

THERMAL LINES



Grayson
THERMAL SYSTEMS

NEWS FROM GRAYSON THERMAL SYSTEMS
SPRING 2017



**KEEPING IT COOL
WITH E-DRIVE
SUCCESS**

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KEEPING IT COOL WITH E-DRIVE SUCCESS

Winter is finally on its way out and the summer months are looming, but with the warmer climate comes the annual challenge of soaring engine heat and the associated increase in vehicle overheats, resulting in lost mileage and additional operating costs.

Grayson Thermal Systems has the answer. The world's leading provider of engine cooling, heating and air conditioning products is enjoying great success with its innovative E-Drive electric fan system, reducing operator costs and environmental impact, aiding noise reduction up to 30% whilst in service and achieving up to 10% savings on fuel costs.

With the company's outstanding build quality and unique configuration, this electric fan drive cooling system is an innovative solution that replaces traditional hydraulic/viscous fan systems found on passenger service vehicles and is the lightest most efficient fan on the market.

First sold in 2011, the E-drive continues to meet demands within the industry to reduce emissions and costs with no sign of orders slowing. Stuart Hateley, Managing Director, commented: "We have a healthy 2017 order book for the E-drive, with over 800 systems scheduled for aftermarket retrofit so far this year." "The Grayson designed and manufactured E-drive has fast become the number 1 choice, and is now OE fit with a number of vehicle manufacturers. With 5-year cover on all major parts and components when taken with the 5-year maintenance package, our customers can have complete peace of mind."

With over 80 years of industry knowledge, the Hateley family have been building heat exchangers since 1935. Graham Hateley, the current Chairman, incorporated Grayson Thermal Systems in 1978 and so the journey continues....

Things have changed a lot since the early days and, in more recent years, the company has invested heavily in its brazed aluminium technology centre, which is now delivering in excess of 1000 heat exchangers per week to its global customer base.

The 25-strong engineering team continues to create class leading products that are playing a critical part in cooling system performance. This includes using

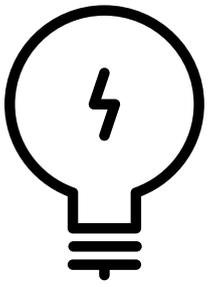
thermal simulation and performance mapping to design one of the most efficient Transit bus cooling systems in the world and development of a rigorous new testing system that ensures each cooler passes over 1 million pressure pulsation cycles and 10,000 thermal fatigue cycles.

Stuart went on to add: "Our unique fin and tube designs allow us to ensure not only does the product perform when new, but maintains great performance throughout years of operation." "Yesteryears older plate and bar construction heat exchangers just do not offer the same thermal performance, weight and cost point that our own product delivers today."

Grayson Thermal Systems' experienced design team can provide a bespoke 'E-Drive' solution based on individual specifications and are equipped to retrofit your current hydraulic systems with minimum on-costs and around a 12 to 15-month payback.

Ian Hateley, Technical Director, concluded: "We take great pride in leading the market on new thermal management systems. Quality in our product and service remain the key drivers of the business, ensuring longevity of life in both the systems provided and the customer relationships they are built on."





NEW INNOVATIONS

BATTERY THERMAL MANAGEMENT SYSTEMS

TEMPERATURE CONTROLS ARE CRITICAL TO THE FUNCTION & LIFE OF THE BATTERY CELL/S

Electric vehicle development is now accelerating and by 2020 it is expected that there will be significant number of electric vehicles built throughout the next decade. The key driver of the system is electrical energy storage and charging which is carried out by installing high value, large capacity batteries.



Production
in 3 manufacturing plants



Specialists in
bus & truck, battery manufacturers & refuse vehicles



Supported
with exceptional service



Guaranteed
reliability



Designed
with Grayson's extensive knowledge



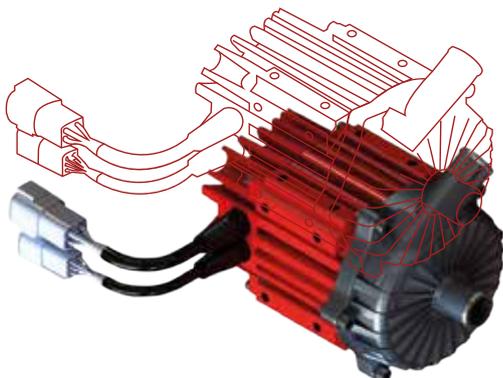
Adapts
to vehicle ambient temperature



NEW PRODUCTS

GRAYSON WATER PUMP

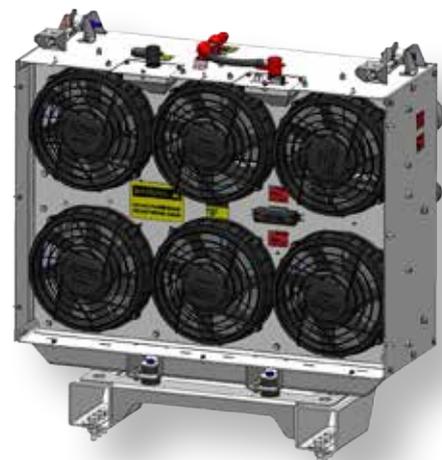
Grayson Thermal Systems 24V electric water ethylene-glycol (WEG) pump has been developed specifically for Bus, Truck, Hydrogen, Gas, Hybrid and Electric vehicle applications. The pump, suitable for global use in a variety of operating and environmental territories, is lightweight whilst offering long motor life, variable flow control, exceptional corrosion and water resistance, which can be mounted in a number of orientations, without impacting reliability or performance.



NOVA 6 BUS | NV6

The Nova Bus E-Drive is redesigned to improve serviceability, reduce downtime and allow for cost effective replacement modules that can be changed quickly and efficiently.

All heat exchangers are covered by a 2 year warranty.





A WORD FROM STUART HATELEY MANAGING DIRECTOR

The Spring of 2017 sees the change of pace in the specialist vehicle markets, with alternative Driveline technology entering the market and serial production increasing significantly - Fuel cell, Hybrid and Electric Vehicles are all beyond development phases and have started being produced and this is reflected in the systems and products seen running through our production facilities.

After 4 years of product development, BTMS (Battery Thermal Management systems), high flow / pressure electric water pumps, fuel cell coolers can all be seen throughout our production facility and on our customer production lines. The pace of product development continues showing no sign of slowing down and the first prototype heat pumps are operating on a test rigs and field trials underway.

The market shift is for sure well under way and it is now very much a case of out with the old and in with the new. Our Tyseley based Wharf Road facility has finally ceased production of copper brass cooling element, freeing up much needed capacity for production of our exciting new E Mobility product range.

Equally our traditional products for Diesel and CNG powered vehicles are running at record highs, as the major fleets continue to drive the move to cleaner Euro 6 vehicles.

It is exciting times and we are delighted to be part of the industry move towards low or zero emission vehicles. We must however continue our business vision to deliver excellence in all areas of our business, continuing to create innovative products whilst not losing our focus to drive out weight and cost.

UPCOMING EXHIBITIONS

15th - 17th May 2017

Come find us at CUTA / UITP
in Montreal



NEW WEBSITE

Keep an eye for the Grayson Thermal Systems
new website coming soon!



ENJOYING A £3M SALES BOOST

A global move towards low- or zero-emission buses and coaches helped Grayson Thermal Systems add £3 million to its turnover in 2016.

A three-generation family firm that began in 1978 as a car radiator repairer, we now employ 270 people across four sites in the West Midlands and a US operation in Indiana and have seen sales increase to £28 million after securing a string of new orders for our E-drive electric fan technology and battery thermal management products.

This will see technology born in Birmingham used to transport passengers efficiently and in greater comfort across international cities including Barcelona, Hamburg and Hannover.

Managing director Stuart Hateley said: "The world is moving to low- or zero-emission vehicles and the bus and coach sector is no different, with the introduction of even cleaner engines, hydrogen fuel cells/hybrids and a move to full electric vehicles" We are continually working with the manufacturers and operators to ensure we are delivering cooling,

heating and air conditioning solutions that are kind to the environment and this approach definitely paid off in 2016, with the introduction of a number of new products....the next 12 months look equally exciting and we are expecting to grow 15 per cent, creating jobs across a range of engineering and manufacturing positions in the process.

Despite material cost increases and economic uncertainty in 2016, Grayson expanded and interest in its innovations is strong. We plan to invest more than £500,000 into R&D and bring a wave of new products to the market over the course of the year including a cooling system controller aimed at reducing installation time for manufacturers. There will also be the launch of a battery thermal management system, which the company feels will put it in an ideal position to take advantage of growing volumes of electric vehicles.



COPPER BRASS RADIATOR RATIONALISATION

Demand for copper brass radiators has been falling for some years, with Grayson seeing the steepest drop off in orders for these products during 2016. The picture for 2017 is consistent with this reduction and as it is no longer economical to produce at the current levels, regrettably Grayson Thermal Systems wish to inform you that we will be winding down production of this product range over the coming months.

With large MBQ's from our material suppliers, in order for us to continue production we would need to purchase 2+ years of material, making this an unviable option and therefore as current material stock runs down, we will cease production of the heat exchanger element. We have however secured a supply arrangement with a partner who can provide the same range of heat exchangers previously manufactured

by GTS. This will allow us to offer a rebuilt or new unit where demands still exist and although it may result in possible cost increases, Grayson will do its utmost to keep these to a minimum.

GTS have manufactured copper brass products since 1994 so this is the end of an era for our manufacturing facility. It will however create manufacturing capacity for the introduction of our exciting new range of E Mobility products. The first Battery Cooling units rolled off our production line in January and as the electric vehicle market grows, our range of Battery Thermal Management Systems (BTMS), Battery Cooling plates, High Flow / Pressure Pumps and Electric Water Heaters are now growing in popularity, with Grayson seeing extremely high demand for these new innovative products and orders increasing month on month. We would like to thank the many valued customers who initially purchased copper brass products from GTS

and have now transitioned to all aluminium radiators and E Mobility products. Your local Account Manager will contact you shortly to discuss the new arrangements and closing stages of this legacy product.



ENGINEERING CHANGES & STAFF PROFILE



The rate and technical nature of product development continues to grow within the organisation and the move towards the hybrid / electric vehicle is giving us more opportunities to develop new and exciting products and markets. The product range is now vast and the expertise to deliver technical excellence to our customers is a massive challenge

With this in mind, a strategic review of the business and engineering structure was carried out and the Board decided to set up system focused teams, designed to bring expertise to the product / system focus in design, development and customer delivery. Principal Engineers have been selected to run each team with application and design work being part of the principal engineer's brief. This is an opportunity for the entire engineering alliance to develop specific knowledge in the discipline of their allocated group and allows Grayson to continue delivering engineering excellence to benefit its customers.

One Principal Engineer selected to head up HVAC systems is Nathan Stephens. Nathan joined Grayson in the summer of 2008 initially as a work experience student to support his BTEC in mechanical Engineering.

Grayson immediately saw his natural flair and enthusiasm for engineering and offered sponsorship for Nathan to attend Wolverhampton University on a

six year day release programme. This allowed him to work at Grayson's gaining hands on experience at the same time as learning new skills and knowledge. It also meant that Nathan would leave university with a qualification and no student loan!

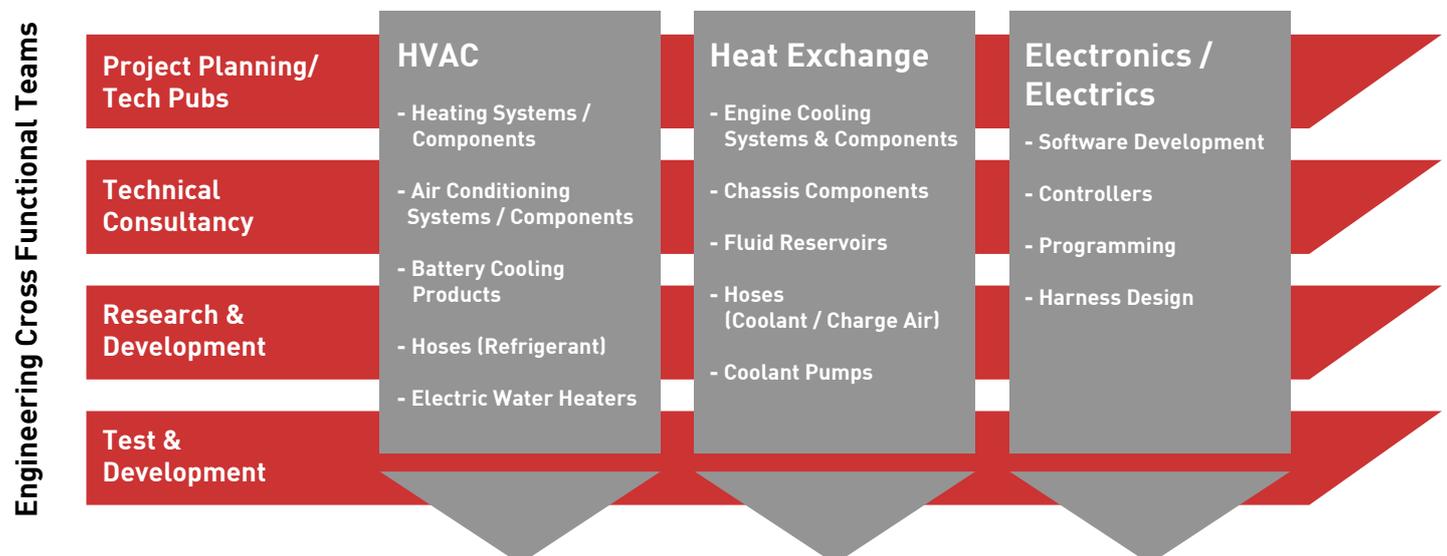
With further CAD and Applications experience now under his belt, Nathan showed a keen interest in the HVAC side of the business and pursued this avenue with help of Technical Director Ian Hateley.

Nathan says "I Always wanted to be an Engineer. Both grandparents used to be toolmakers, but even before I knew this, engineering was already something I knew I wanted to do and know more about." Working his way up through the company from Design Technician - Nathan is now in charge of new HVAC Team which is set to be a great success.

Married since September 2016 and now a home owner, Nathan enjoys cars, motor sports and even puts his hands to some DIY so keeps himself busy outside of work too.

Nathan is a great asset to the Grayson Business and we are incredibly proud of his achievements.

PRODUCT FOCUSED ENGINEERING TEAM



CASE STUDY

E-DRIVE FOR STAGECOACH SCANIA

In November 2016 Grayson were awarded a substantial order to supply our market leading, E-Drive Engine Cooling system for Scania vehicles operating within the Stagecoach fleet.

Grayson have worked with Stagecoach for many years on a number of improvement projects and the latest collaboration has been retro-fitting E-Drive to a range of OEM platforms, providing fuel saving and reduced emissions benefits.

The Grayson E-drive was the chosen solution for the project as this offered proven engine cooling technology in the UK market, backed by Grayson's 39 years of cooling expertise and nationwide service and maintenance network.

The project itself consisted of 581 E-Drive cooling systems for Euro 4 and Euro 5 engine platforms, with 86 of the systems being fitted by GTS. The remaining majority of the cooling systems were fitted by trained Stagecoach fitting teams at five depots around the UK. Starting in February 2017, the project is set to be completed by mid-June 2017.

This has been a great opportunity for Grayson to work closely with both Scania and Stagecoach, building on the existing relationships between all parties. Moving forward, all new Scania Euro 6 buses will be supplied to Stagecoach fitted with Grayson E-drive.

What could we do for you?!

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