
- ✓ SRG installation will be implemented on the basis of validated reporting of energy efficiency
- ✓ Spotlight targeting material improvements in indoor air quality, system efficiency, improved asset life and validated carbon reduction.

Australian SmartENERGY opportunity size

Supermarkets

Over 10,000 supermarkets and convenience stores

Shopping centre

Over 1,338 shopping centres

Retail

Over 210,000 locations

Hospitals

Over 1,300 hospitals

Nursing homes

Over 2,080 residential aged care homes.

Retail Food

Over 60,000 retail food outlets

Refrigerated transport

Estimated fleet of 28,900 refrigerated trucks and export containers

Residential

Over 11.5 million devices in residential dwellings.








Aeris Invited to Join Large Format Retail Association



- ✓ Aeris is now well positioned as a credible advisor for energy efficiency and indoor air quality to some of Australia's leading large format retailers
- ✓ Aeris has found high levels of awareness by retailers of the cost squeeze in a relatively flat economy and will be focusing on presenting a strong ROI and business case to large scale retailers in both Australia and across the region



Aeris In The News



Business Breaking News

Aeris forms Accor partnership in Asia

November 26, 2015 5:54pm
AAP

AUSTRALIAN anti-microbial technology company Aeris Environmental has entered into a strategic partnership with global hotel operator AccorHotels Group to apply Aeris SmartENERGY solutions to Accors hotels across the Asia Pacific region.

THE company's patented suite of advanced multi-enzyme products will be used to deliver significant cost savings, while improving quality, efficiency, and safety at Accors more than 600 hotels across the Asia Pacific region, including Thailand, Japan, Singapore, Malaysia, Indonesia, South Korea, Vietnam, Laos and Cambodia.

Accor is making sustainable hospitality the focus of its strategic vision and through greater strategic involvement with Aeris, the leading hotel operator has reinforced its committed to sustainable development and to improve green building ratings.

Aeris, through this partnership, will support Accors PLANET 21 initiative, which is structured around sustainable development objectives that all hotels are expected to meet by the end of 2015.

Aeris CEO Peter Bush said the company is very pleased to be working with a global leader in the hotel industry that is focused on adopting new and innovative technology to delivering positive environmental and economic outcomes.

He added the initiative reinforces a growing global requirement for Aeris multi-enzyme technology in heating, ventilating and air conditioning systems globally.

Aeris develops, manufactures and markets patented, environmentally friendly technology solutions that address the global megatrends of energy efficiency, healthier air, food safety, water quality and long term materials protection, with core guiding principles of clean, green, protect.

Smart Enzymes and Coatings provide long term remediation, and prevention of mould, bacteria growth, corrosion and improved hygiene, with OEM, consumer and technical applications.

SmartENERGY provides dramatic and proven energy savings in the range of 19% to 33%, alongside documented improvement in system efficiency (54% to 289% improvement in airflow and up to 40% in coil efficiency), and independently-validated indoor air quality across all air-conditioning and refrigeration systems.

Globally Accor has more than 3,600 hotels and 470,000 rooms in 92 countries. Prominent brands in their portfolio include Sofitel, Pullman, MGallery and Grand Mercure, Novotel, Mercure, Adagio, ibis, ibis Styles, ibis budget and hotelF1.



business breaking news

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Originally published as [Aeris forms Accor partnership in Asia](#)

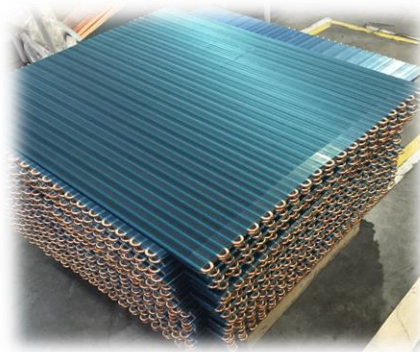
perth now

The Advertiser
Messenger Sunday Mail

aeris
ENVIRONMENTAL

AerisGuard OEM Coatings

- ✓ Launch of latest generation of AerisGuard OEM coatings
- ✓ First sale to offshore oil industry for corrosion protection
- ✓ Executed a contract with SolAir World Pty Limited (SolAir)
- ✓ Executed a contract with Coils International Group (CIG)
- ✓ Ongoing business development in key OEM coatings markets



- ✓ C. I. Group to exclusively use next generation AerisCoat OEM coatings at its three facilities in Thailand.
- ✓ CIG is publicly traded on the Stock Exchange of Thailand, employs more than 1,000 staff and is a major supplier of coils to leading global air conditioner and refrigeration companies.
- ✓ CIG specializes in the custom manufacture of high performance, large capacity coils.

Anti-microbial coatings sales on track to reach \$3.3 billion by 2018 - Doubling its value in six years

AerisGuard SMART Service Products

- ✓ Initial sales to large and multinational accounts
- ✓ Commencement of wholesale distribution strategy with industry leaders
- ✓ Specification on numerous projects – including a national retail chain and large-scale health authority



- ✓ Accor Initiates Platinum Partnership on Energy Efficiency and Indoor Air Quality with Aeris Environmental.
- ✓ Rollout Commencing in South East Asia.
- ✓ Follows a series of successful implementations.
- ✓ The launch phase of activity will focus on Thailand, Japan, Singapore, Malaysia, Indonesia, South Korea, Vietnam, Laos and Cambodia.



SOFITEL
LUXURY HOTELS

pullman



Grand
Mercure

NOVOTEL

Mercure

ibis

ibis
STYLES all seasons

ibis
budget FORMULA1

Suite NOVOTEL

adagio

Etap

hotelF1

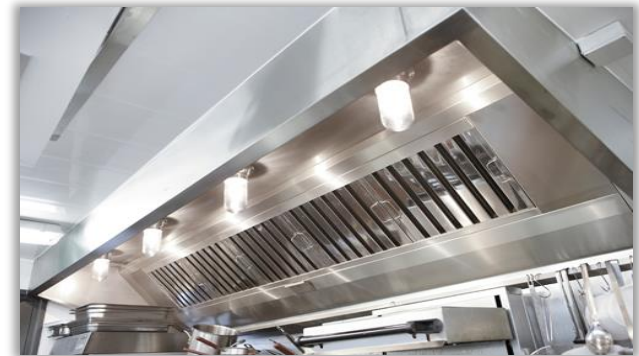


AerisGuard SMART Service Coatings

- ✓ Two key product launches in Australia, with active business development in each key market and country
- ✓ Commencement of shipping of commercial quantities of AerisGuard Antimicrobial Duct Sealant
- ✓ Launch of Aeris' novel Range Hood Coating. Recognised by way of a HACCP Australian Food Safety Certification
- ✓ Launch of service anti-corrosion aerosol



Target Market is over 10 million discreet business/facility owners



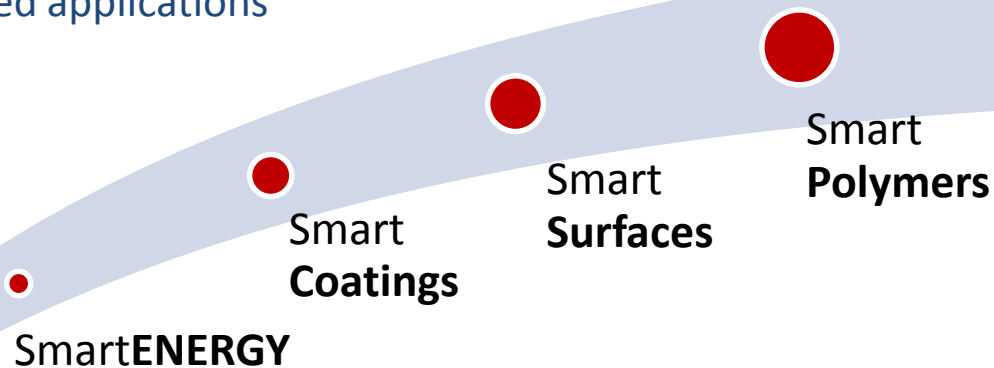
Emerging Opportunities

ENZYMES AND WATER TREATMENT

- ✓ Enzyme cleaning opportunities in the HVAC circuit water treatment and hospitality industry, including beer, soft serve and beverages

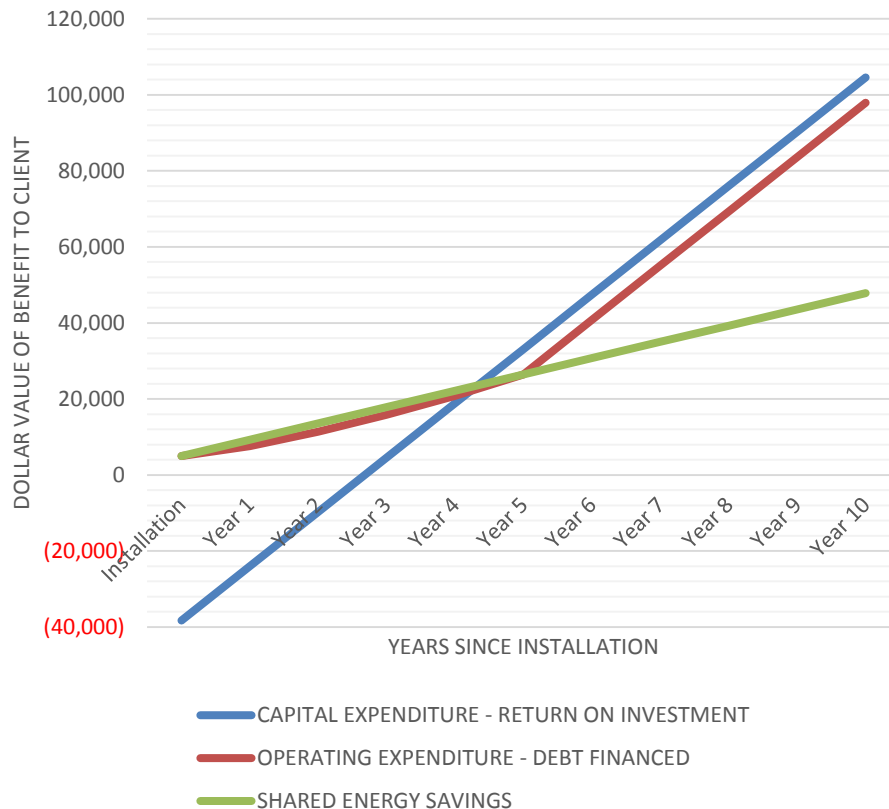
BIOSTATIC POLYMERS

- ✓ Aeris is targeting a 2016 launch of its “SMART polymer” technologies
- ✓ Early market entry to be focused on high value-added applications



SmartENERGY Financial Models

SmartENERGY 10 Year Cumulative Return Australian Domestic



Case Study Site – Northern NSW	Single Site	10 Site Rollout
CAPEX - RETURN ON INVESTMENT		
Job Value	43,285	432,850
Maintenance	4,328	43,285
Energy Saving - Client benefit	14,285	142,850
Energy Saving Credit - Client benefit	5,000	50,000
OPEX - DEBT FINANCED (7%)		
Job Value	46,314	463,140
Maintenance	4,631	46,310
Energy Saving - Client benefit	14,285	142,850
Energy Saving Credit - Client benefit	5,000	50,000
SHARED ENERGY SAVINGS		
Job Value	0	0
Annuity Revenue	15,000	150,000
Energy Saving - Client benefit	4,285	42,850
Energy Saving Credit – See Annuity Revenue	0	0

SmartENERGY Case Study NSW

- ✓ Installed cost - \$43,285
- ✓ Payback – 2.2 years
- ✓ ROI – 45%
- ✓ Maintenance annually – 10% P.A.

Aeris Value Drivers

- ✓ Outstanding portfolio of clean-tech products
- ✓ Broad intellectual property protection and International Certifications
- ✓ Strong balance sheet and attractive margins
- ✓ Rapidly growing base of flagship customers together with platinum value-add partners
- ✓ Proven value proposition to customers across multiple sectors
- ✓ Aeris is the emerging energy efficiency partner
- ✓ Growing sales pipeline into 2016 and beyond





Mr Peter Bush

Chief Executive Officer



Aeris Ecosystem

 **momentum**
energy

 **ecoVantage**

 **Rexel** | ENERGY
SOLUTIONS

 **ACTROL**

 **CUSHMAN &
WAKEFIELD**

 **NSW**
GOVERNMENT | Office of
Environment
& Heritage



Aeris Sales Process



The fundamental drivers of success...

- ✓ **establishment of the trusted partnership with the customer**
- ✓ **leads to deeper and expanded uptake of the Aeris SMART portfolio**

Scalable SMART Solutions



Competitive Advantage

Aeris Accreditations

- ✓ AS/NZ 1668.2 Indoor air quality
- ✓ AS/NZ 3666 - Microbial control (air-handling)
- ✓ AS/NZ3666 - OH&S
- ✓ AS4351:1996 - Completely biodegradable
- ✓ Food safe HACCP
- ✓ Australian Made
- ✓ NSF approved Category Code A1 - toxicology approval
- ✓ Australian drinking water guidelines 6-2004. pH level equivalent to that of potable water (National Water Quality Management Strategy)



Climate Change Awareness

"You're getting a sense of inevitability that this is the path, and now the question is how are we going to get on with it," says AGL Energy chief executive Andy Vesey, who will join business leaders flocking to Paris-Le Bourget.

The Sydney Morning Herald
BusinessDay

News Markets Quotes Portfolio Budget 2015 Money Property Focus Small Business
Today's News Comment World Business Mining Banking & Finance The Economy Aviation Ener

You are here: Home » Business » Energy »

Groundswell of business support for Paris climate action

November 28, 2015 - 1:24AM

15 reading now

Comments 26

☆ Read later












As the 40,000-plus attendees to the Paris climate summit congregate on Monday at a former aircraft hangar in north-east Paris, a surprisingly large chunk of Australian big business will be cheering them on.

In the 12 months leading up to the 21st Conference of the Parties – more snappily known as COP21 – a groundswell of change has built across the business community and encroached on even the sector that has most to lose, energy and resources.

“We fully acknowledge there is a climate change issue and we believe we need to be part of the solution.”

Rio Tinto head of coal and copper Jean-Sebastien Jacques

Where big companies stand on climate change

	AGL Energy	expand +
	AMP	expand +
	ANZ	close -
Supports action to limit warming to +2°C: Yes		
Own Measures: Target to fund \$10b over five years for customer activities to cut emissions		
	BHP Billiton	expand +
	CBA	expand +
	IAG	expand +
	NAB	expand +
	Origin Energy	expand +
	Qantas	expand +
	QBE	expand +
	Rio Tinto	expand +

Energy Saving Certificates

Financial Summary

<i>Aeris Total Quote Price</i>	\$ 534,265.19	(excl. GST)
<i>Number of Rebate Certificates</i>	5,385	-
<i>Rebate Value Applicable (ESC'S and VEEC'S only)</i>	\$ 114,768.63	(excl. GST)
<i>Project Cost</i>	\$ 419,496.57	(excl. GST)
<i>Return on Investment</i>	2.2	years [^]
<i>Estimated Installation Budget</i>	\$ 85,918.00	(excl. GST)
<i>Estimated Annual Monetary Savings</i>	\$ 194,596.57	(excl. GST)

**Pricing indicative of installation during business hrs,*

^Based on the inclusion of projected rebate certificates (5 yr.) at a value of \$20.00 AUD Each

Environmental Impact

Total Energy Saved	1.4	GWh
Enough Energy to Supply Homes for 1 Year	468	Homes
Total Greenhouse Gas Reduction	1,136,911	Tonnes

*** \$21 per certificate – 27% of project cost.**



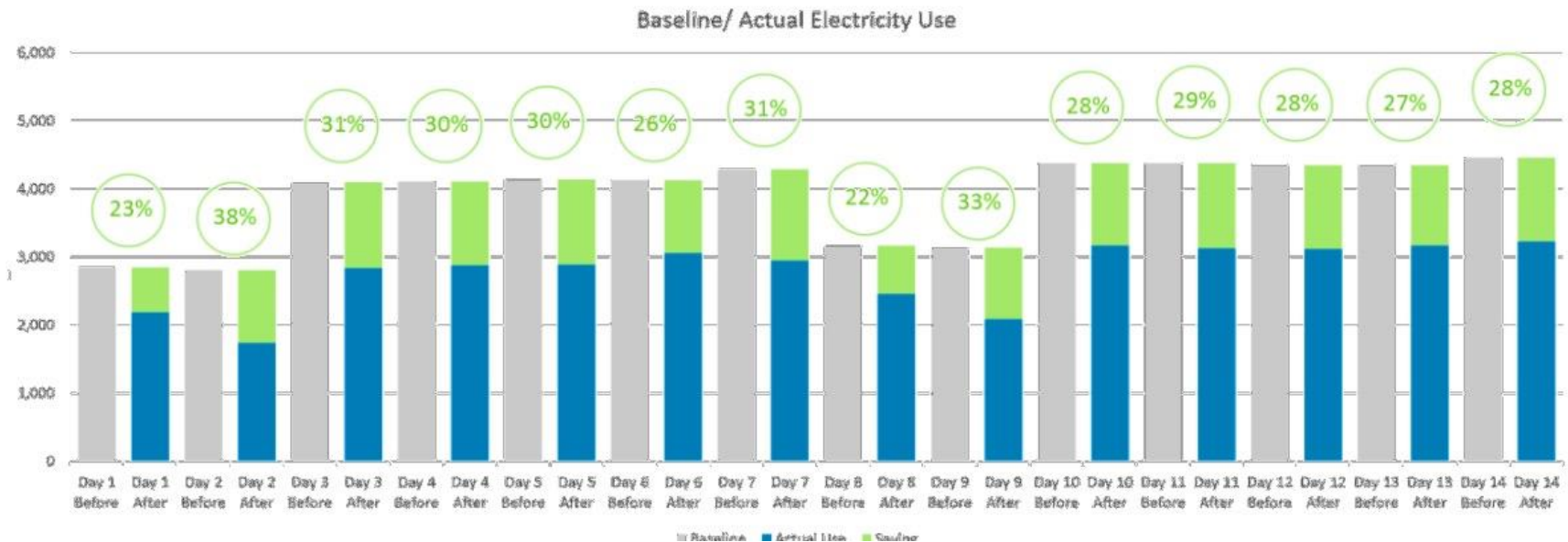
**Energy Efficiency and
Conservation Authority**
Te Tari Tiaki Pūngao



**Office of
Environment
& Heritage**



Case Study – Australian Retailer



Location

Townsville, QLD

ECM Install Date

14/10/15

ECM Type

SmartENERGY

Energy Savings

28.8%

Project Price

\$53,750 (\$86,000 Total Site)

Monetary Savings

\$35,000 - 40,000 per annum (estimated)

ROI

1.3 – 1.5 years

Greenhouse Gas Reduction

12.7 Tonnes per annum (estimated)

28.8%
Energy Savings



Case Study - Queensland

Forecast benefits

In order to demonstrate overall potential broad scale value of intelligent compressor optimisation systems, discounted cash flow analysis was undertaken from a whole-of-Queensland perspective at project inception. The discounted cash flow analysis compares the costs to Ergon Energy of capital investment in network infrastructure against the avoided network costs resulting from the reduction in peak demand. A nominal discounted rate of 7% was adopted for the analysis.

The analysis returned a Net Present Value (NPV) of \$108 million based on key assumptions provided below.

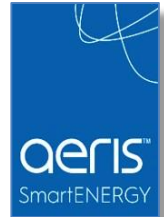
Table 3: Forecast value of energy savings to Queensland from adoption of intelligent compressor optimisation systems

Parameter	Value (\$NPV)
Present value of costs	\$22,618,079.15
Present value of benefits	\$130,905,432
NPV	\$108,287,353
Key assumptions modelled	
Model term (years)	20
Avoided infrastructure spend (kVA/per annum)	220
Implementation costs per shopping centre	\$50,000
Cumulative shopping centres targeted	470
Cumulative MVA reduction	94
Peak demand saving (air-conditioning only)	10%
Energy saving (air-conditioning only)	10%

There are estimated to be 2,350 shopping centres of varying sizes across Queensland with 1,250 potential customers on the Ergon Energy network. This concept could also be extended across the Energex network.

Total number of business customers	Of total business customers, the retail segment represents	Retail segment represents	Of the 8% retail segment, key retail businesses make up	Percentage of business electricity consumption attributed to the key retail businesses
110,000	8%	Third largest electricity consumer	10%	53%

**Present Value of benefits
to QLD if SmartENERGY
broadly implemented
\$130 Million**



Supply and installation price	\$519,590.50
Savings achievable	21%
ROI	52%
Pay Back Period	1.9
predicted yearly savings	\$270,784.92
predicted savings over 5 years	\$1,502,856.28



SmartENERGY – Specific Opportunities

SmartENERGY Metrics

Australian domestic

Workers Club NSW - **\$33,000**

Leagues Club QLD - **\$34,000**

Shopping Mall NSW - **\$50,000**

Asia Pacific

300 room hotel HK - **\$346,000**

Govt. hospital BKK – **\$314,000**

Vertical markets, rollout (Phase I)

Australian Retailer –

23 sites x \$22,600 ea. \$519,800

Australian Retailer –

34 sites x \$14,500 ea. \$493,000

Australian Retailer –

90 sites x \$27,000 ea. \$2,430,000



SmartENERGY

- ✓ Average Installation - \$25,000
- ✓ Average Payback – 2.2 years
- ✓ Average ROI – 45%
- ✓ Average Recurring – 10% PA

Australia / NZ focus

Hospitals, Airports, Hotels,
Shopping Malls, Retail,
Hospitality, Council,
Government, Corporate

Asia Pacific Focus

Hospitals, Airports, Hotels,
Shopping Malls & Retail



SmartENERGY – Specific Opportunities

Specification / Energy Performance Contracting (EPC)

Consultants, Specifiers, Mechanical Services & Engineers

- EPC - Multinational – Hospital VIC - **\$30,000**
- EPC - Consultant – University NSW - **\$50,000**
- EPC - Consultant – Hospital NSW - **\$100,000**
- Project - Consultant – Mall in NSW - **\$50,000**

Pipeline conversion

Installed base upgraded to SmartENERGY

- Shopping mall for Australian REIT - **\$30,000**
- Sites for Australian Government Utility –
50 x \$4,000 (**\$200,000**)

Refrigeration

Cool room, refrigerated trucks and containers

- Fresh Freight - 97 refrigerated containers used for produce - **\$20,000**



Case Study – Monash House

- ✓ Coil remediation (done)
- ✓ Coil coating (done)
- ✓ Duct coating (done)
- ✓ SmartENERGY
- ✓ Hard Surface

**Estimated fleet of
refrigerated
Trucks
28,900**



Wholesale Service Range – Specific Opportunities

Wholesale Distribution of Service Range – Asia Pacific

- ✓ Implement supply chain and logistics across multiple countries
- ✓ Continue to build brand recognition and technical leadership
- ✓ Leverage branch sales force (project & retail point of sale)
- ✓ Lead generation for value add opportunities – SmartENERGY
- ✓ Leverage growing national customer base
- ✓ Potential to be stocked in branches (over 250 nationally)

Purchase orders and current pipeline

- | | |
|---------------------------------------|--|
| • BlueScope / Transfield - | \$300,000 PA
(3,000 HVAC units) |
| • TVH NSW Police - | \$147,000 PA |
| • National tender - 3,000 sites - | \$150,000 |
| • National tender - 10 mines - | \$300,000 |
| • SM Group Philippines - | \$128,000 |
| • 3M Japan - | \$126,000 |
| • Smart House - 15,000 homes x \$15 - | \$225,000 PA |



- ✓ 20 new accounts opened since 1 July
- ✓ Average account spends \$15k PA



OEM Coatings

Worlds most advanced HVAC coating system

- ✓ Provides up to 10 years residual protection to control, prevent and inhibit mould, fungi and odour causing bacteria
- ✓ Provides up to 10 years acid or acid/alkali corrosion protection
- ✓ Compliance with 6000 hour salt spray test (ASTM B117-11)
- ✓ Easy to apply spray or dipped application.
- ✓ New breakthrough “Auto cure” coating
- ✓ Highest levels of environmental compliance
- ✓ Broadest range of consumer claims

AerisCoat™ Product Matrix	AerisCoat™ Maintenance	AerisCoat™ U OEM	AerisCoat™ R OEM	AerisCoat™ C OEM	AerisCoat™ P OEM
Aluminium Adhesion	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Microchannel Aluminium Adhesion	✓✓✓	✓✓✓	—	—	✓✓✓
Copper Adhesion	✓✓	✓✓	—	✓✓✓	✓✓✓
Galvanised Steel Adhesion	✓✓	✓✓✓	—	✓✓✓	✓✓✓
Curing Cycle*	Air Dry	Air Dry	15-60 min @ 160 ° C	45-60 min @ 160 ° C	45-60 min @ 160 ° C
Appearance	Translucent Blue	Clear or any colour	Clear or any colour	Clear or any colour	Clear or any colour
Acid Corrosion Resistance	✓	✓✓✓	✓✓✓✓	✓✓✓	✓✓✓
Alkaline Corrosion Resistance	✓	✓✓✓	—	✓✓✓	✓✓✓
Formic Acid Resistance	✓	✓✓	✓✓✓✓	✓✓✓	✓✓✓
Salt Corrosion Resistance	✓	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓✓
Operational Longevity	✓	✓✓✓	✓✓✓✓	✓✓✓	✓✓✓
Water/Moisture Resistance	✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Abrasion Resistance	✓	✓✓✓	✓✓✓✓	✓✓✓	✓✓✓
Biofilm Growth Resistance	✓	✓✓	✓✓✓	✓✓	✓✓

*Where a heat curing cycle is indicated the specific temperature and time is dependent upon the size, configuration and weight of the substance. A minimum temperature of 160C is recommended.



Specialty Surface Coatings

World leading speciality coatings

- ✓ Developed by Aeris in response to customer demand
- ✓ Environmentally friendly and cost effective
- ✓ Greenfield opportunity in cleaning industry
- ✓ Provide better outcomes as well as being more efficient

Range Hood

- Melbourne Cricket Ground - MCC facilities
- David Jones Market Street - TVH
- Burger King - TVH

Duct Sealant

- Treasury Casino QLD - TVH
- Pacific Fair - Boongala
- Monash House - Cool Clean
- MFB - Boongala
- Department of Defence, Science & Technology - Boongala
- Chapel St Police station - Boongala
- Cairns Airport, Rockhampton Airport - Air Systems Australia
- QLD University Campuses - Air Restore



Peels off easily for simple reapplication

SMART Surface Coatings

Advanced Mould Remediation and Long Term Anti-Microbial Protection

- ✓ Anti-microbial and anti-mould hard surface provides long term residual protection
- ✓ Provide Non Toxic solutions
- ✓ Can be applied to virtually any substrate, multiple presentations (wipes, towels, sprays)
- ✓ Idea companion sell with other Aeris SMART platforms

Priority target markets

- ✓ Disaster recovery
- ✓ Mould removal
- ✓ Food hygiene
- ✓ Hospitality
- ✓ Cruise ships
- ✓ Airlines
- ✓ Public transport
- ✓ Cleaning and remediation



Water Treatment

Environmentally friendly enzymatic solutions

- ✓ Directly leverage Aeris' powerful and proven enzymatic cleaning technologies
- ✓ Highest levels of environmental compliance
- ✓ Fit into existing workflow
- ✓ Enhanced operator and customer safety and compliance

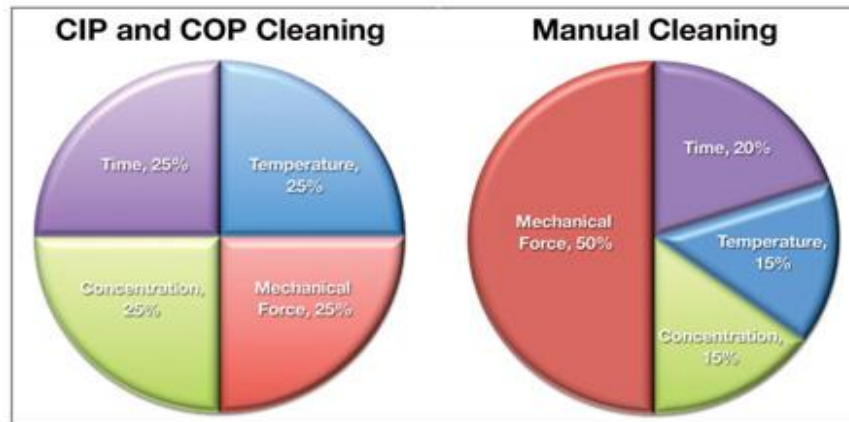


Figure 2: Comparison between COP- and CIP-balanced Sanitation and Manual Cleaning

The screenshot shows the FoodSafety magazine website. The top navigation bar includes links for HOME, CURRENT ISSUE, EVENTS, MAGAZINE ARCHIVE, SIGNATURE SERIES, PRODUCTS, and BLOG. Below this is a secondary navigation bar with links for CONTAMINATION CONTROL, FACILITIES, FOOD TYPES, MANAGEMENT, PROCESS CONTROL, REGULATORY, and SANITATION. The main content area features an article titled "Inadequate Sanitation Results in Biofilm Formation" by Gloryann Mejias-Sarceno, dated April/May 2011. The article includes a sub-header "SANITATION | April/May 2011" and a social media share button. The article text discusses the importance of establishing corrective actions to eradicate biofilms and prevent product contamination. A small image of a biofilm is shown next to the text.

FoodSafety magazine

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Home » Magazine Archive » April/May 2011

SANITATION | April/May 2011

Inadequate Sanitation Results in Biofilm Formation

By Gloryann Mejias-Sarceno

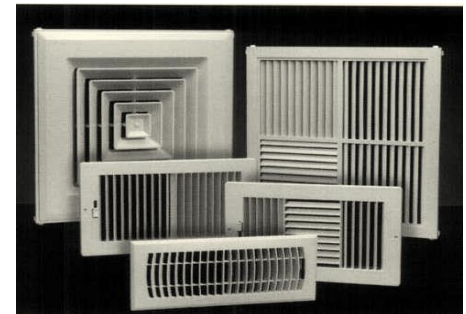
What exactly is a biofilm and how does it adhere to food processing equipment? Why is it important to establish corrective actions that will eradicate them and prevent them from reoccurring? How can you prevent positive finished product microbial results and reduce the amount of product that needs to be put on hold for further testing and disposition? These are some of the questions that many sanitarians and production managers ask whenever there is an indication that the sanitation program is not effective in preventing product contamination.

Biofilms are bacterial films consisting of a mixture of different microorganisms, along with product residues and polysaccharides excreted by the microorganisms that help them to attach to surfaces. You can say that these films become a living community with a life of its own and the means to exist and perpetuate if allowed to do so. Wherever there are the right conditions for biofilms, they will form and establish themselves. Biofilms in food production environments are an indication that sanitation programs are inadequate and can become the potential root cause for reduction of shelf life and pathogenic contamination of food products.

SMART Polymers

Value Added Polymer Additives With Proprietary Benefits

- ✓ Patented class of anti-microbial, biostatic polymers that can control, prevent and inhibit mould, fungi and odour causing bacteria
- ✓ Partially co-developed with the Australian Government Research Organisation (CSIRO)
- ✓ Ideal for manufacturers wanting to differentiate their product line-up with superior long-lasting performance. Applications include:
 - ✓ Hospital and healthcare surfaces
 - ✓ Building materials exposed to high moisture levels
 - ✓ Protective clothing and footwear
 - ✓ Consumer durables



- ✓ **The U.S. antimicrobial plastics market was valued at USD 662.3 million** in 2013 and is anticipated to reach USD 1,227.4 million by 2020, expanding at a CAGR of 9.3% during the forecast period from 2014 to 2020.
- ✓ Healthcare was the largest application segment, accounting for approximately 44% of the market share in 2013. Higher number of patients with hospital-acquired infections is projected to augment demand for antimicrobial plastics.

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Article by Benjamin Kwek of ETHA Engineering.

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