
GreaseShield™



GreaseShield™ Product Appraisal
WSA – PS – 805 – TWA 1109
May 2014
GS1850 AST CRM4 Active Grease Separator
For Woolworths Chicken Cookers

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Amendment History

Date	Amend Ref No/	Section/ Page No	New Issue	Reason	Auth by
14-10-11	0	ALL	A	First Issue of WSAA GreaseShield™ Product Appraisal Application.	PON
20-03-12	1	ALL	B	Second Issue of WSAA GreaseShield™ Product Appraisal Application.	PON
28-03-14	2	ALL		Third concise issue for WA	AR
8-05-14	3	ALL	D	Structural amendments for WA	AR

Foreword

The Product Appraisal application includes descriptive literature, specification and drawings relating to the GreaseShield™ model GS 1850 AST CRM4 Active Grease Separator. It is the responsibility of the installer, operator and maintenance personnel to read and fully understand the Installation and Operations manual instructions before installing, commissioning or operating the GreaseShield™.

Terms & Definitions

FOGs – Fats, Oils and Greases.

FSEs – Food Serving Establishments.

EPAS – Environmental Products & Services Ltd

Section 1: Introduction

Manufacturer Contact Details:

Manufacturer: Environmental Products & Services Ltd
Address Line 1: Unit 5 Shepherds Drive
Address Line 2: Carnbane Industrial Estate
City: Newry
County: Down
Post Code: BT34 6JQ
Country: Northern Ireland, United Kingdom
Telephone: +44 (0)28 30833081
Fax: +44 (0)28 30257556
E mail: info@EPAS-LTD.com
Website: www.EPAS-LTD.com

Manufacturer Overview:

EPAS is the manufacturer of the 'award winning' GreaseShield™ Range of Pro-Active Grease Trap/Separators since 1998. EPAS has supplied GreaseShields™ to many prestigious projects & clients including National Stadia, Fast Food Chains, Large Supermarket Chains, Restaurants, Hospitals and many other types of Food Serving Establishments (FSEs). The Company is headquartered in the United Kingdom and supported by manufacturing bases in Europe and Asia.

Environmental Products & Services Ltd., (EPAS) aims to exceed customers' expectations worldwide, with product quality, performance and value for money. EPAS seeks to reduce customers' operating costs, provide effective solutions, reduce carbon emissions and recycle the harvested waste streams into a renewable source of energy.

EPAS invests in innovation and offer sustainable solutions to the problems of fats, oils and grease (FOGs) being discharged from food service establishments (FSEs), eliminating recurring blockages in drains attributable to FOGs and food waste entrained in effluent from FSEs. EPAS is working to generate both electrical and thermal renewable energy by harvesting FOGs. The company is committed to providing sustainable solutions in respect of the conversion and recycling of food waste.

EPAS operates a fully integrated Management System which meets the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001 and has implemented the Business Excellence Model (EFQM), to facilitate effective quality and environmental management and to deliver continuous improvements in all aspects of the company's activities.

EPAS is a preferred supplier to the British Hospitality Association and enjoys membership of British Water, CESA (Catering Equipment Suppliers Association) and CEDA (Catering Equipment Distributors Association). The M.D. of EPAS is a founder member of the International and European FOG Associations. (IFOGA and EFOGA).

Australian Distributor Contact Details:

Manufacturer: Avem PTY Ltd
Address Line 1: 1-7 Ausco Place
City: Dandenong
County: Victoria
Post Code: 3175
Country: Australia
Telephone: (03)9771 4477
Fax: (03)9771 4400
E mail: info@avem.com.au
Website: www.avem.com.au

Distributor Overview:

Avem Pty Ltd is a family owned business that was established in 1980 and was originally based in South Melbourne. Early operations included supplying equipment into hotels and supermarkets in the Melbourne metropolitan region. In the early 1980's Avem broadened their supply agreement with a major supermarket chain and installed equipment in many of their locations nationally. Avem Pty Ltd., established a strong national service network to promptly and efficiently respond to the technical support requirements of their equipment.

As a result of their service capabilities Avem Pty Ltd has grown nationally and become renowned as the leading supplier of food service equipment to the retail sector. In addition they have established and developed strong links with the foodservice market through their skills in service, support and logistics management.

Avem Pty Ltd currently supply a broad range of foodservice equipment to many significant major organizations including National Foods, Brumby's, Coles Express, Caltex, Coles, Woolworths and many others. Their continuing success in the market place has been based on high quality equipment and the expertise of their experienced sales team; their extensive and capable service network and their ability to adapt to meet the needs of their varied customer base.

GreaseShield™ Model

The GreaseShield™ model covered within this product appraisal is as follows:

GS 1850 AST CRM4 Active Grease Separator

To View the GreaseShield™ in operation please click on the following link:

www.EPAS-LTD.com/Videos.html.

Brochures on the GreaseShield™ models can be downloaded from the following link:

<http://www.epas-ltd.com/pdfs/brochures/Grease-Shield.pdf>

Please also refer to Appendix 1 to view the cover page of the brochure.

GreaseShield™ Products Overview

Stage 1: Solids Separation

The GreaseShield™ works to remove and dewater organic solid matter that is typically entrained in the effluent preventing anaerobic foul smelling conditions.

AST Series - Effluent from Grease Producing appliances / Sinks enters the inlet/s of the GreaseShield™. Food Solids get retained inside a hopper where an inclined auger automatically dewater and removes the solids to an external solids cartridge. The hopper has filtration holes allowing the screened effluent to pass through.

Stage 2: Automated FOG Separation

Effluent from FOG contamination points in commercial kitchens typically originates from Steam Combi Ovens, Convection Rotisserie Ovens, Pot Sinks, Pre Rinse Sinks, Dishwashers, and Canopies etc. The model GS 1850 AST CRM4 maintains the temperature of the effluent bath at 40 Celsius during operation using a controlled heater element.

A number of co-operating Baffles and a Reverse Flow Direction together with the difference in specific gravities of FOGs and water assist in retaining FOGs and help to counteract emulsified contaminants.

The GreaseShield™ removes FOGs using an Oleophilic (attracts FOGs) and Hydrophobic (repels water) rotating drum in conjunction and co-operation with a silicone rubber blade having anti-static ingredients allowing FOGs to be removed externally for recycling and safe disposal.

Stage 3: Automated Self Cleaning

GreaseShield™ has an automated recirculation of grey effluent feature to agitate and clean the tank followed by cleaning cycles to remove fine sedimentation and prevent foul smells.

The automated Self Cleaning function eliminates the recurring need to pump greasetraps, refill with clean water, and eliminates the costly use of biological agents, enzymes and chemicals.

GreaseShield™ does not smell in operation because it removes organic matter and FOGs typically entrained in the heated effluent leaving a commercial kitchen, thus inhibiting the biological degradation of organic matter in effluent and eliminating the conditions under which anaerobic conditions prevails.

Other Functions

The GreaseShield™ also incorporates an anti-flood pump that activates if the water level within the unit rises too high. This function is calibrated once per day.

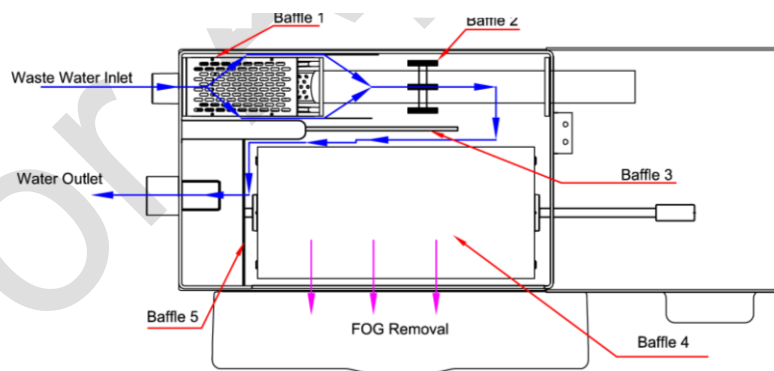
The above function is linked to a CIP (Cleaning in Place) function.

Where GreaseShields™ are connected to a potable water supply; measures are taken to prevent contamination of potable water arising from back flowing or back siphonage.

All functions within the GreaseShield™ Range of Pro-Active Grease Trap/Separators are controlled by a programmable logic controller (PLC).

Reverse Flow Configuration

As the effluent enters the GreaseShield™ a combination of retaining baffles, including a magnetic baffle, reverse flow configuration and the differing specific gravities of water and FOGs which are in turn complemented by thermal layers within enable the separation and retention and removal of the FOGs.



5 Year Structural Warranty

EPAS warrants to the original user that the Stainless Steel Components and Polypropylene inner tank manufactured by it shall be free from material defects in workmanship and materials for a period of 60 months / 5 years.

Further Explanation of How GreaseShield™ Works

1. GreaseShield™ is a proactive greasetrap to deal with emulsified FOGs that would otherwise pass through into the drainage system to present problems.
2. Eliminating contamination at source GreaseShield™ protects the drainage and water course systems whilst harvesting a source of renewable energy, thus contributing to a sustainable environment. The design of the GreaseShield™ has had regard to the Eco Design Directive and is 99% recyclable at the end of its working life. The GreaseShield™ is designed to prevent blockages of FOG origin in drains and protects pumping stations whilst significantly reducing the loading on waste water treatment plants. Where sampling of effluent is practiced, significant effluent treatment charges can be applied as a result of high BOD, SS and FOG levels being detected. GreaseShield™ achieves significant reductions in the BOD; COD; FOG and SS loading levels of effluent being discharged from commercial food service premises.
3. The recurring need to pump greasetraps and refill with clean water is reduced as is the costly use of biological agents, enzymes and chemicals.
4. Recognising that water is a scarce resource GreaseShield™ uses and recirculates grey water to carry out internal cleaning thereby conserving a valuable water resource. Water usage and associated costs are reduced because the need to pump out and refill with clean water is eliminated. Where GreaseShields™ are connected to the potable water supply; measures are taken to prevent contamination of water arising from back flowing or back siphonage.
5. GreaseShield™ uses a combination of retaining baffles; including a magnetic baffle, reverse flow configuration and the differing specific gravities of water and FOGs which are in turn complemented by thermal layers within the effluent. All of these factors, working in conjunction with the properties of the unique oleophilic and hydrophobic FOG removal means, all contained within a small compact unit that is easily installed in commercial kitchens where space is at a premium.
6. GreaseShield™ does not smell in operation because it removes organic matter and FOGs typically entrained in the heated effluent leaving a commercial kitchen, thus inhibiting the biological degradation of organic matter in effluent and eliminating the conditions under which anaerobis prevails.
7. GreaseShield™ is a proactive unit that is highly efficient and unlike other greasetraps does not require to be regularly pumped; nor does it permit noxious odours to be emitted in operation; nor does it permit biological degradation of organic matter in water to occur thus significantly reducing the BOC, COD, FOG and SS loadings.

To View the GreaseShield™ in operation please click on the following link: www.EPAS-LTD.com/Videos.html.

Section 2: Quality Control

Mission and Commitment to Quality

Our corporate mission is to protect the environment by providing sustainable and environmental solutions for our clients. We aim to exceed customer's expectations worldwide with product quality, performance and value for money.

Standards & Certifications

EPAS operates an accredited integrated management system incorporating the following:

- [Quality management system to ISO 9001:2008](#)
- [Environmental management system to ISO 14001:2004](#)
- [Occupational health and safety management system to OHSAS 18001:2007](#)

EPAS Integrated management system is audited twice annually by Moody International Ltd. Certificates are available for download from:

www.EPAS-ltd.com/Standards_and_Certifications.html

Effluent Quality

Testing of the effluent leaving the GreaseShield™ has been carried out by independent local authority's FOG Compliance programme. The effluent being sampled from the outlet of the GreaseShield™ located in FSEs. Please refer to Appendix 2 for results.

A large Australian supermarket has carried out tests of the GreaseShield™ on both the fat harvested and the effluent waste from a Rotisserie / Multisserie oven cooking chickens. Please refer to Appendix 3 & 4 for results of the effluent and fat quality samples.

EPAS commissioned testing of the effluent from the GreaseShield™ Range to comply with ASME A112.14.3 – 2000 and PDI-G-101.

Statement of Conformity and CE mark

Please see Appendix 5 for statement of conformity for the following model: GS1850 AST CRM4

Sizing & Selection of GreaseShield™:

- Before purchasing & installing a GreaseShield™ a calculation is required to ensure correct sizing & selection for a trouble free installation.
- The sizing calculation should be to determine the maximum or peak flow rate to be discharged through the GreaseShield™ and by reference to PDI G-101, ASME A112_14_3_2000, WSA PS – 805 or CSA B481 Standards. Please see calculation in following page.
- The peak flow rate is determined by calculating the maximum amount of wastewater that can be discharged per minute or second through the GreaseShield™. Peak flow rate shall be used as the basis for determining the minimum size of GreaseShield™ that is required. Peak flow rate shall be determined by:
 - Actual drainage load from fixtures using the total discharge volume, which is based on the size, number of fixtures and expected drain down time into the GreaseShield™
 - Determining the Max flow possible through the diameter of Inlet Piping into the GreaseShield™.
 - Appliance Manufacturer's literature shall be consulted for the peak discharge rate.
- Choosing a GreaseShield™ with a flow rating larger than the expected peak flow rate will improve removal efficiency. A GreaseShield™ that is rated for less than the expected peak flow rate should not be selected.
- Should you require additional information on sizing or selecting the appropriate GreaseShield™ model, please do not hesitate to contact [Avem Pty Ltd](#) or directly to [EPAS](#) (Please see contact details in [Section 1: Introduction](#)).

GreaseShield Sizing & Selection Calculation

Project Details	
Project Name: XXXXXXXX	County: XXXXXXXX
Contact Name: XXXXXXXX	Country: XXXXXXXX
Address Line 1: XXXXXXXX	Post/Zip Code: XXXXXXXX
Address Line 2: XXXXXXXX	Telephone: XXXXXXXX
City: XXXXXXXX	Mobile: XXXXXXXX
Floor No: XXXXXXXX	E mail: XXXXXXXX
Drawing No: XXXXXXXX	Enforcement Authority: XXXXXXXX
Room No: XXXXXXXX	MEP/FCSI Consultant: XXXXXXXX
Room Description: Main Kitchen	Catering Supplier: XXXXXXXX
Additional Comments:	

Sizing Calculation					
Item Description:	Potwash Sink				
Item No:	1				
		Dimensions			
Description:		Length (mm)	Height (mm)	Width (mm)	
Bowl No: 1		500	300	400	
Bowl No: 2		500	300	400	
				Volume (L)	
				60	
				60	
				0	
		Total Volume (L) of Item:			120
Adjust for Actual Drainage Load (%):	75.00%				
Volume of Actual Drainage Load (L):	90				
Drainage Period (Minutes):	1.00				
Flow Rate (L/M)	90.0				
Flow Rate (L/S)	1.5				

Expected Max Flow into GreaseShield	
Flow Rate (L/M)	90.0
Flow Rate (L/S)	1.5
Flow Rate (US GPM)	24

GreaseShield Selection:			
PDI Size Symbol	US GPM	L/M	L/S
4	4	15	0.25
7	7	26	0.44
10	10	38	0.63
15	15	57	0.95
20	20	76	1.26
25	25	95	1.58
35	35	132	2.21
50	50	189	3.15
75	75	284	4.73
100	100	379	6.31

GreaseShield Model Required: GreaseShield 1850 AST

Additional Notes:
 GreaseShield is required to be installed as per manufacturer's instructions.
 GreaseShield is required to be maintained as per manufacturer's instructions.
 Sampling from the GreaseShield as per manufacturer's instructions.



Section 3: Specifications and Drawings

GreaseShield™ Specifications

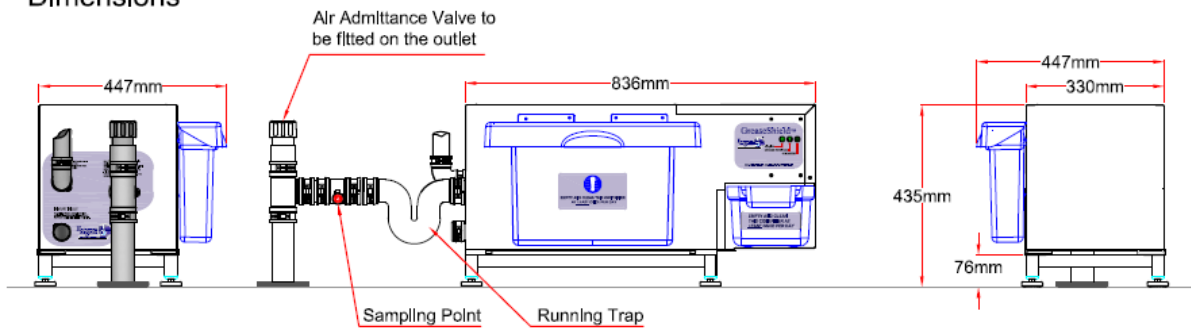
Description									
1850									
Materials									
Material External Tank	Brushed Finished Stainless Steel 304 Tank								
Material Internal Tank	Chemical Resistant Polypropylene Tank								
Weights									
Weight (empty) Kilograms	25.64								
Weight (full) Kilograms	45.51								
Flow Rates:									
Flow Rate(Average) litres per sec):	1.85								
Flow Rate (Max) (litres per sec):	2.29								
Anti-flood Safe Guard:	✓								
FOG Removal									
FOG Removal Rate (litres per hour):	4	2	4	2	4	4	2	4	2
FOG Removal Means:	A Slowly Rotating Oleophilic Drum That Attracts FOG Wiped By A Silicone Rubber Wiper Blade With Anti Friction Proprieties Attached To The FOG Storage Container								
FOG Storage Capacity (Litres):	6								
FOG Storage Container Graduated:	✓								
Solids Removal									
Automated Solids Transfer & Dewatering Rate:	✓								
Solids Storage Capacity (litres):	7								

Automated Cleaning	
Automated Internal Cleaning Cycles:	Cleaning Cycles As Standard Eliminating The Requirement To Desludge By Licensed Waste Contractor And Prevents Foul Smells
Staff Daily Maintenance:	No Requirement For Staff To Access Internal Of The GreaseShield™. Empty & Clean FOG & Solids Storage Containers A Minimum Of Once Per Day
Operational and Installation Requirements	
PLC Control:	Control Smart Programmable Relay For total Control And Additional Flexibility To Be Programmed For Specific Customer Requirements (Opening Hours And Levels Of Contamination)
Electrical Power (Watts):	47.6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Electrical Socket:	IP 56 Socket installed to Local Electrical codes and bylaws
Motor Safety Protection:	Automatic thermal safety protection cut out and reset on all motors
¾" BSP Hot Water Supply Connection	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	ECO Range Variants available to Reduce and Eliminate Water Usage.
Inlet/s & Outlet Connectors:	Flexiplumb EPDM Universal Connectors provided
Dimensions & Operational Requirements:	Please refer to Dimensional & Operational Requirements Drawings
Installation & Sizing Requirements:	Please refer to Installation and Operations Manual

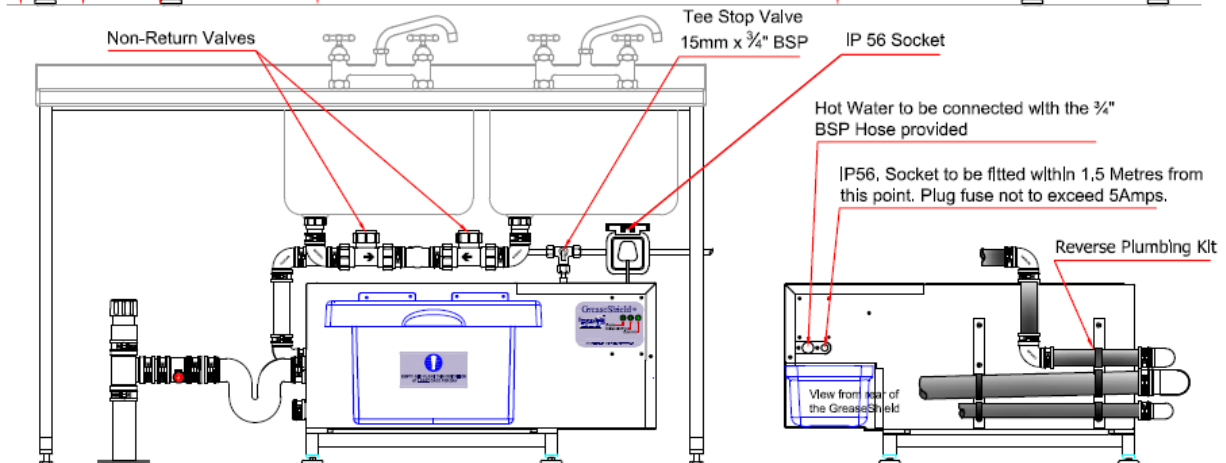
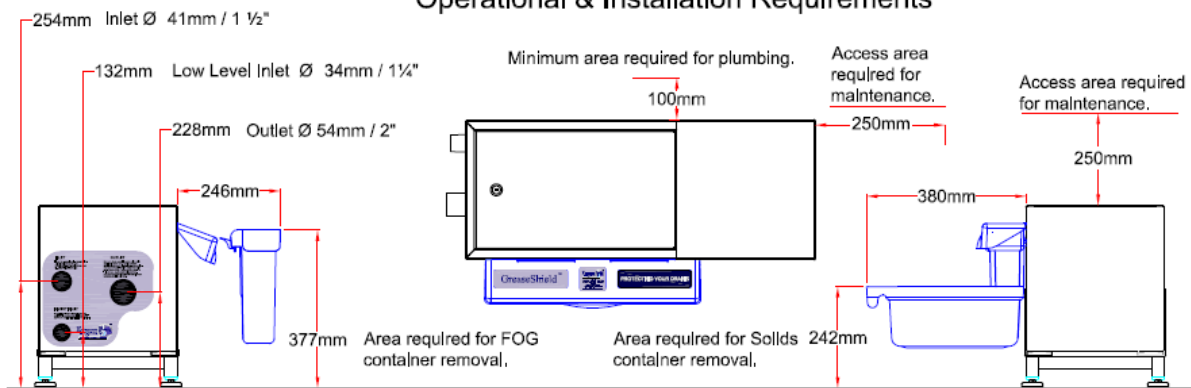
GreaseShield™ Drawings

GreaseShield™ 1850 AST

Dimensions



Operational & Installation Requirements



Section 4: Installation Requirements

Pre Installation

Local codes and bylaws

GreaseShield™ shall be selected in accordance with applicable plumbing, electrical and building codes, by-laws, and municipal ordinances. Applicable requirements can include the following:

- Maximum permissible FOG concentration in the FSEs effluent (typically between 100 and 300 mg/L);
- Mandatory maintenance requirements.
- Types of facilities required to have GreaseShield™ e.g.: restaurants, fast food chains, supermarket, hotels, prisons, hospitals etc.
- Types of fixtures and appliances that are permitted to discharge wastewater through a GreaseShield™
- Minimum distances from plumbing fixtures;
- Venting requirements; and
- Flow control device restrictions and requirements.

Location of GreaseShield™

- The GreaseShield™ to be located as close as possible to the FOG contamination ingress point/s and should not be further than 6 metres / 22 feet away.
- Should allow the inlet pipe work to have an adequate fall of a 1 in 40 into the GreaseShield™ inlet/s.
- Should allow the outlet pipe work to have a fall greater than 1 in 40 from the GreaseShield™ outlet.
- Provides adequate access for Installation & Maintenance.
- Provide access for a FlexiPlumb GreaseShield™ Sampling Point.
- The GreaseShield™ is not intended for use outside of FSEs and may require sufficient external housing to protect it from the elements.
- The GreaseShield™ is not intended to be buried underground or support any loads.

Electrical

- An [IP56 Socket](#) with an operating Voltage of 240 Volts AC 10 Amp Plug is required to connect the GreaseShield™ electrical plug into.

Water Supply

- A ¾" BSP connection complete with isolation from a hot water supply to be located within 1 metre of the GreaseShield™ location. The water pressure should not exceed 29.5 psi / 2 Bar and be not less than 4 psi/ 0.28 Bar. Water hardness to be less than 7° KH and Chlorides being less than 30 ppm.

Dimensions & Operational Requirements

- Please refer to the drawings for Dimensions & Operational Requirements:

Inlet Pipe work

- The Installer shall be responsible for the design, supply, installation, testing and commissioning of the inlet pipe work. The GreaseShield™ is provided with [Flexiplumb](#) EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work.

Outlet Pipe work

- The Installer shall be responsible for the design, supply, installation, testing and commissioning of the outlet pipe work. The GreaseShield™ is provided with [Flexiplumb](#) EPDM hub-less couplings to allow various materials with different wall thickness to be connected to the inlet/s and outlet pipe work. N.B. A drain size of >50mm/2" is required to accept the 50mm/2" outlet piping of the GreaseShield™.

Handling Requirements

- Adhere to all local & national Manual Handling Regulations to prevent injuries with safe lifting.

Installation

Selection of Installer

- Where the service provider selected by the FSEs to install, commission & provide staff training on the GreaseShield™/s is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Risk Assessments

- A Risk assessment should be carried out by the installer to prior to the installation to:
 - Identify the hazards
 - Decide who might be harmed and how
 - Evaluate the risks and decide on precaution
 - Record your findings and implement them
 - Review your assessment and update if necessary

Method Statement:

- A Method Statement (safe system of work) should be completed by the installer to prior to the installation detailing the way a work task is to be undertaken:
 - Identify the hazards
 - Step by step guide on how to do the job safely.
 - Control measures to be introduced to ensure the safety of anyone who is affected by the task.

Insurances

- It is highly recommended the installer has adequate coverage for Public & Employers Liability prior to the installation.

Water Connection

- A ¾" BSP water intake hose has been provided - connect to the ¾" BSP fitting (solenoid valve) to the rear of the GreaseShield™ and then to the ¾" BSP fitting on the potable water supply. Switch on water supply. **Note:** the solenoid valve will not allow water into the GreaseShield™ until the unit is electrically connected.
- Check for any leaks & fix.

Inlet Pipe work

40mm/1.5" Inlet Piping

- The 40mm/1.5" Inlet is provided with a 40mm/1.5" [Flexiplumb](#) 90 degree bend.
- The inlet piping to the 40mm/1.5" Inlet must not be greater than 40mm/1.5".
- The inlet piping must have a fall greater than 1 in 40 into the GreaseShield™.
- Straps or clips for supporting the inlet piping should be fixed about every 510mm (20").
- Check for any leaks & fix.

32mm/1.25" Inlet Pipe Work

- The 32mm/1.25" Inlet is provided with a 32mm/1.25" [Flexiplumb](#) 90 degree bend.
- The inlet piping to the 32mm/1.25" Inlet must not be greater than 32mm/1.25".
- The inlet piping must have a fall greater than 1 in 40 into the GreaseShield™.
- Straps or clips for supporting the inlet piping should be fixed about every 510mm (20").
- Check for any leaks & fix.

Outlet Pipe work

- The 50mm/2" Outlet is provided with a 50mm/2" [Flexiplumb](#) 90 degree bend.
- The Outlet piping from the 50mm/2" Outlet must not be reduced at any time.
- The outlet piping must have a fall greater than 1 in 40 from the GreaseShield™.
- Straps or clips for supporting the inlet piping should be fixed about every 510mm (20").
- Check for any leaks & fix.

Electrical Connection

- Connect the GreaseShield™ electrical socket into the [IP56 Socket](#) provided.

Commissioning of Installation

- Ensure GreaseShield™ is removing FOGs
- Ensure GreaseShield™ is removing Solids
- Ensure GreaseShield™ can handle the flow rate.
- Ensure GreaseShield™ has been installed correctly.

Section 5: Operations – GreaseShield™ Daily Maintenance

General:

- Posters are available for download via www.EPAS-LTD.com or clicking in the following link:
 - [Daily Maintenance Log](#) – (Please see Appendix 7)
 - [GreaseShield™ Daily Maintenance](#) - (Please see Appendix 8)
- Please refer to EPAS YouTube channel for video on GreaseShield™ Daily Maintenance:
 - <http://www.youtube.com/EPASLtd>
- If there are any dirt/debris/liquids on or around the GreaseShield™ please remove and clean on a daily basis.

FOG Container:

- Empty & Clean FOG Container at least once daily.
- When connected to a chicken cooker the Standard Operating Procedure (SOP) requires emptying after each cook or at least when the container is more than half full.
- Operational experience may require the FOG Container to be emptied and cleaned more than once per day depending on quantities of FOG being removed.
- Remove FOG Container & empty contents into a [FOG Storage Container](#).
- Record the amount of FOGs removed into a [Daily Maintenance Log](#).
- Clean the FOG Container with water not exceeding 60°C, sanitise & check for wear and tear.
- Ensure wiper blade is clean & check for wear and tear.
- Re attach FOG Container correctly to GreaseShield™.

Solids Container:

- Empty & Clean Solids Container at least once daily.
- Operational experience may require the Solids Container basket to be emptied and cleaned more than once per day depending on quantities of Solids being removed.
- Remove Solids Container baskets & empty contents into Food Waste Collection Bin.
- When the Solids Container is removed, check & clean to ensure no solids has landed on the shelf & fallen to the rear of the unit.
- Clean the Solids Container with water not exceeding 60°C, sanitise & check for wear and tear.
- Locate Solids Container correctly to GreaseShield™.

Staff Training

- To contribute to the goal of managing waste responsibly and minimizing the frequency of required cleaning and maintenance, the facility shall provide training to its employees in
 - the proper function, operation and maintenance of GreaseShield™;
 - the benefits of [Best Management Practices](#) within different locations within FSEs
 - the proper storage, handling, and disposal of wastes;
 - To obtain the maximum removal efficiency from a GreaseShield™ facilities need to establish and adhere to a regular schedule of cleaning and maintenance; and
 - Ensure that maintenance staff or external contractors follow the operating and maintenance (cleaning) instructions provided.

- Frequency of maintenance depends not only on the amount of FOG and Solids generated but on the facility's implementation of [Best Management Practices](#) to reduce the FOG and Solids discharged into the sanitary sewer system.
- [Signs](#) should be posted in the kitchen, especially over the sinks & major FOG & solids contamination ingress points, informing staff what can and what cannot be poured down the drains.

Disposal of intercepted substances

- FOGs & other intercepted substances removed from the GreaseShield™ shall be disposed of:
 - in accordance with applicable regulations and bylaws;
 - by a licensed waste hauler; and
 - At a licensed waste disposal facility.
- Note: FOGs and Solids removed shall not be discharged into sanitary sewers, storm sewers, drainage ditches, or surface water.

SECTION 6 – Servicing Schedule

Annual Service Requirements

- EPAS recommends that the GreaseShield™ is serviced by a trained and competent service engineer at least once annually. The purchaser should also check and comply with local codes and bylaws on mandatory maintenance requirements. If the FSE does not adhere to [Best Management Practices](#) this may require additional service visits per year, but this would be based on operational experience.

Selection of Trained Servicing Engineer

- Where the service provider selected by the FSEs to service the GreaseShield™ is not the manufacturer of the equipment, the FSE should ensure that the service provider has been authorised by the manufacturer or deemed competent to do so.

Risk Assessments

- A Risk assessment should be carried out by the service provider to prior to works:
 - Identify the hazards
 - Decide who might be harmed and how
 - Evaluate the risks and decide on precaution
 - Record your findings and implement them
 - Review your assessment and update if necessary

Method Statement:

- A Method Statement (safe system of work) should be completed by the service provider to prior to works detailing the way the work task is to be undertaken:
 - Identify the hazards
 - Step by step guide on how to do the job safely.
 - Control measures to be introduced to ensure the safety of anyone who is affected by the task.

Insurances

- It is highly recommended the service provider has adequate coverage for Public & Employers Liability prior to works being undertaken.

Levels of Protection

- The Company recommends that before working with / on / or inside the GreaseShield™ it should be isolated from the power supply by disconnecting its electrical plug from the IP56 socket electrical supply.

Appendix 1: GreaseShield AST Brochure:

GreaseShield™

AST (Automatic Solids Transfer) Range

Automatic Grease Separation and Solids Removal

Environmental
Products & Services Ltd.
www.EPAS-Ltd.com



*"The best
Greasetrap
in the world"*

Key Benefits

- ✓ GreaseShield is the only proactive greasetrap in the world to deal with emulsified FOGs. Automatically separates grease from effluent to achieve < 100 ppm FOG Discharge.
- ✓ GreaseShield removes entrained solids in real time to reduce BOD, COD and SS loadings reducing loading on waste water treatment plants and pumping stations.
- ✓ Eliminates frequent pumping costs, harvesting a source of renewable energy.
- ✓ Self emptying and self cleaning. No need for staff to access the internal of the machine.
- ✓ User Friendly! Odour Free!
- ✓ No need to purchase enzymes or biological agents! No heating elements. Low operating costs.
- ✓ Reduce CO² emissions and avoid loss of a renewable energy source caused by pumping out greasetraps.
- ✓ Award Winning Modular Technology. Small, compact and easily installed in any Deli or Kitchen!
- ✓ Eco friendly, sustainable design - 99% recyclable!



Members of

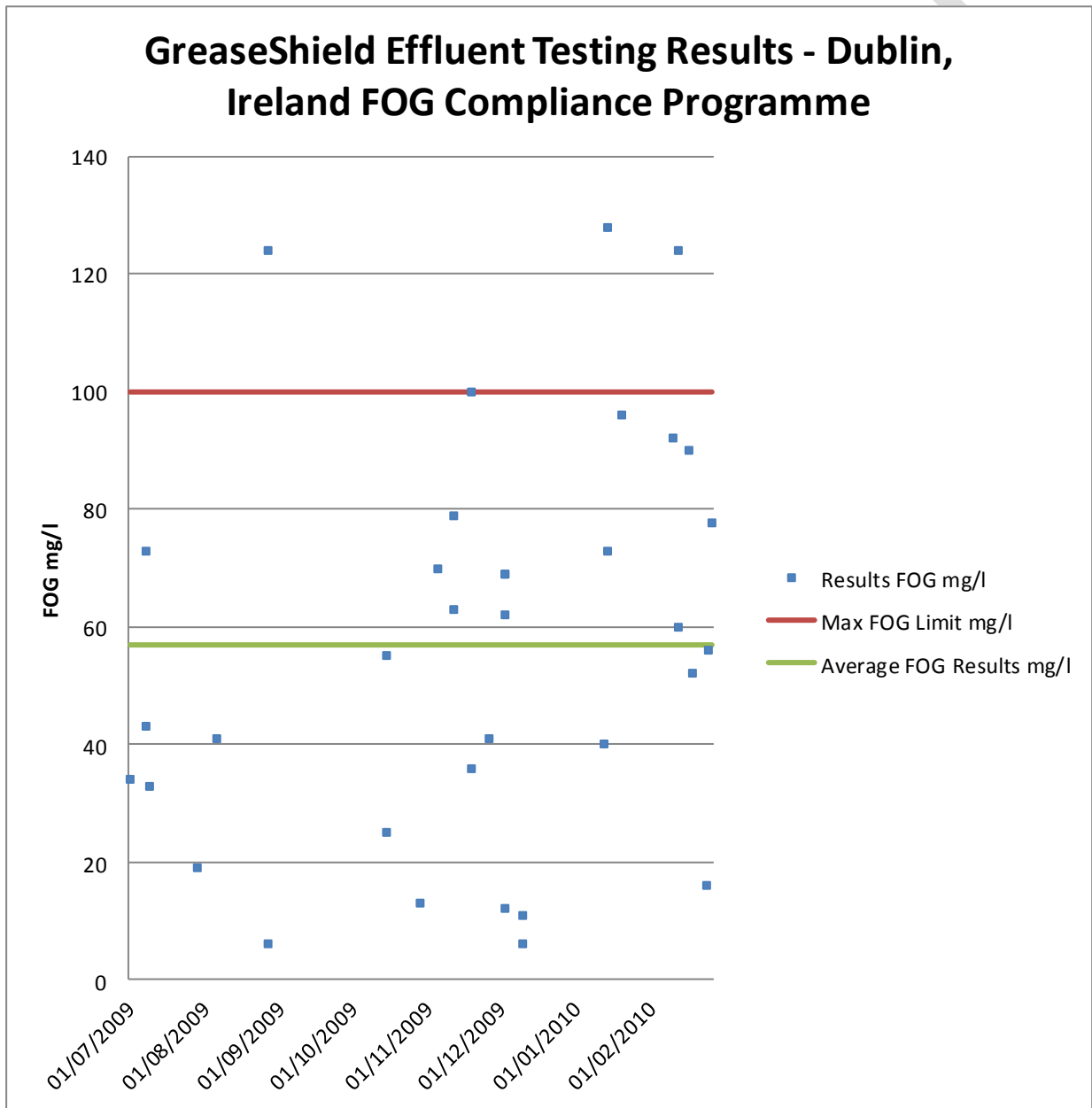


Award Winning Technology

5 Shepherd's Drive
Cambane Industrial Estate
Newry, Co. Down
N. Ireland, BT35 6JQ
Tel: +44 (0) 28 3083 3081
Fax: +44 (0) 28 3025 7556

www.GreaseShield.com

**Appendix 2: GreaseShield Effluent Testing Results - Dublin, Ireland
FOG Compliance Programme:**





ID No.	date taken	time taken	Results FOG mg/l	Grease Type Description
175	01.07.2009	11:50	34	GreaseShield
195	08.07.2009	11:56	43	GreaseShield
197	08.07.2009	11:59	73	GreaseShield
203	09.07.2009	11:03	33	GreaseShield
225	29.07.2009	12:10	19	GreaseShield
243	06.08.2009	10:00	41	GreaseShield
275	27.08.2009	11:00	124	GreaseShield
278	27.08.2009	15:00	6	GreaseShield
347	15.10.2009	14:26	55	GreaseShield
348	15.10.2009	10:35	25	GreaseShield
370	29.10.2009	11:45	13	GreaseShield
377	05.11.2009	19:10	70	GreaseShield
389	12.11.2009	11:30	79	GreaseShield
391	12.11.2009	11:56	63	GreaseShield
399	19.11.2009	16:07	36	GreaseShield
403	19.11.2009	11:30	100	GreaseShield
411	26.11.2009	11:55	41	GreaseShield
421	03.12.2009	12:26	62	GreaseShield
424	03.12.2009	12:00	12	GreaseShield
432	03.12.2009	10:40	69	GreaseShield
434	03.12.2009	11:00	69	GreaseShield
440	10.12.2009	11:10	6	GreaseShield
448	10.12.2009	11:23	11	GreaseShield
358159	13.01.2010	11:45	40	GreaseShield
358778	14.01.2010	10:35	128	GreaseShield
358779	14.01.2010	11:00	73	GreaseShield
361119	20.01.2010	11:30	96	GreaseShield
369300	10.02.2010	10:30	92	GreaseShield
370428	12.02.2010	10:35	60	GreaseShield
370430	12.02.2010	11:00	124	GreaseShield
372058	17.02.2010	11:35	90	GreaseShield
372695	18.02.2010	10:40	52	GreaseShield
375593	24.02.2010	10:00	16	GreaseShield
376691	25.02.2010	15:35	56	GreaseShield
376927	26.02.2010	10:20	77.6	GreaseShield

Appendix 3: GreaseShield Effluent Testing Results – Large Supermarket Chain Sydney, Australia Chicken Rotisserie Oven



SILLIKER AUSTRALIA
SYDNEY LABORATORY
 Unit C2, 391 Park Road
 Regents Park, NSW 2143
 02 8718 6888 Fax 02 8718 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-50338698-0
Supersedes:	None
COA Date:	19/09/2011
Page 1 of 1	

TO:
 Mr. Norm Nugent
 NSW State Manager
 Avem Pty Ltd
 2/11 Binney Road
 KINGS PARK, NSW 2148

Received From:	Kings Park, NSW
Received Date:	13/09/2011
P.O.#:	Avem Pty Ltd
Location of Test: (except where noted) Regents Park, NSW	

Analytical Results

Desc. 1:	Chicken Water	Sample Number:	451369200
		Condition Rec'd:	NORMAL
		Temp Rec'd (°C):	20
		Date Started:	16/09/2011
Analyte	Result Units	Method Reference	Result Date Loc.
Fat	<0.1 g/100ml	FAB 13.1	16/09/2011

HELEN BEVAN
 LABORATORY MANAGER, CHEMISTRY



NATA Organic Accreditation Number 209
 Address: 200 Technology Dr, 2111, New Castle, NSW 2206
 Phone: 61 61 839 6200 Fax: 61 61 839 6201
 Accredited for compliance with ISO/IEC 17025
 The above details are reproduced as per NATA requirements

*Asterisk denotes tests not covered under our NATA scope of accreditation, or the scope of accreditation of our designated approved subcontractors at the time this report was prepared. Note: All subcontractors are regularly evaluated as part of our approved suppliers program; however their accreditation status is not under the control of Silliker and may be subject to amendment.

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s) as received. The data therefore may not be representative of the lot or batch or other samples. Consequently the data may not necessarily justify the acceptance or rejection of a lot or batch, a product recall or support legal proceedings. It is the responsibility of the client to provide all information relevant to the analysis requested. The report does not imply that Silliker Australia has been engaged to consult upon the consequences of the analysis and for any action that should be taken as a result of the analysis. This report shall not be reproduced except in full, without the written approval of the laboratory.

TGA Licence No: 152612

ALI/COA-33

Appendix 4: GreaseShield FOG Quality Test Results – Large Supermarket Chain Sydney, Australia Chicken Rotisserie Oven



**SILLIKER AUSTRALIA
SYDNEY LABORATORY**
Unit C2, 391 Park Road
Regents Park, NSW 2143
02 87 18 6888 Fax 02 87 18 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-50338205-0
Superseded:	None
COA Date:	16/09/2011
Page 1 of 1	

TO:
Mr. Norm Nugent
NSW State Manager
Averm Pty Ltd
2/11 Binney Road
KINGS PARK, NSW 2148

Received From:	Kings Park, NSW
Received Date:	13/09/2011
P.O.#:	Averm Pty Ltd
Location of Test: (except where noted)	Regents Park, NSW

Analytical Results

Deco. 1:	Chicken Fat	Sample Number:	451369194
		Condition Rec'd:	NORMAL
		Temp Rec'd (°C):	20
		Date Started:	16/09/2011
<u>Analyte</u>	<u>Result</u> <u>Units</u>	<u>Method Reference</u>	<u>Result Date</u> <u>Loc.</u>
Moisture	0.4 g/100g	FAB 5.1B	16/09/2011

HELEN BEVAN
LABORATORY MANAGER, CHEMISTRY



NATA Grease Shield Australia Market 2011
Address: 100 Macquarie St, 2000, Sydney NSW 2000
Phone: 02 9550 6000 Fax: 02 9550 6001
Email: info@nata.gov.au
Website: www.nata.gov.au
This document shall not be reproduced without permission.

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s) as received. The data therefore may not be representative of the lot or batch or other samples. Consequently the data may not necessarily justify the acceptance or rejection of a lot or batch, a product recall or support legal proceedings. It is the responsibility of the client to provide all information relevant to the analysis requested. The report does not imply that Silliker Australia has been engaged to consult upon the consequences of the analysis and for any action that should be taken as a result of the analysis. This report shall not be reproduced except in full, without the written approval of the laboratory.

TGA Licence No: 152612

AU-COA-23

Appendix 5: GreaseShield™ 1850 AST Statement of Conformity:

Manufacturer: Environmental Products & Services Ltd
Address Line 1: Unit 5 Shepherds Drive
Address Line 2: Carnbane Industrial Estate
City: Newry
County: Down
Post Code: BT34 6JQ
Country: Northern Ireland, United Kingdom
Telephone: +44 (0)28 30833081
Fax: +44 (0)28 30257556
E mail: info@EPAS-LTD.com
Website: www.EPAS-LTD.com

We hereby declare, under our sole responsibility, that the above machinery has been subject to the quality conditions of our registration to the BS EN ISO9001:2008 management standard and complies with the provisions of the following EC Directives:

- European Machinery Directive 2006/42/EC.
- Electromagnetic Compatibility Directive 2004/108/EC, amended by 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.
- Low Voltage Directive 2006/95/EC amended by 93/68/EEC on the harmonisation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
- CE mark affixed 18th February 2005


Basis on which conformity is declared:

- The above machinery satisfies the relevant essential health and safety requirements of the European machinery Directive where appropriate.
- The above machinery complies with the protection requirements of the EMC Directive and the principal elements of the safety objectives of the Low Voltage Directive.

Standards Applied

- EN 61000-6-4:2001 Electromagnetic compatibility generic emission standard Part 2: Industrial Environment
- EN 6100-6-1:2001 Electromagnetic compatibility generic immunity standard Part 2: Industrial Environment
- EN 60204-1:2006, Safety of Machinery – Electrical Equipment of Machines

Signed: _____



Date: _____

06st December 2010

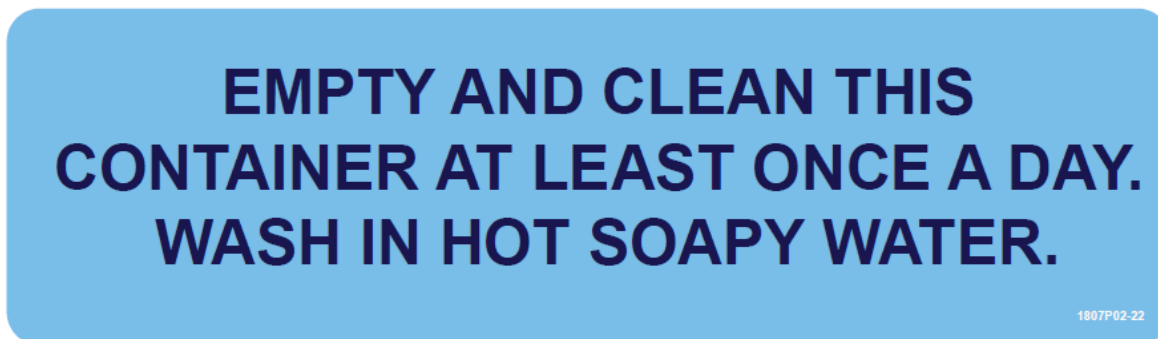
Position: **Managing Director**

Appendix 6: GreaseShield™ Identification Labels:

John Smith
Instruction Label: Empty FOG Collection Container



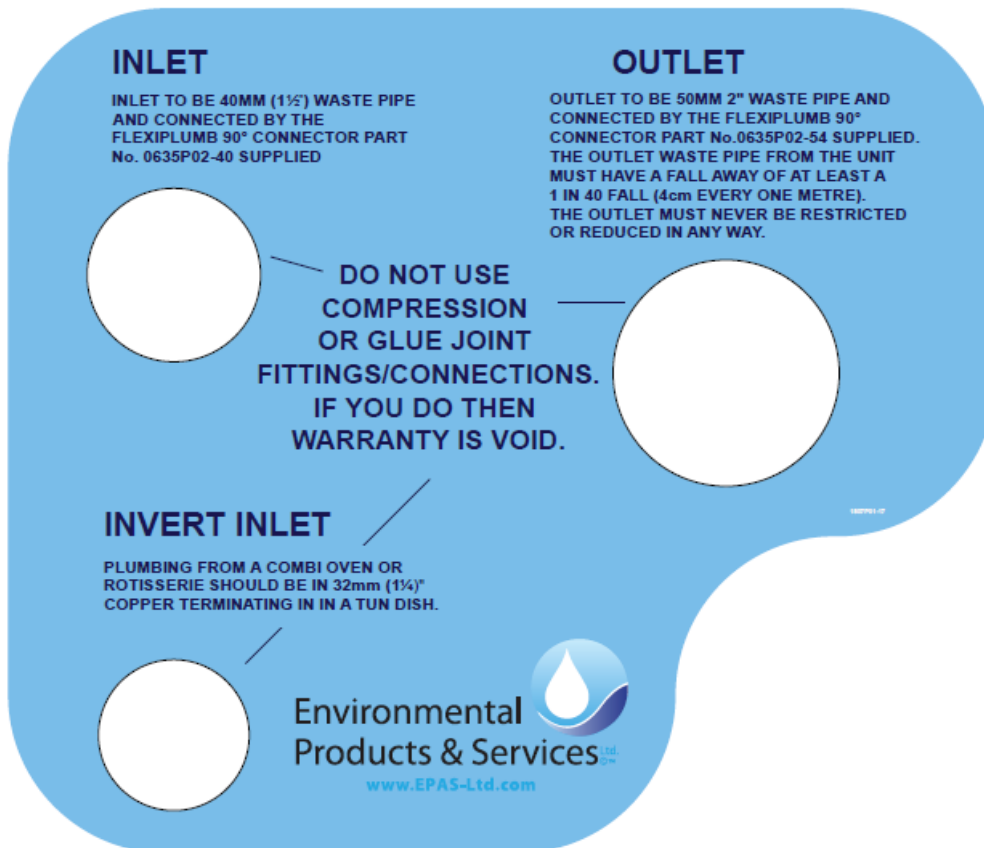
Instruction Label: Empty Solids Collection Containers and Strainer Baskets



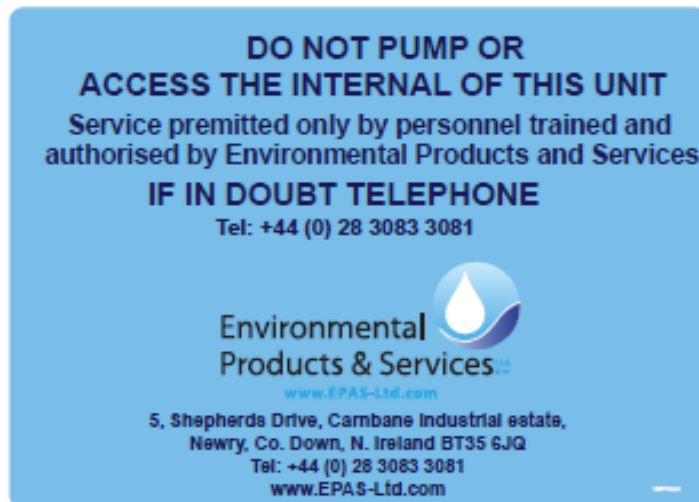
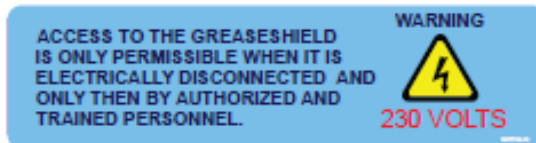
Instruction Label: GS1000 and GS 1500 Inlet/Outlet



Instruction Label: GS1500 and GS 2000 Inlet/Outlet



Instruction Label: Warning Labels



Identification Labels – Contact Details, Models and Serial Numbers



Compliance Label to WSA – PS – 805 – TWA 1109



Appendix 7: GreaseShield Daily Maintenance Record:

DAILY MAINTENANCE RECORD



Environmental Products & Services Ltd.
 5, Shepherd's Drive, Carnbane Ind. Est.
 Newry, Co. Down, N. Ireland, BT35 6JQ
 Tel: +44 (0) 28 3083 3081
 Fax: +44 (0) 28 3083 3081
www.EPAS-Ltd.com
customerservice@EPAS-Ltd.com

Week Starting Monday **GreaseShield Maintenance Record**

Day	Date	Wiper Blade Cleaned		FOG & Solids Cleaned *		FOG Amount in Litres	Solids Amount in Litres	Staff Initials and Time	
		YES	NO	YES	NO			INITIALS	TIME
Monday									
Tuesday									
Wednesday									
Thursday									
Friday									
Saturday									
Sunday									
Monday									
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Friday									
Saturday									
Sunday									

TOTAL MONTHLY


* FOG & Solids containers washed in warm soapy water

Premises Located At: _____

GreaseShield Location: _____


Appendix 8: GreaseShield Daily Maintenance:


GreaseShield - Daily Maintenance


 <p>DO NOT ACCESS THE INSIDE OF THE GREASESHIELD!</p> <p>DO NOT USE THE TOP OF THE GREASESHIELD AS A SHELF!</p>	 <p>EMPTY and CLEAN Fats, Oils and Grease collection container DAILY. Grease should be collected by authorised waste collectors.</p>
 <p>CLEAN WIPER BLADE on FOG collection container. Wash in hot soapy water.</p>	 <p>EMPTY and CLEAN solids waste collection container daily. Solid waste can go for composting. Wash in hot soapy water.</p>
 <p>Use FOG Storage Drums Part N° S30D located on a Bundled Pallet Part N° S4DP to comply with Environmental Protection Agency requirements</p>	 <p>Complete Daily Maintenance Checklist and record amounts of FOGs and solid waste removed each day. Maintenance contracts are available.</p>

ISO Certifications

<small>Quality</small> ISO 9001:2008	<small>Environment</small> ISO 14001:2004	<small>Health & Safety</small> OHSAS 18001:2007
---	--	--








The BEST greasetrapp in the world!

5 Shepherd's Drive, Carnbane Industrial Estate, Newry, Co. Down, N. Ireland, BT35 6JQ
 Tel: +44 (0) 28 3083 3081 Fax: +44 (0) 28 3025 7556 Web: www.EPAS-Ltd.com



Environmental Products & Services
www.EPAS-Ltd.com

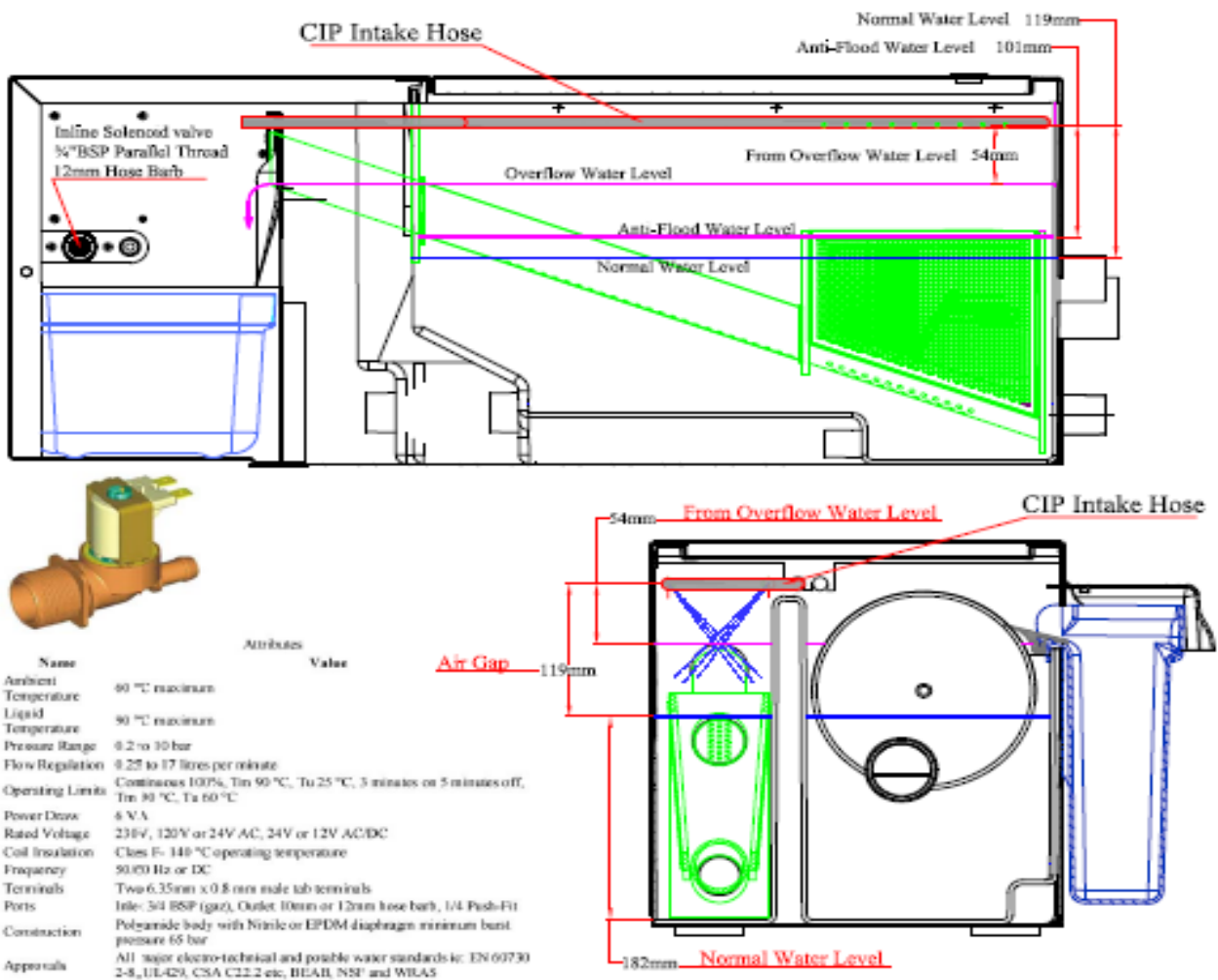
Appendix 9: Potable Water Protection Measures:

All GreaseShield models are protected by non-mechanical and mechanical backflow prevention:

Non-mechanical backflow prevention:

The GreaseShield has been designed with a Type AA air gap with unrestricted discharge.

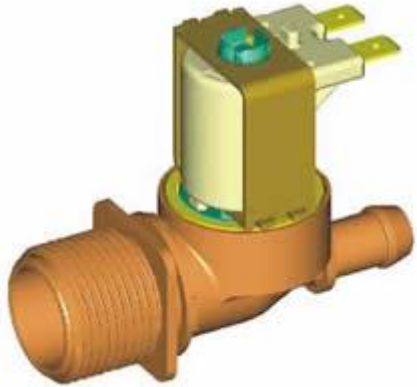
- There is an Air gap of 115 mm (minimum standard of 25 mm) and 10 times (versus 2 times being the minimum standard) the internal diameter (12mm) of the inlet water pipe.
- During the CIP function, water discharges at an angle of 15° from the vertical centreline of the water stream.
- In addition the "Maximum level" and "Spill over levels" are such as to first spill over the top edge of a receptacle if the inflow of water exceeds the outflow through any outlet and any overflow pipe and the effluent cannot ever reach the CIP Water Spray Bar!



Mechanical backflow prevention

All GreaseShields are also fitted with backflow prevention devices in the form of WRAS approved solenoid valves. Please see below specification.

Inline or right angled electrically operated solenoid valves for the control of water supplies above 0.2 bar. The valves are typically used in potable water applications e.g. Drinks vending machines, water coolers, coffee brewers/machines, refrigeration/coolers along with glass washers, humidifiers, spa pool systems and shower systems.



Name	Attributes	Value
Ambient Temperature		60 °C maximum
Liquid Temperature		90 °C maximum
Pressure Range		0.2 to 2 bar
Flow Regulation		0.25 to 17 litres per minute
Operating Limits		Continuous 100%, Tm 90 °C, Tu 25 °C, 3 minutes on 5 minutes off, Tm 90 °C, Tu 60 °C
Power Draw		6 VA
Rated Voltage		230V, 120V or 24V AC, 24V or 12V AC/DC
Coil Insulation		Class F- 140 °C operating temperature
Frequency		50/60 Hz or DC
Terminals		Two 6.35mm x 0.8 mm male tab terminals
Ports		Inlet 3/4 BSP (gaz), Outlet 10mm or 12mm hose barb, 1/4 Push-Fit
Construction		Polyamide body with Nitrile or EPDM diaphragm minimum burst pressure 65 bar
Approvals		All major electro-technical and potable water standards i.e.: EN 60730-2-8, UL429, CSA C22.2 etc., BEAB, NSF and WRAS

Appendix 10: GreaseShield™ Awards

Environmental Products and Services Ltd., who export their award winning products, to a number of countries, has been recognized by the hospitality industry as having reached the very highest standards of excellence at Gulfood Dubai 2012, the World's largest annual food & hospitality show, featuring 3,800 Exhibitors from 88 countries.

The company's Highly Commended award winning GreaseShield product ranked in the top three in two categories, which were judged by a 15 strong international panel of independent industry experts.

- Best New Catering Equipment Innovation.
- Best Environmental Sustainability Initiative

These awards now join the highly prized list of awards obtained for GreaseShield which includes; 2011 - the UK FCSI 'Highly Commended - Sustainable Catering Equipment Award' ; Irish 'Green Hospitality Award Innovation 2010'; French 'Eco Innovation Award 2009' ; Irish 'Best Equipment Product 2009' and 'Best Catering Equipment Award 2008'.

These awards are a tribute to the dedication of the EPAS workforce, and their enthusiasm to constantly build on the company's past achievements, aiming to exceed customers' expectations worldwide, with product quality, performance and value for money. EPAS seeks to reduce our customers' operating costs, provide effective solutions, reduce carbon emissions and recycle the harvested waste streams into a renewable source of energy. EPAS operates a fully integrated Management System and has implemented the Business Excellence Model, to facilitate effective quality and environmental management and to deliver continuous improvements in all areas of the business activity.

Role of Honour

2012 Gulfood Highly Commended 'Best New Catering Equipment Innovation'

2012 Gulfood Highly Commended 'Best Environmental Sustainability Initiative'

2011 FCSI Highly Commended Sustainable Catering Equipment Award

2010 Green Hospitality Award for Innovation

2010 Innovation in Industry Award

2009 Eco Innovation Award

2009 Best Equipment Product

2008 Best Catering Equipment Award

Appendix 11: Warranty

Applicable Law

These conditions and the contract between the parties shall be construed and applied in accordance with the law of Northern Ireland and the Northern Irish Courts shall have jurisdiction in any dispute relating thereto. If any provision of these conditions of sale shall be determined by a Court of competent jurisdiction to be void or unenforceable the other conditions shall remain unaffected and enforceable.

Assignability

The contract of which these conditions form part is personal to Purchaser and the Purchaser shall not assign the benefit thereof without the Company's prior written consent.

Copyright and Trademarks

No representation, warranty or indemnity is given by the Company, that the goods do not infringe any copyright, trademarks, registered designs or other proprietary rights.

Limitation of Liability:

In no event shall EPAS be liable, whether in contract, warranty, tort (including negligence), strict liability indemnity or any other legal theory, for incidental or consequential damages or for any other loss or cost of a similar type.

Under no circumstances will the aggregate liability of EPAS for any cause of action related to the products covered hereby exceed the net purchase price received by EPAS for the products.

Any action or suit by purchaser against EPAS relating to EPAS products must be brought within 15 months of the date of the invoice(s) save for the specific 5 year warranty relating to the structural integrity of the product.

EPAS warrants to the original user that the products manufactured by it delivered with this warranty shall be free from material defects in workmanship and materials for a period of 12 months/ 1year from the date of invoice to the distributor (if sold by an authorised EPAS distributor) or the date of invoice to the purchaser (if sold directly by EPAS), but in no event longer than 15 months from date of shipment from EPAS production facility.

EPAS additionally warrants to the original user that the structural integrity of the GreaseShield Tank shall be free from material defects in workmanship and materials for a period of 60 months / 5 years. Any claim must be made in writing promptly after discovery of the defect and within the applicable warranty period to the following:

Manufacturer:	Environmental Products & Services Ltd
Address Line 1:	Unit 5 Shepherds Drive
Address Line 2:	Carnbane Industrial Estate
City:	Newry
County:	Down
Post Code:	BT34 6JQ
Country:	Northern Ireland, United Kingdom
Telephone:	+44 (0)28 30833081
Fax:	+44 (0)28 30257556
E mail:	info@EPAS-LTD.com
Website:	www.EPAS-LTD.com

The product must be delivered, prepaid, to EPAS, together with proof of purchase, the serial number from which the item was removed and a return authorisation number issued by EPAS. Please contact EPAS at CustomerService@EPAS-Ltd.com for further assistance if required.

If EPAS determines upon examination that the component is defective and that the warranty conditions are met, EPAS's sole obligation under this warranty, and the purchaser's sole and exclusive remedy, is the repair or replacement, at EPAS option, of the defective component, including parts and labour. The replacement will be furnished F.O.B. point of shipment.

If EPAS determines that the component is not defective or that the other conditions of this warranty are not met, then any return of such part to the purchaser shall be at purchaser's cost.

Specific Exclusions

This warranty shall not cover any defect in otherwise covered products resulting directly or indirectly from:

failure to properly install, operate or maintain the product in accordance with EPAS instructions and procedures, including, without limitation, use in excess of rated flow, changing of operating programmes without EPAS permission, improper electrical service, or use that fails to comply with applicable laws, regulations or codes;

damage in transit, handling or installation;

modifications, adjustments, repairs, or alterations or alleged service made by unauthorized persons; or

Other causes not arising out of defects in workmanship or materials.

EPAS shall not be responsible for damage to products resulting from flooding, sewer line back-up, pumping or lift station failure, ambient water flow or other sources of water damage.

Except as expressly set forth above, EPAS makes no representations, warranties or guarantees, either expressed or implied, including, without limitation, as to merchantability or fitness for a particular purpose, whether or not EPAS had knowledge of purchaser's particular requirements or needs, or with respect to other incidentals relating to use of the product.

No distributor, sales person or other person is authorized to make any warranty statements on behalf of EPAS regarding EPAS products other than as set forth in this warranty. This statement of warranty supersedes any quote, brochure, or other statement or document with respect to warranty of EPAS products.

Appendix 12: GreaseShield Public and Products Liability

APPLICABLE INSURANCE

Insurance Company: Zurich Insurance
Policy Number: FW736526/MDA000603
Policy Type: Commercial Combined

Public and Products Liability

Public Liability

Limit of Liability £5,000,000 any one event or series of events arising out of one occurrence

Products Liability

Limit of Liability £5,000,000 in the aggregate in any one period of insurance

Pollution & Contamination

Limit of Liability £1,000,000 in the aggregate in any one period of insurance

Excess £500

Endorsements applicable to the section None

Employer's Liability

Employer Liability

Limit of Liability Up to £10,000,000 for any one claim or series of claims against you arising out of any one cause

Endorsements applicable to the section None