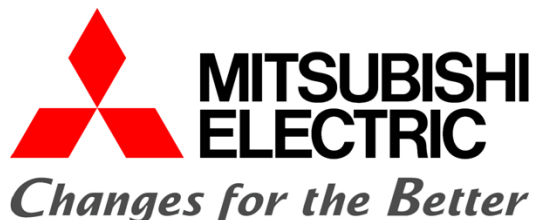




Mitsubishi Electric Air Conditioning Systems Europe Ltd.

Environmental Management and Audit Scheme (EMAS)

Environmental Statement Jan – Dec 2009



Contents

- **Foreword**

1: Purpose and Scope

1.1 – Background

2: Environmental Policy

2.1 – Company Environmental Statement

2.2 – Certifications

2.3 – Legal register

3: Environmental Management System (EMS)

3.1 – Environmental Review

3.2 – Aspects register

3.3 – Environmental Aspects / Impacts

3.4 – Energy Use (Electricity & Fuel)

3.5 – Water and Wastewater

4: Targets and Objectives 2009

4.1 – Environmental Objectives 2009

4.2 – Scrap Reduction

4.3 – Improvement Plans

4.4 – Additional Improvements

5: Targets and Objectives 2010

5.1 – Environmental Objectives 2010

6: Waste Report

6.1 – Description of the company waste report

7: Core Indicators of Environmental Performance

7.1 – Summary of the 5 Core Indicators

8: Closing Statement

8.1 – Summary statement

9: Further Information

9.1 – Statement availability, and contact details



Foreword:

This document is Mitsubishi Electric Air Conditioning Systems Europe Ltd's (M-ACE) first annual EMAS environmental statement and presents our company's main environmental issues and performance for the timeline January to December 2009.

This statement is part of Mitsubishi Electric's overall commitment to EMAS and ISO 14001:2004, and will help ensure that the impacts from all our activities are fully understood and minimised.

Our commitment to EMAS will also be backed up by the Mitsubishi Electric Group 'Environmental Vision 2021'. (Fig 1.1)

Announced in October 2007, the Environmental Vision 2021 is our long-term environmental management image of the Mitsubishi Electric Group. It establishes a framework for realising a sustainable planet, and defines long-term initiatives to prevent global warming and to create a recycling-based society.

The motto "making positive contributions to the earth and its people through technology and action," calls for our company to work toward the realisation of a sustainable society by utilising our wide-ranging and sophisticated technologies as well as promoting assertive and persistent actions by all our employees.

The vision sets 2021 as the target year, commemorating the 100th anniversary of Mitsubishi Electric's founding.

Environmental Vision 2021 stands at the core of Mitsubishi Electric's commitment to the environment, and outlines the targets we aspire towards and measure ourselves against.

(Fig.1.1)



Find out more at: <http://www.mitsubishielectric.com/eco>

1: Purpose and Scope:

1.1: Background

With over 100 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi is a recognised world leader in the manufacture, marketing and sales of electrical and electronic equipment.

Founded in 1954, the air conditioning company known today as Mitsubishi Electric quickly rose to the forefront of the air conditioning industry - a position that we still enjoy today.

Mitsubishi Air Conditioning Systems Europe (M-ACE) is part of Mitsubishi Electric's Living Environment & Digital Media Equipment Group and our only manufacturing facility in the UK.

The site in Livingston, West Lothian, Scotland is an integrated production facility for the manufacture of air conditioning units. Production of these units first commenced in March 1994.

Working in conjunction with the other Mitsubishi Electric factories in Japan and Thailand, the products manufactured in Livingston cater for the entire European market. We place great emphasis on the value and importance of producing the highest quality air conditioning equipment possible. Our years of experience are complemented by the latest manufacturing and testing technology that money can buy.



Air Con Factory 1



Air Con Factories 2, 3, and 4

At present in Livingston we have around 430 staff working in four factories, over two sites. In the 2009 calendar year we produced approx 110,000 air conditioning units.

In the UK we have 3 locations. M-ACE (Livingston, West Lothian), UK Branch (Hatfield, Herts), and our Corporate Office (Uxbridge, London), as well as sales offices in key locations around the country. The overall company HQ is in Tokyo, Japan.

M-ACE current product lines: Indoor (ceiling mounted / ducted) and outdoor air conditioning units of various power, sizes and design (up to 12kw).

In September 2009 we also began production of our 8.5kW Ecodan Air to Water heat pump (model: PUHZ-W85VHA2).

2: Company Environmental Statement

(Fig.2.1)

MITSUBISHI ELECTRIC AIR CONDITIONING SYSTEMS EUROPE LTD.

Environmental Policy Statement

Mitsubishi Electric Air Conditioning Systems Europe Ltd. is a leading manufacturing company and has been assembling and shipping Air Conditioning units from its facility in Livingston since 1994.

As a leading manufacturer of air conditioning systems, we at Mitsubishi Ltd. will continually strive to undertake our business and production activities alongside a care for the natural environment. We therefore have implemented an Environmental Management System (ISO 14001:2004) and we shall ensure that we are guided by the following principles;

We commit to comply with relevant Environmental Legislation and other requirements related to our business.

We will continually strive to improve our Environmental Performance through prevention of pollution techniques.

Through continuous improvement we will aim to reduce any adverse Environmental Aspects resulting from our activities, this includes but is not limited to management of solid wastes/chemical wastes/air emissions and waste water discharges.

Where practicable we will promote the efficient use of natural resources through conservation /recycling and re-use. We will also be using best available knowledge to modify and introduce new and efficient production technologies.

Through identification and evaluation of Environmental Aspects relating to the site and the manufacture and distribution of air conditioning units, we will set Objectives and Targets and a Management Programme to minimize the use of materials and processes which contribute unfavourably to the Environment. This programme will be subject to periodic reviews.

We aim to build Environmental Awareness amongst our employees, suppliers and sub-contractors to ensure that our Environmental Policy commitments are fulfilled. To achieve this we will ensure that all relevant parties are trained/made aware of our policy so that they are able to co-operate with the company and management on the implementation of this Policy.

We will constantly monitor our Environmental Performance to ensure that continuous improvement is achieved, where possible. We will also maintain and support sufficient data to measure our performance. The Environmental Policy will be reviewed on a regular basis, and if required, revised in light of legislative or organisational changes.

We fully understand the principle that quality products should not be produced at the expense of our employees or the Environment, and we will further improve our Environmental Performance as our knowledge and systems develop.

The general implementation of this Environmental Policy is the responsibility of all employees within the Livingston Factory who are in turn responsible to the President and Executive Vice President of the Company who have approved this Policy.

福 嶋 章 雄

A. Fukushima
President M-ACE

A copy of this Policy and stated Objectives and Targets is made available to the public on request from the factory reception during day hours Monday - Friday. Further information is available from the Environmental Team.

Date; 16 June 2007

2.2: Certifications

Our continued effort and investment has helped us gain accreditation in both ISO 9001:2008 (Quality Management) and ISO 14001:2004 (Environmental Management) which ensures we work to the highest standards whilst minimising wastes, recycling, and reducing consumption of natural resources wherever possible.

Our heat pump models have obtained certification from the Microgeneration Certification Scheme (MCS), as we are working to gain the Ecolabel certification mark in 2010.

As a company we are also accredited with the 'Investors in People' standard.

2.3: Legal Register

We hold a detailed and current register of all legal regulations that are applicable to our business. European directives, UK enabling acts and subsequent amendments to regulations are listed within the detailed register entries.

This register is fed by a quarterly update report that we receive from our environmental consultants Ecolibrium. <http://www.ecolibrium.co.uk>

For simplicity and consistency, the legislation is grouped under the area headings (below) set down in the ISO 14001 Environmental Aspects guidance notes.

Emissions to Air

- Reg/Air/1: Environmental Protection (Ozone-Depleting Substances) Regulations 2002
- Reg/Air/2: Pollution Prevention & Control (Scotland) Regulations 2000 + Amendments
- Reg/Air/3: Climate Change Levy (General) Regulations 2001 + Amendments
- Reg/Air/4: The Ozone Depleting Substances (Qualifications) Regulations 2009
- Reg/Air/5: EC Regulation on Certain Fluorinated Greenhouse Gases

Releases to Water

- Reg/Sewerage/1: Sewerage (Scotland) Act 1968
- Reg/Pollution/1: Water Environment (Controlled Activities) Regulations 2005 + Amendments
- Reg/Pollution/2: Water Environment (Oil Storage) (Scotland) Regulations 2006

Waste Management

- Reg/Waste/1: Environmental Protection (Duty of Care) Regulations 1991
- Reg/Waste/2: Special Waste Regulations 1996 + Amendments
- Reg/Waste/3: Waste Management Licensing Regulations 1994 + Amendments
- Reg/Waste/4: Waste Electrical and Electronic Equipment Regulations 2006 (WEEE)
- Reg/Waste/5: Batteries and Accumulators (Placing on the Market) 2008
- Reg/Pack/1: Producer Responsibility Obligations (Packaging Waste) Regulations 2007
- Reg/Pack/2: Packaging (Essential Requirements) Regulations 2003
- Reg/Landfill/1: Landfill Tax Regulations 1996 + Amendments

Use of Raw Materials & Natural Resources

- Reg/Chem/1: EU regs - Registration, Evaluation, Authorisation & Restriction of Chemicals (REACH)
- Reg/Chem/2: The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2005 (RoHS)

Contamination of Land

- Reg/Con/1: Environmental Protection Act 1990 Part II - Contaminated Land + Associated Regulations
- Reg/Con/2: The Environmental Liability (Scotland) Regulations 2009

Other Local Environmental and Community Issues

- Reg/Town/1: Town & Country Planning (Scotland) Act 1997
- Reg/Wildlife/1: Wildlife and Countryside Act 1981
- Reg/Noise/1: Environmental Protection Act 1990, Part III / Control of Pollution Act 1974

3: Environmental Management System

Our environmental management system has been developed to fit into Mitsubishi Electric's organisational format and conforms to the ISO 14001:2004 standard.

3.1: Environmental Review

Within our company we have an experienced environmental team in place that has representatives from various departments. This team is responsible for the management and control of our Environmental Management System.

We hold quarterly environmental meetings in order to review amongst other things, the progress of our current objectives and targets, internal audit program, legislation issues, as well as any recent Health & Safety incidents.

3.2: Aspects Register

We hold an aspects register of the items related to our work that we consider to be significant to the environment. The register is held by our QC Department, reviewed by BSI (auditors) at our bi-annual audit, and updated as necessary.

3.3: Environmental Aspects / Impacts

Detailed below are the most significant environmental aspects of our business. (Fig.3.3.1) These are identified as part of our environmental audit, scored, and reviewed regularly. Details of all aspects / impacts are held in our Environmental Aspects Register.

Emissions to Air:

Paint powder, Freon gas, Helium, Nitrogen, natural gas, brazing fumes, evaporative oil, smoke, oxygen, welding fumes, flux methanol, chemical fumes.

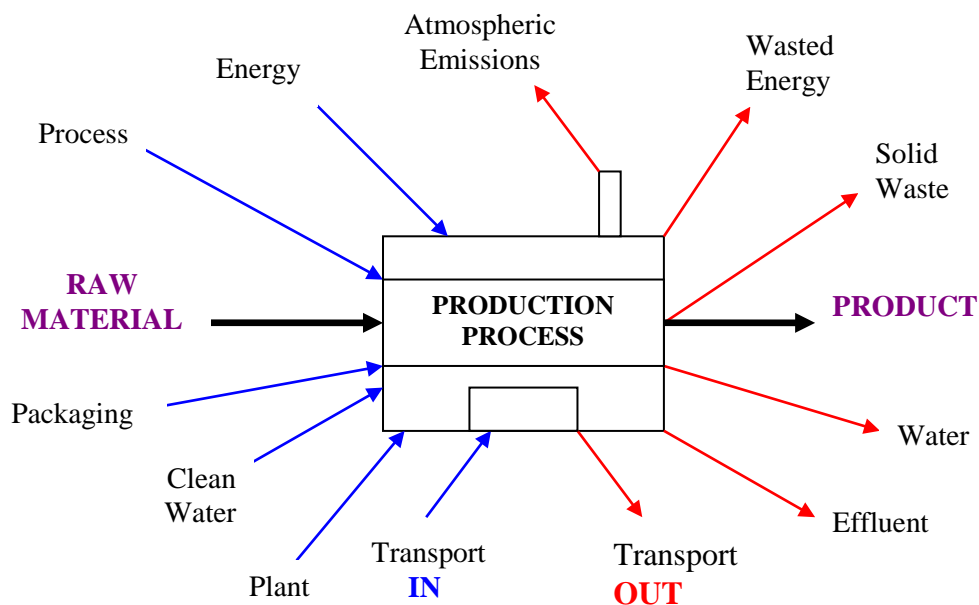
Discharges to Water:

Sewerage, surface drainage, effluent, fuel / oil / lubricants, chemicals, paint sludge, degreasing, liquid paint/floor paint.

Solid Wastes (Ground):

Fuel/oil, metals (copper, steel, aluminium), PCB's, fluorescent tubes, gas flux, cardboard, plastics/polythene, wood, waste filters, paint powder, paint cans, oil drums, chemical containers, general waste.

(Fig.3.3.1)



3.4: Energy Use: (Electricity & Fuel)

The burning of fossil fuels, indirectly to produce electricity and directly on site can create a number of gases which may contribute to atmospheric pollution and global climate change.

The main energy use on our site is electricity (for production machinery, offices, lighting forklifts, etc) and gas – Natural Gas, Oxygen, Nitrogen (heating, production process, etc) Our electricity and gas use is measured on a weekly basis by our maintenance team, and monitored against our annual figures.

The energy reduction work has been based on the following principles:

Fig.3.4 - Principles of Energy Reduction

1	Thermal Insulation	Boilers	Ensure storage tanks and cylinders are properly insulated
		Pipes	All heated pipes should be insulated
		Steam	All steam pipes should be insulated
2	Eco Monitor	High use	High energy use machine should have energy monitors
		Compressors	Minimum required air pressure and periodic leak checking should be carried out
3	Voltage Regulation	Power supply	Minimum voltage requirements should be set to machines
4	Machine Power	Inverters	All equipments should be inverter controlled
		Switch off	All machines not in use (at stop and breaks) should be switched off
		Scheduling	Low utilisation equipments should be planned only for use on
		Replacing	Old inefficient equipment should be removed / replaced
		Control	Lights should be controlled and switched off locally
5	Thermal	Access/Exit	All exits / access should be auto close

We have been using these principles to plan the optimisation of energy use in our factories, and although this hasn't been achieved all in all areas, we will be working hard in the coming year to try and accomplish these.

Fig 3.4.1 – 2009 M-ACE electricity consumption

The table and chart below shows our electricity consumption for the year:

Month	Product Built	Electricity Used (KwHr)	Electricity / product (KwHr)
January	9226	398694	43.21
February	9399	302969	32.23
March	11467	331524	28.91
April	8135	300675	36.96
May	7789	260057	33.38
June	7531	248015	32.93
July	6243	252298	40.41
August	6243	258945	41.48
September	9575	312830	32.67
October	10562	314577	29.78
November	13204	343201	25.99
December	10757	307857	28.61
Average	9177	302636	33.88
Total	110131	3,631,642	405.56

Electricity Used - 2009

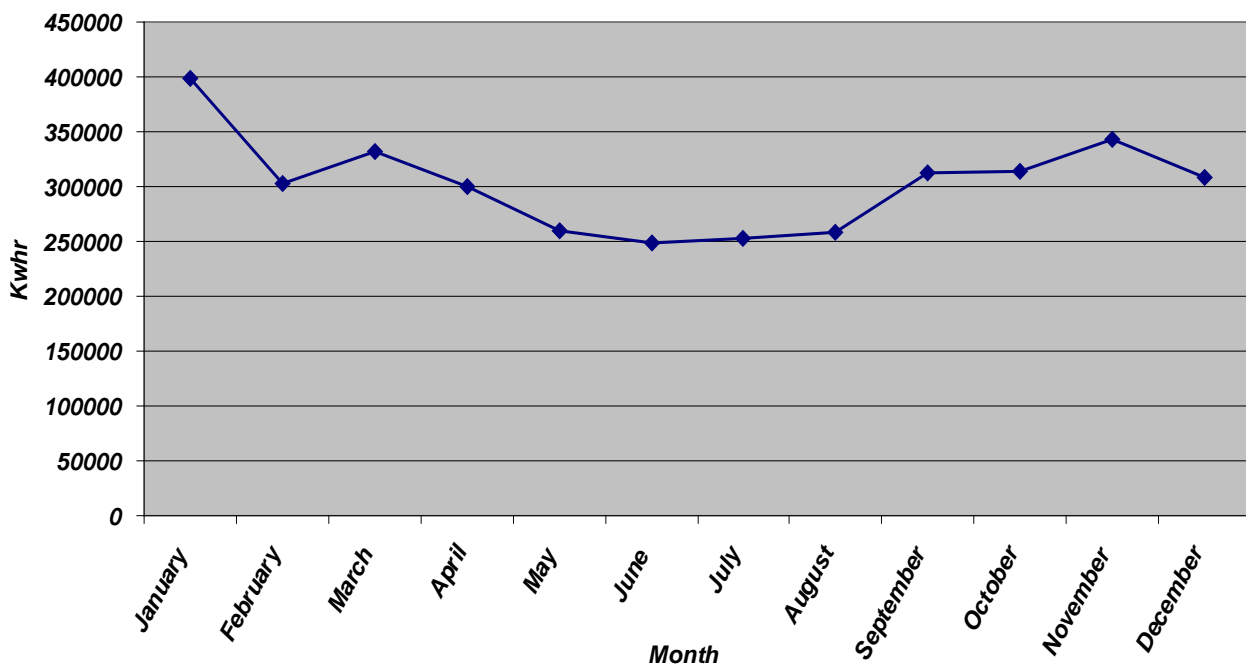


Fig 3.4.2 – 2009 M-ACE natural gas consumption

The table and chart below shows our natural gas consumption for the year:

Month	Product Built	Gas Used (KwHr)	Natural Gas / product (KwHr)
January	9226	1081936	117.27
February	9399	808196	85.98
March	11467	1040899	90.77
April	8135	527880	64.89
May	7789	472558	60.67
June	7531	335430	44.54
July	6243	282973	45.33
August	6243	236410	37.87
September	9575	285838	29.85
October	10562	475836	45.05
November	13204	450381	34.10
December	10757	929661	86.42
Average	9177	577333	61.89
Total	110131	6,927,998	742.74

Gas Used - 2009

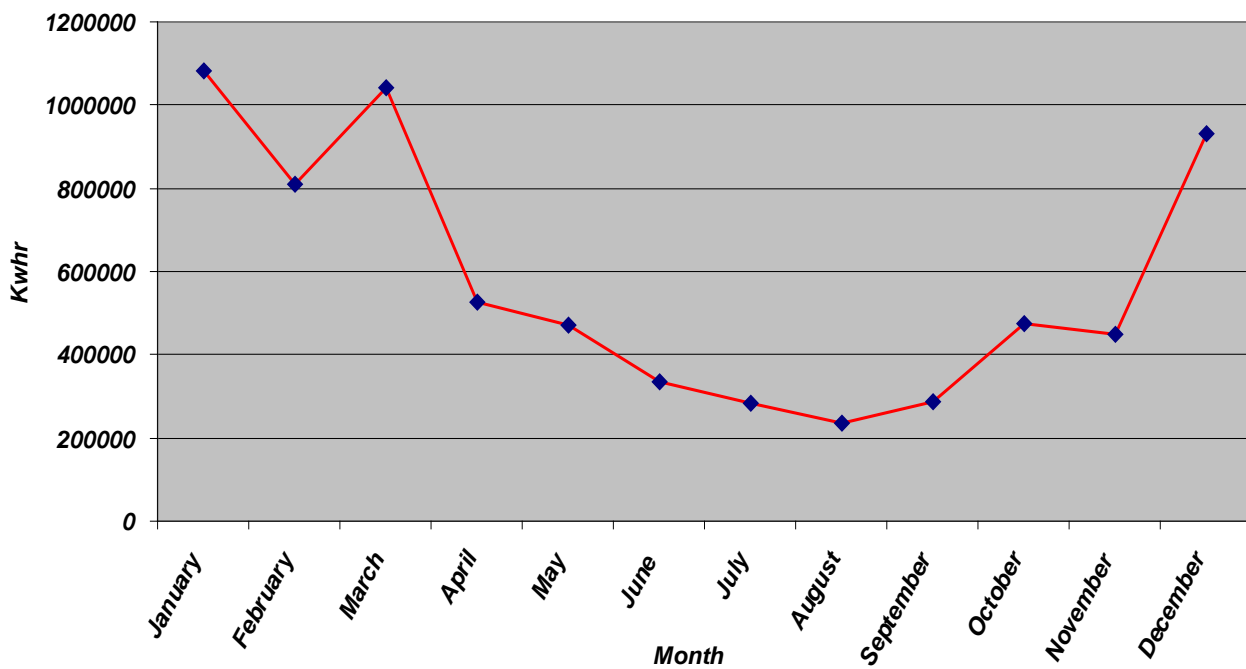


Fig 3.4.3 – 2009 M-ACE liquid nitrogen use

The table and chart below shows our liquid nitrogen consumption for the year:

Month	Product Built	Nitrogen used (Kg)	Nitrogen used / product (Kg)
January	9226	7600	0.82
February	9399	0	0.00
March	11467	3700	0.32
April	8135	4200	0.52
May	7789	3890	0.50
June	7531	6913	0.92
July	6243	4200	0.67
August	6243	0	0.00
September	9575	7210	0.75
October	10562	2650	0.25
November	13204	3920	0.30
December	10757	3455	0.32
Average	9177	3978	0.4475
Total	110131	47,738	5.37

Nitrogen used - 2009

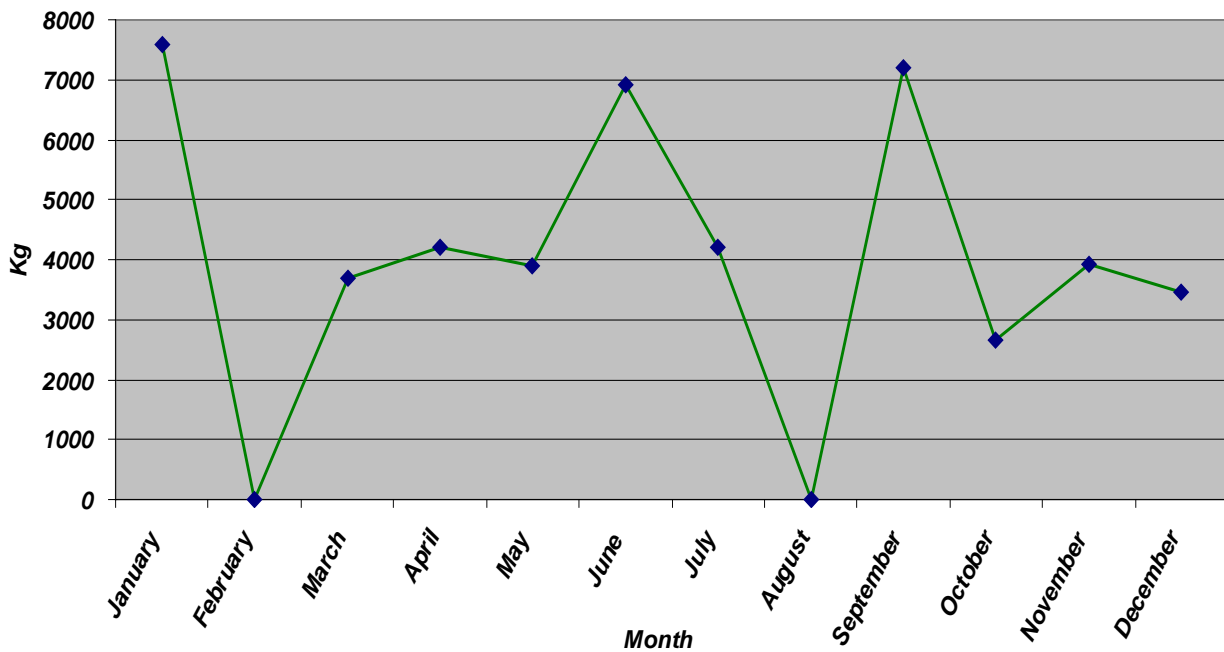
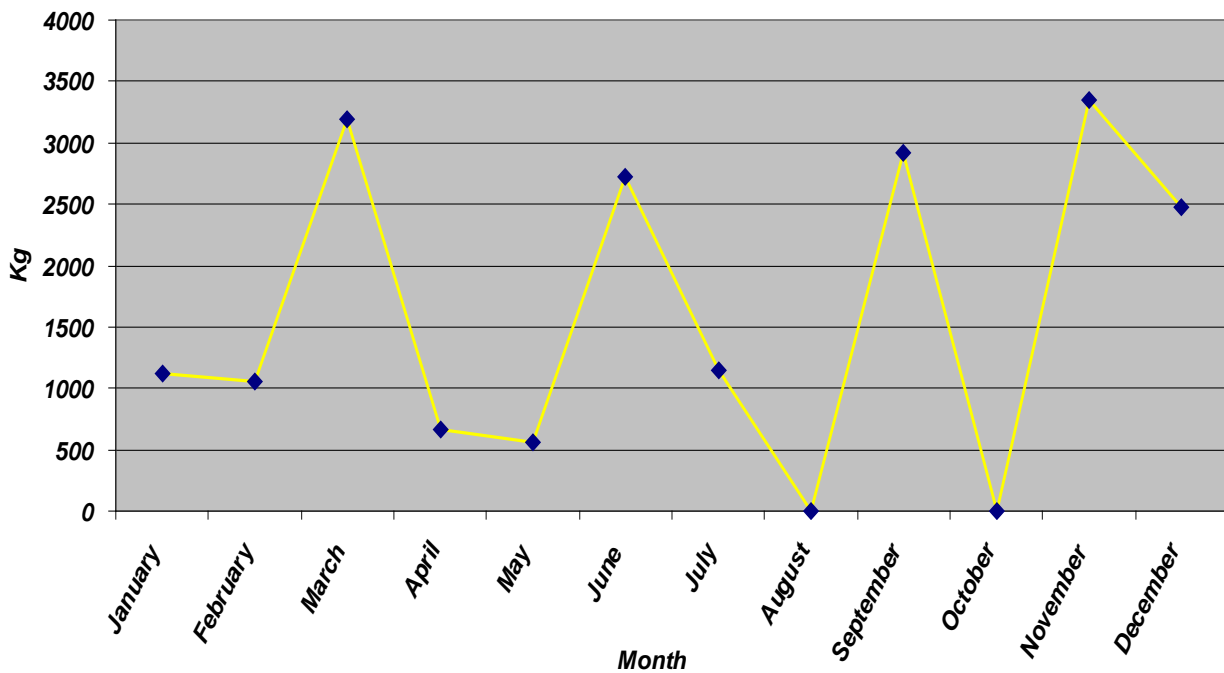


Fig 3.4.4 – 2009 M-ACE liquid oxygen use

The table and chart below shows our liquid oxygen consumption for the year:

Month	Product Built	Oxygen used (Kg)	Oxygen used / product (Kg)
January	9226	1120	0.12
February	9399	1052	0.11
March	11467	3191	0.28
April	8135	658	0.08
May	7789	560	0.07
June	7531	2718	0.36
July	6243	1150	0.18
August	6243	0	0.00
September	9575	2918	0.30
October	10562	0	0.00
November	13204	3345	0.25
December	10757	2470	0.23
Average	9177	1598	0.165
Total	110131	19,182	1.98

Oxygen used (Kg)



3.5: Water and Wastewater

Throughout the year we have been communicating with our supplier (Scottish Water), on possible ways of reducing our water consent levels.

Our current water volume level use is set at 300m³ per day, and we are aiming to try and reduce this figure to around 100m³ per day in 2010. The overall benefit of this would be the obvious cost saving to ourselves as well as the reduction in water and effluent release to the environment.

At present our paint plant facility accounts for around 73% of all our water. The decommissioning of this in 2010 should result in a dramatic reduction in our water use.

Fig 3.5.1 – 2009 M-ACE water use

Month	Product Built	Water used (m ³)	Water used / product (m ³)
January	9226	2585	0.28
February	9399	2405	0.26
March	11467	1535	0.13
April	8135	2461	0.30
May	7789	3013	0.38
June	7531	1808	0.24
July	6243	2618	0.42
August	6243	1483	0.24
September	9575	1420	0.15
October	10562	1867	0.18
November	13204	1770	0.13
December	10757	1089	0.10
Average	9177	2004.5	0.234
Total	110131	24,054	2.81

Fig 3.5.2 – 2009 M-ACE trade effluent use (water)

Month	Product Built	Trade Effluent used (m ³)	Trade Effluent / product (m ³)
January	9226	1792	0.19
February	9399	1738	0.18
March	11467	1145	0.10
April	8135	1644	0.20
May	7789	985	0.13
June	7531	601	0.08
July	6243	1494	0.24
August	6243	395	0.06
September	9575	1727	0.18
October	10562	1164	0.11
November	13204	1134	0.09
December	10757	632	0.06
Average	9177	1204	0.135
Total	110131	14,451	1.62

4: Targets and Objectives (2009)

4.1: The Mitsubishi environmental management system ensures that structured objectives are set, and personnel are given the means and reasonable timescales to achieve any targets. We identify our Targets and Objectives through our annual Environmental Management Program Plan. Identification of significant environmental aspects will determine the immediate objectives.

Objectives set by our company are initially identified from the 3 overall target areas set down in our group Environmental Vision 2021:

- 1.) Contribute to the prevention of global warming**
- 2.) Create a recycling based society**
- 3.) Foster environmental awareness**

From these main subjects, we were able to agree on our own Targets and Objectives (applicable to M-ACE) for the year 2009.

Detailed below are the 5 most important objectives we identified - although there were many others.

Objective 1: ISO 14001 Certification

Retain our ISO 14001 certification standard by way of continued excellent environmental performance. This certification ensures that we have an appropriate environmental management system in place

During 2009 BSI conducted two on-site audits for ISO:14001 (20th July & 8th December). Minor non-conformities from previous visits were rectified.

Objective 2: Legislative Compliance

Continued compliance with all applicable environmental legislation. The legal register is kept up to date and legislative compliance checked at quarterly review meetings.

This register is fed by a quarterly update report that we receive from our environmental consultants 'Ecolibrium', as well as being reviewed and actioned at our own environmental meetings to ensure that we maintain legal compliance.

Objective 3: Reduce Energy Consumption

Over our four factories we have made a concerted effort to try and reduce our overall energy consumption. This has mainly been carried out by the replacement of old sodium lighting, but also through improved scheduling of heavy energy-use plant, and education of staff into energy saving measures.

In mid 2009, a nightshift audit was carried out to identify overall night time factory energy use. We were able to act on these results and make identifiable savings by eliminating the use of some unnecessary lighting.

Each year we set energy use targets, which are determined to be realistic figures.

They are agreed upon by the Environmental team, and are monitored throughout the year. Our target energy figures against actual figures for 2009 are shown below:

Target Electricity = 33.78 KwHr/unit
Actual Electricity = 32.01 KwHr/unit

Target Gas = 71.85 KwHr/unit
Actual Gas = 45.75 KwHr/unit

These figures for electricity and gas show that we were within our own projected targets for the year.

Objective 4: Calculate CO₂ emissions:

Fig 4.1 (below) shows our Carbon footprint figures*. It should be noted that the emissions figures can be affected by the production numbers. ie.) there will always be a minimum electricity and gas use for our factories.

* Figures were calculated using 2009 DEFRA conversion factors (C/F).

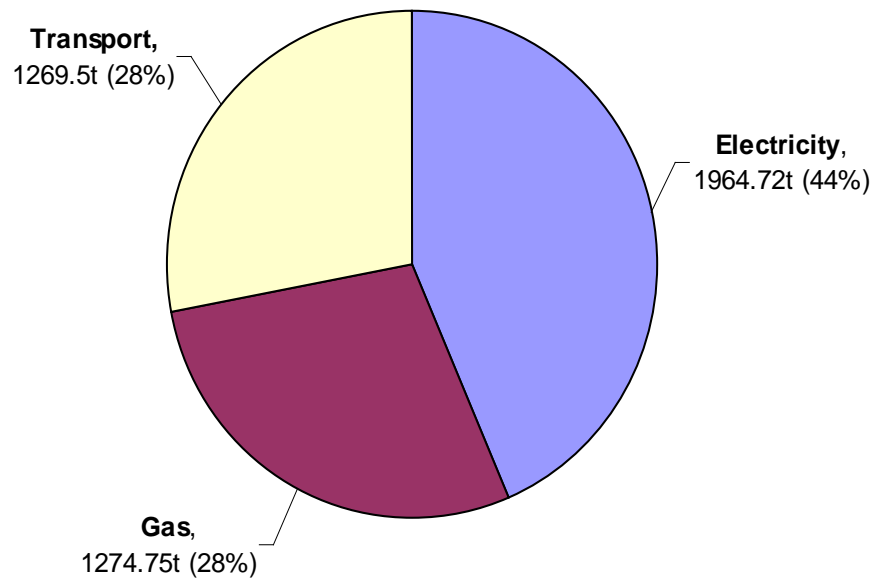
(Fig 4.1)

Year	Air Con units produced	Electricity (CO ₂ tonnes)	Gas (CO ₂ tonnes)	Transport (CO ₂ tonnes)	Total (CO ₂ tonnes)	Total (kg CO ₂ / unit)
2009	110131	1964.72 t	1274.75 t	1269.50 t	4508.97 t	39.5 kg

Figures were calculated thus:

- Electricity: 3631642 KwHr x 0.541 (C/F) = **1964.72 tonnes**
- Natural Gas: 6927998 KwHr x 0.1836 (C/F) = **1274.75 tonnes**
- Transport: Total mileage x 0.817 (C/F road) & 0.015 (C/F sea) = **1269.50 tonnes**

2009 CO₂ Emissions Breakdown



Objective 5: Continuous Improvement on Waste

Over our two sites we have recycling collection facilities in place for paper, cardboard, polythene, wood, metals (steel, copper & aluminium), fluorinated gases, WEEE, oil, and hazardous wastes.

Material is collected in bins / skips on site, stored until a reasonable amount has been accumulated and then forwarded onto our chosen recycling company.

We always make sure that any material is stored safely and in appropriate containers.

Examples include:

Paper / Cardboard: office paper, cardboard packaging and shop floor waste.

Wood: Delivery pallets and packaging wood.

Polythene: Component packaging and coverings.

Metals: Manufacturing process waste (Copper pipe, aluminium pressings & scrap steel)

WEEE (waste electrical and electronic equipment) – Circuit boards, wiring, IT equipment.



We have also recently set up a waste battery collection scheme.

This was an initiative prompted by the EC Waste Batteries and Accumulator regulations (2006/66/EC). Collection bins on the shop floor now allow employees to deposit waste batteries, as well as encouraging staff to bring them in from their homes – rather than disposing of them to landfill. These batteries are stored on site and then forwarded onto our chosen battery recycling company.



4.2: Scrap Reduction:

Despite the various lean techniques we use in the manufacturing process of our products, there will always be an element of scrap waste. It is however, what we try and do to minimise this waste that is important.

For example, our supply chain always tries to ensure that ordered materials and components are of the correct amount and appropriately packaged.

Where possible we will also return any re-usable packaging to the suppliers to use again.

We always try to adhere to the '**REDUCE – REUSE – RECYCLE**' philosophy.

4.3: Improvement plans, and reduction of materials, energy and recyclables.

We have worked hard to try and reduce our energy consumption across our 4 industrial units. Developments such as the reduction in use of natural gas and oxygen (investigation into outsourcing brazed pipes and introduction of a pre-coated material), the fitting of motion sensors in offices / meeting rooms, and replacing old Sodium lights in the factories with new high frequency / low energy lighting have shown a marked decrease in our annual energy use.

The education of employees on the importance of energy saving is also an effective way of cutting costs. Encouraging people to switch off lights, heating, PC's, electrical equipment, etc when not in use, can help in a small way to stop the wasting of energy.



4.4: Some other additional improvements we have made:

- **Introduce baler to cardboard recycling:**

This method of collecting cardboard waste has been introduced to accommodate the removal of previously installed compactor.

The removal of the compactor is in line with the transport requirements. It was also noted that there is a price decrease from £58 to £30 per tonne of baled cardboard inline with the current downturn of the market.

- **Introduce 205 litre oil drum crusher**

The drum crusher allows us to crush previously hazardous waste (oil drums), and now place them into metal recycling waste stream. This is achieved by crushing the drum and piercing the material removing the oil sufficiently.

- **Introduce paint can crusher**

The paint crushers have been purchased to enable empty paint cans to be crushed on site, thus removing from them from the hazardous waste stream to metal recycling.

5: Targets and Objectives (2010)

5.1: The targets and objectives we have identified for environmental improvement in 2010 look to build on the work that was carried out in 2009.

The five main objectives we have identified are:

Objective 1: Retain ISO 14001 status and achieve EMAS accreditation

- Retain ISO 14001 certification by way of continued excellent environmental performance.
- Achieve EMAS accreditation.
- Continued EMS compliance (MCS & Ecolabel)
 - Compliance with RoHS directive.
 - Compliance with REACH directive.
 - Create procedure to review import weight and SVHC content for REACH Directive.
 - Identification of dangerous chemicals.
 - Measure of F-Gas release to atmosphere.

Objective 2: Reduction in our carbon dioxide emissions

- Overall plan to reduce CO₂ emissions from our operations by 30% in 2021 (compared to 2008 base) - in line with the Mitsubishi Corporate Environmental Vision 2021.
- Increase the environmental brand image by the promotion of green activities.
- Comply with applicable environmental legislation.

Objective 3: Improvement on energy costs

Reduce the use of natural resources

- Review the use of chemicals and reduce environmental impact.
- Review and increase the energy efficiency of high-use energy machines.
- Extend our purchasing policy for engineering materials/machines to be more 'green'.
- Introduce factory voltage regulation system.
- Investigate the use of Eco-monitor system.

A reduction of our total energy consumption over the two sites through various energy saving measures.

As part of an ongoing study we have carried out an energy efficiency audit to determine what areas of our business use the most energy (electricity, water, gas) and where we can reduce this in order to make savings. The findings of this audit will be the basis for our energy saving work

We are also due to investigate the optimum running conditions for high-energy use site plant and equipment.

A company energy policy will be drawn up and displayed throughout the factory.

These improvements should still be possible despite an increased workload schedule.

We will also be investigating the requirements and potential benefits of possibly implementing ISO 16001 – Energy Management Systems in the near future.

Objective 4: Improved waste management streams

- Separate all wastes and insure recycling management
- Promote 3R's (Reduce, Reuse & Recycle) across all departments
- Increase recycling of materials with suppliers

One of the main objectives of 2010 will be to try and develop what we do with our food waste. At present we have around 400 people eating in two site canteens which can produce around 100 litres of food waste a week.

We already separate out plastic cups, bottles, cans, etc, so any waste that is left is mostly organic (or certainly bio-degradable) material.

We have approached several companies with a view to taking our food waste (where it would be processed via a procedure called 'Anaerobic Digestion'). This can be used to produce renewable electricity (biogas), a nutrient-rich fertiliser, or produce a cleansed packaging material suitable for recycling.

2010 should see us sending our food waste to an outside source to be recycled via anaerobic digestion – therefore removing a large volume of our waste going to landfill. We have also planned to re-design our canteens to make it easier to collect food waste, cans, bottles, paper, and general waste.



Objective 5: Reduction in material, energy, and water use.

For next year we have identified annual targets for reductions in the use of materials, energy and water use. As a company some of our greatest expenses lie in these areas.

We should also see a big reduction in these fields with the removal of our paint plant facility.

By early 2010 we are proposing to decommission the powder paint plant operation from our site. This facility is currently used to paint external panels on our air conditioner units. We use water tanks at the beginning of the process to clean the panels – which in turn produces an effluent which we have to deal with.

The future proposal will be to purchase pre-painted steel (panels) from out with our site; this will now mean that panels will go straight into the production line and thus remove the need for any rinse tanks.

The removal of the paint plant will substantially reduce our water usage, effluent output, energy use, emissions to air, as well as reducing our financial costs of effluent tank cleaning, and hazardous waste removal.

6: Waste Report

6.1: Every month we compile a company 'Waste Report'. This details the planned / actual waste costs of our manufacturing activities against the recovered costs, giving an overall accumulated cost to Mitsubishi for the month (+/- £'s).

From the report we are also able to see the weights of the various waste materials sent to the vendors.

In the 6 month period of January to June 2009:

	January	February	March	April	May	June
Metal (tonnes)	39.67	33.54	28.72	33.5	23.53	28.08
Paper/Cardboard (tonnes)	25.24	35.0	35.0	12.46	21.16	15.66
Plastic (tonnes)	0	0	3.12	0	0	2.60
Planned Waste Costs (£)	5536	5536	5536	5451	1929	5031
Actual Waste Costs (£)	3643	1313	7635	5710	3749	2285
Recovered Costs (£)	4284	6524	3873	7045	3419	6518
Savings to Company (£)	+£641	+£5211	- £3762	+£1335	- £330	+£4233

From this chart we can see for example, that in January we sent **39.67 tonnes of metal** and **25.24 tonnes of paper/cardboard** to our recycling vendors.

The actual waste costs (ie: transportation, admin fees etc) came to £3643, but we were able to recover £4284 for the value of the material.

For the month, this in turn led to a small profit for our company of £641

It should be noted that the main aim of this work is not as a money making exercise, but to try and recycle as much waste as possible and prevent excess material going to landfill.

We have a good relationship with all our recycling companies and keep in constant communication with them. As well as this, we regularly take the opportunity to invite them to our site to see our manufacturing processes and question whether they can provide us with any further services.

At our site we hold copies of company's waste carriers licences, contracts, waste transfer notes, and copies of any environmental certificates they may hold.

An annual external audit is also carried out on all our recycling companies.

This enables us to have a degree of traceability on waste products once they leave our site, and also allows us to determine whether the company in question can continue to meet the high standards that we demand.

7: Core Indicators of Environmental Performance

7.1: In summary, the 5 main core indicators for M-ACE in the year 2009 were:

1: Energy Efficiency (Electricity & Gas)

The total annual direct energy use figure (A) was **10559.6 MwHr**

The total annual product produced (B) was **110131 units**

The Energy Efficiency Ratio (R1) was **0.0958 MwHr / unit**

2: Material Efficiency

The total annual mass flow of different materials (A) was **6084 tonnes**

The total annual product produced (B) was **110131 units**

The Material Efficiency Ratio (R2) was **55.24 kg / unit**

3: Water

The total annual water consumption (A) was **24054m³**

The total annual product produced (B) was **110131 units**

The Water Consumption Ratio (R3) was **0.218m³ of water/unit**

4: Waste

The total annual generation of waste (A1) was:

i.) Copper = 7.8 tonnes

ii.) Aluminium = 31.8 tonnes

iii.) Steel = 414.3 tonnes

iv.) Cardboard / Paper = 276.8 tonnes

v.) Polythene = 12.0 tonnes

vi.) Wood = 288.6 tonnes

The total annual generation of hazardous waste (A2) was **93.3 tonnes**

A1 + A2 = 1124.6 tonnes

The total annual product produced (B) was **110131 units**

The Waste Generation Ratio (R4) was **10.2 kg / unit**

5: Biodiversity

The total land use (A) was **92612m³**

The total annual product produced (B) was **110131 units**

The Biodiversity Ratio (R5) was **0.84m³/unit**

6: Emissions:

The total annual emissions of greenhouse gases (+ transport) (A) was **4508 tonnes***

* This is CO₂ equivalent figure in tonnes – see p15 for derivation.

No other significant air emissions are produced through the sites activities.

The total annual product produced (B) was **110131 units**

The Greenhouse Gas Emissions Ratio (R6) was **40.9 kg / unit**

The total annual product (B) has been represented in ‘units produced’ (110131) - the average product weight was **55.25kg** therefore a total annual tonnage figure could be calculated as **6084.73 tonnes**.

We have chosen to monitor and measure our produced product in numerical units.

8: Closing Statement

8.1: 2009 has been a challenging year for M-ACE and the Mitsubishi Group as a whole. Despite the difficult financial climate, our overall production and sales figures still show we have managed to have a relatively successful year.

From an environmental point of view, our waste recycling levels have been pretty consistent - the total waste figure for 2009 was **1031 tonnes.** In April we also began to record the ratio of waste created per unit produced, as well as producing a recycling ratio (%) and a landfill ratio (%).

From April to Dec 2009:

Ratio of waste to units = **10.60 kg per unit**

Ratio of metal to units made = **3.20 kg per unit**

Recycling Ratio = **91.70%**

Landfill Ratio = **8.30%**

These figures will be monitored, and reduction percentages set against them in forthcoming years. We are however constantly monitoring the markets to ensure we are getting the best prices for our scrap materials, and internally we are always looking at possible ways to modify or improve our waste streams.

The introduction of the new Ecodan 8.5kW Air to Water heat pump model provided us with a new product line, and in the future manufacture of the water tank and related parts. Associated to the ATW product; in 2009 we were awarded accreditation from the Microgeneration Scheme (MCS) for production of this unit, and in 2010 we will also be working hard to gain the EU Ecolabel award for this product.

During the year we were audited for both ISO 9001 and 14001 standards and were successfully re-accredited both.

We are always looking to keep up with the latest environmental news and information, and through our membership with various organisations such as the Green Business Partnership (<http://www.thebep.org.uk>) we have been able to attend many different seminars, presentations, and site visits detailing such areas as, carbon footprinting, energy reduction, and managing food waste.

Though the Onsite Insights group (<http://www.onsiteinsights.co.uk>) we encourage companies to come to our factory to see the environmental work that we have been carrying out. This can also be a good opportunity to speak to other companies, share information and best practices, as well as promoting our environmental philosophies.

We have close links in Europe to EPEE, JBCE, as well as FETA, DEFRA, Carbon Trust, and BSI in the UK.

We also have a subscription to 'ENDS Europe' which is a European environmental information service that gives us daily updates on the latest environmental news and legislation.

Internal and external audits were carried out throughout the year, and we continue to work with our recycling outlets to try and achieve the best possible disposal solutions.

Our plans to investigate other environmental improvements will continue in 2010.

9: Further Information

9.1: We are always interested to get feedback regarding our environmental efforts, so if you have any further questions or comments please contact our Environmental Engineer (Richard Lowrie) at our Livingston facility:

Mitsubishi Electric
(Air Conditioning Systems Europe Ltd.)
Nettlehill Road
Livingston
Scotland
EH54 5EQ
Tel: 01506 445500

This statement can also be accessed at the Mitsubishi Electric website:
Web: <http://www.mitsubishielectric.com/eco>

EMAS verification:

“This statement has been validated by Richard Edmond on behalf of BSI.
BSI is accredited for EMAS verification with the registration reference UK-V -0002
The validation was completed on Tuesday 25th May 2010.”