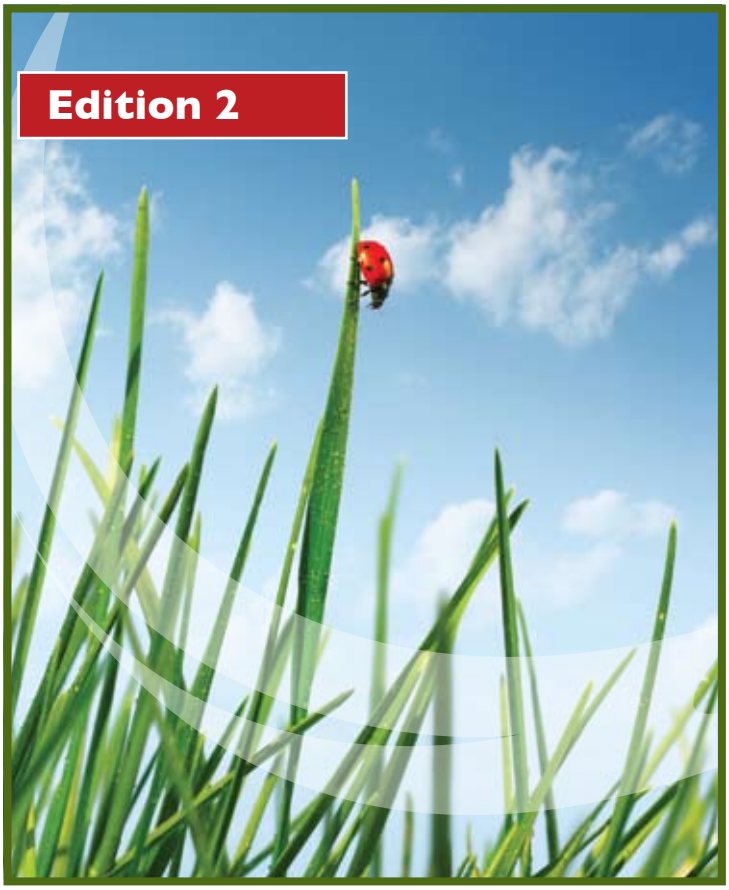

Edition 2

GBR TECHNOLOGY LIMITED

Contents:

NEWSLETTER

January 2019

Welcome *to the second edition of our Newsletter. A slightly plumped up version this one, produced in time for BTME 2019! There are some longer articles discussing iron products, water management and lubricants which we hope you will find of use. The grass growing season will be upon us before we know it and for us too, it will be all systems go – for our sales guys, for the office and for our manufacturing and warehousing operations. We are nicely prepared and enjoy being very busy – it creates a great buzz! With our growing amenity business, the changing cycles of nature now reflect more and more on our overall business – it's a good thing!*

Paul Morris
Managing Director

P5

P7

Iron Products

Iron is one of the essential micronutrients required for turfgrass. It plays a vital role in nitrogen metabolism, chlorophyll production and thus photosynthesis. Iron deficiencies result in chlorosis (a yellowing resulting from insufficient chlorphyll production) of young leaves. In sports turf, iron is used to give green up and 'harden off' the plant inferring some protection against disease. Iron is also used for moss control at higher levels.

Using iron for green-up results in minimal stimulation of leaf growth unlike the use of nitrogen for the same application.

Iron will react in nature to form compounds in one of 2 oxidation states – ferrous (2+) or ferric (3+). Ferric is the most stable oxidation state in nature however many ferric compounds are very insoluble and utilisation by turfgrass once converted to this state in the soil is more difficult and requires valuable energy. Whilst many forms of iron will tend to form into very insoluble ferric compounds once in the soil, strongly chelated iron will resist forming these very insoluble compounds.

Types of iron

Inorganic salts:

Ferrous sulphate is an inorganic salt and a very useful and well used form of iron (highly cost effective and good for controlling moss). Good quality ferrous sulphate supplied as the mono or heptahydrate can be dissolved in water with very little initial residue and will be good for foliar uptake. After dissolving, ferrous sulphate will slowly oxidise and a dusting of brown insoluble ferric compounds will be seen falling out of solution typically within an hour – ferrous sulphate crystals should also not be stored exposed to the atmosphere and part opened bags should be tightly re-sealed. Addition of surfactants can significantly assist in foliar uptake of iron – giving a greater green up for the same amount of iron or allowing less iron to be used. Attention should be given to the scorch potential of ferrous sulphate applications especially under hot sunny conditions – adding surfactants to enhance uptake without reducing the amount of ferrous sulphate will increase the scorch potential.

Complexed or chelated iron:

Certain chemical species have the ability to form a 'ligand' bond with certain metals, including iron. If the species forms one ligand bond per molecule this is normally referred to as a 'complex', if the chemical species form multiple bonds per molecule it's referred to as a chelate. Chelates tend to offer greater protection than complexes in preventing iron from undergoing unwanted reactions. Also, each particular chelate offers different degrees of binding power and thus different abilities to protect iron from undergoing unwanted reactions to form very insoluble compounds and leaving it less bioavailable.

Formulated Iron Products

Many formulated liquid iron products use ferrous sulphate in combination with chelated or complexed forms. A fully formulated product will typically contain a surfactant to aid foliar uptake (and often this needs to be an acid stable surfactant), some Nitrogen and a micro-nutrient package. Potassium may also be included to enhance the 'hardening off' effect. Forti-Fe fits into this category. Many liquid iron products will aim to provide about 6% iron weight for volume. It's very rare to find a liquid iron where all 6% of the iron is in a strongly chelated form e.g. EDTA or DTPA and Emerald Iron is pretty unusual in this respect for sales into managed sports amenity turf.

Once spray applied, iron can be taken up through the leaf and via the root system. This initial green-up would not be enhanced by using a chelated iron over ferrous sulphate however, ongoing bioavailability of iron in the root zone would be better with a chelated product. In some case, for example fairway application without irrigation, then avoiding the use of ferrous sulphate in favour of chelated forms of iron with lower scorch potential may have other advantages. Another reason to avoid or minimise the use of ferrous sulphate would be to avoid adding too much sulphur.

Iron Products from GBR Technology

Forti-Fe: An excellent and cost effective fully formulated liquid iron (6%) with micro-nutrients, potassium (6%) and magnesium and 2% fast release N to further assist green-up. Iron is in the form of ferrous sulphate which is chelated with the addition of citric acid and also with a more minor amount of Ferric DTPA chelate.

ACTi-Fe: Ferric ammonium citrate in powdered form. 21.5% Iron. A moderately well chelated form of iron which has lower scorch potential than ferrous sulphate and almost no sulphur/sulphate (traces are less than 0.1%). Very easy to dissolve in water.

Emerald Iron: 6% liquid iron all in the form of a very strongly chelated DTPA chelate – sulphur/sulphate free. Contains a superwetting surfactant to significantly aid foliar uptake.

HIGGI Iron: Ferrous sulphate heptahydrate – 20.4% Iron.

Examples of complexes and chelates along with their strengths are highlighted in the table below:

	Type	*Ligand bonds per molecule*	*Chelating power*
Sulphate	Neither complex or chelate	0	-
Ammonium	Complex	1	-
Citric acid	Chelate	2	Moderate
EDTA	Chelate	6	Very strong
DTPA	Chelate	up to 8	Extremely strong
EDDHA	Chelate	up to 8	Extremely strong (different forms exist)

Surfactants and Water Management

Peter McMorran- Course Manager at Farnham Golf Course, for 23 years and now GBR Technology's north area Technical Sales Manager shares his knowledge and experience of water management on golf courses.

The use of surfactants is one of many factors that have to be taken into consideration when managing soil moisture especially when the overall aim is to achieve the greatest degree of uniformity, and the following points are worth consideration when aiming to reach that goal.

Soil texture and particle size

The 4 constituent parts of the soil profile are sand, silt, clay and organic matter and these will be present in different quantities from course to course as well as in the different layers that have been developed over time through top dressing.

Knowing the textural analysis along with the gradation index will provide useful information when judging a profile's capacity to drain, resist compaction and potential to deliver a good balance of capillary and non-capillary porosity. Add to this the % of organic matter that may be found at the surface, or in a layer deeper down and the potential of organic matter to hold moisture at the expense of air (oxygen). This basic knowledge goes a long way when preparing a cultural maintenance plan to maintain/improve the management of soil moisture to deliver aerobic profiles for the benefit of plant health and a firm, free draining surface for the game.

As soil texture plus organic matter will vary to some degree from green to green and from course to course the use of a moisture meter to measure soil moisture content when the green is saturated, has reached field capacity (generally after 24/48 hours without rain following saturation when temperatures are low and water loss to ET is minimal), when drought stress shows and the development of hydrophobicity at the surface or within the profile are essential readings to have to set a soil moisture deficit that triggers the need for automatic irrigation and/or hand watering.

Rooting depth of main root mass for each sward and selected areas within a sward

As roots are used to draw water up from the soil for the plant then the greater the root mass to a greater depth the better. Even with a good root structure not all the water will be accessed by the plant, some of the water will be hydroscopic and unavailable and a good percentage of water near the surface will be lost by evaporation. Assuming the profile has 25% capillary porosity and root mass to a depth of 100mm there will be 25mm of water available at field capacity minus say 5mm for hydroscopic water, this leaves 20mm of available water (20L/m²). During summer, daily ET rates may well reach 3mm (3L of water loss/m² per day) and therefore wilting point is reached within 7 days if no irrigation is applied. Knowing the depth of the main root mass plus water content at field capacity for each green will target the use of water on a green by green basis unless complete uniformity is present in relation to root mass and soil texture.

Moisture content across a sward in relation to the topography of the sward's surface

Greens, unlike tees, have contoured surfaces to add interest to the game and this does lead to water being shed from the higher areas to the low spots and the greater the slope then the greater the run off resulting in low areas receiving more water at expense of the higher areas. It is also worth noting a moisture reading in low areas at the point of saturation and comparing this to the moisture reading on a higher area. This difference will have to be taken into consideration when timing the application of water either by hosing or automatic irrigation as the higher areas will reach the target soil moisture deficit that triggers the need for irrigation quicker than the low areas.

Daily ET rates and rainfall

Monitoring daily evapotranspiration rates allows a soil moisture deficit to be managed and the use of irrigation calculated in relation to daily rainfall data and irrigation input. Since there is likely to be a time difference between low and high areas of a green reaching the soil moisture deficit that triggers irrigation, it may be worth considering two soil moisture deficit charts i.e. one each for low and high areas on an indicator green, this is likely to lead to hand hosing the higher spots until the low areas reach the trigger SMD and then automatic irrigation can commence. Hand watering is still likely to be required due to runoff from high to low areas unless the control system has an efficient cycle and soak facility within the programming.

Effectiveness and performance of irrigation design

Knowing what your irrigation design should deliver by assessing it against the basic principles of design, as set by the BTLIA, and how it actually performs is an important exercise to highlight weaknesses so they can be corrected to deliver a reliable automatic system. This effectiveness has to be considered in the context of what is considered calm conditions i.e. no wind more than 5mph, after that the degree of disruption to the performance of spray cover will increase with the speed of the wind. When windy conditions prevail, the need for regular monitoring to determine the disruption to cover is essential to be able to top up the deficits that arise with hand watering. During a windy spell sound water management will demand more resource to monitor and hand water.

Reflecting on design and the points covered by the BTLIA it is essential to know the areas of a green that are within or outside the main zone of cover e.g. taking a square pattern going head to head with popups spaced at 21m. Assuming the green is 31m long and the "irrigation square" is sited centrally on the green this leaves 5m at the front and rear of the green that are outside the main square and covered by two popups rather than 4. Now if the system is set to deliver 3mm to the main square the 5m strips at the front and rear of the green will, in theory, receive only 1.5mm. Assuming no rain for 7 days, these strips will have received 10.5mm in comparison to the central square that has received 21mm. This shortfall can only be topped up by hand watering and the volume required = 5m x 21m x 10.5L (10.5mm shortfall) = 1102.5L in theory for the front and rear of each green so 2205L per green. If the flow rate for hand watering is 50L per minute it will still take circa 44 minutes of hand watering per green per week to maintain uniformity of moisture in the profile. These figures are theoretical, however it may be worth reflecting on how much hand watering you did during the dry summer of 2018.

Monitoring of indicator areas

Selecting a green that has an undulating surface, no shade or shelter and is the first green to show droughting will be a good indicator green that can be monitored on a day to day basis. Knowing moisture content for the low and higher areas at saturation, field capacity, drought stress and development of LDP will provide sound knowledge that allows water management to be proactive rather than reactive in the use and timing of hand watering as well as automatic irrigation when relating the findings of the day to day monitoring to the likely condition of the other greens based on experience of how they perform during different weather patterns. This does not mean only one green should be monitored but monitored more consistently than the others so the development of potential moisture shortfalls in relation to the forecasted weather and the weaknesses of the irrigation system can be managed in such a way as to deliver the greatest degree of consistency of soil moisture.

Penetration of a wetting front into the profile

The photo above highlights two profiles and the one to the right has a greater depth of thatch at the surface. This is an important factor to note as irrigation applied maybe insufficient to penetrate through the thatch layer due to its water holding capacity and the soil below this layer progressively dries out. The result is a profile that is moist on top followed by a layer that is dry and potentially becoming hydrophobic and, only with depth, is moist soil found once again. It is important to be aware of this phenomenon developing to ensure the profile is recharged as quickly as possible when heavy or prolonged rainfall is likely. To move water into the profile the use of a penetrant should be considered as this type of chemistry lowers the surface tension of water to a greater degree and will be more effective at overcoming hydrophobicity.

In summary

Water Management and the Soil Profile

Wetting Agents
Residuals
Penetrants

Water Influences
Plant health
Movement of nutrients
Soil food web activity

Water content influenced by
Organic matter and soil texture
Gravity
Capillary forces of adhesion & cohesion
ET
Rainfall and irrigation

Other influencing factors
Topography
Wind
Irrigation efficiency and layout
Environmental setting
Time to manage and monitor water needs of individual areas

What holds water in the soil?
Capillary porosity
Organic matter

Rooting Depth
Available moisture
How many days to drought stress

Hydrophobicity
Builds up as soil dries
Can exist as a layer
Quantity of rainfall/irrigation to recharge profile

Thatch
Depth
Water holding capacity
Rewetting
How much water to reach soil
Air exchange from soil to atmosphere

Textural Analysis
Depth
%'s of sand, silt and clay
Sand particle shape and size
Gradation index
Bulk density - compaction
Hydraulic conductivity
Saturated and unsaturated flow
Total porosity
% of capillary & non capillary pores
Field capacity
Drought stress
Wilting point
CEC

In conclusion, surfactants are an important part of the jigsaw when it comes to managing soil moisture with the main aim of achieving consistency from one area on a green to another. Understanding the profile and knowing its potential regarding the needs of the plant and the game as we go through the annual weather cycle compliments an understanding of the different surfactant chemistries and how they can be used to best effect, and a good introduction to the differences between residuals and penetrants can be found in our October Newsletter.

Another interesting point to note arises from the data gathered during our STRI based trials in 2016. Aquazone (standard block polymer), Hydrozone (reverse block polymer) and a Market Leading Surfactant (standard block polymer with end capping chemistry) were all tested and this testing included 2 dry down periods. It should be noted that even the treated areas developed some degree of dry patch during the dry down period but not to the same extent as the control and recovery following rain/ irrigation was considerably quicker. This clearly highlights that if dry patch is to be completely avoided then moisture management has to take into consideration the earlier points raised in this Newsletter so irrigation is used in a proactive manner for consistency and the surfactants applied ensure good distribution of water into the profile, and it is the targeting of water based on an understanding of the trigger soil moisture deficit for individual areas that delivers the aim of uniformity.

One final point is that the STRI trials indicated that all three chemistries delivered good results in comparison to the control and this highlights the benefit of using quality wetting agents that are 100% active. The one difference that is worth reflecting on is the reverse block polymer technology in Hydrozone is not broken down as quickly by microbial activity compared to standard block polymer surfactants. Hydrozone was tested at both 10L/Ha and 20L/Ha and users could consider the use of Hydrozone at 10L-15L/Ha during early season cooler months (although it is best to start with a first treatment of 20L/Ha since over the winter period the profile would have been completely depleted of surfactant if no applications have been made since the previous autumn) moving up to 15L-20L/Ha from May through to September then tapering off to 10L-15L/Ha for October. The main reason for increasing the rate from May is that microbial activity will increase with temperature, speeding up the breakdown of surfactants in general and also to increase the volume of surfactant to coat the soil particles within the profile to raise their surface energy making them more receptive to water during the demanding summer months. Being able to use Hydrozone between 10L and 20L/Ha allows the Course Manager to judge what rate is best for the prevailing conditions making Hydrozone one of the most efficient and cost effective reverse block polymer surfactants on the market.

Lubricants Explained

Lubricants are required in golf course maintenance equipment – typically engine oils, hydraulic fluids, greases and two stroke-oils.

Mechanics and Course Managers have the option to buy OEM branded lubricants or the major brands such as Castrol, Shell, Texaco, Petro-Canada etc. or indeed less well known brands from blenders and smaller marketers of lubricants. Whichever route is chosen it's worth noting that there are real differences in product quality on the market and much of the difference is down to the base oils used.

Lubricant Base Oils

Mineral oils used in lubricants and greases are formulated with various additives to confer the required properties. Additives may include such things as anti-oxidants, extreme pressure additives, corrosion inhibitors, dispersants and anti-foams for the product to perform its function and meet the performance requirements of a number of specifications and standards.

Although the additives play a vital role in the performance of the lubricant, so too does the type and quality of the base oil. It is actually the base oil which relates most strongly to longevity and performance.

Base oils have been classified by the American Petroleum Institute (API) into 5 internationally recognised base oil groups. Hydrocarbon mineral oils, produced from the refining of crude oil, fit into Groups I, II and III. Synthetic fluids made from poly alpha olefins (PAO) comprise Group IV. All other base oil types, be it esters, silicones, polyalkylene glycols (PAGS), fluorinated materials etc., fit into Group V.

API Base Oil Categories

	Base Oil Categories	Sulphur(%)		Saturates(%)	Viscosity Index
Mineral	Group I (solvent refined)	>0.03	and/or	<90	80 to 120
Mineral	Group II (hydrotreated)	<0.03	and	>90	80 to 120
Mineral	Group III (hydrocracked)	<0.03	and	>90	>120
Synthetic	Group IV	PAO Synthetic Lubricants			
Synthetic	Group V	All other base oils not included in Group I,II,III or IV			

A word of caution - the term semi-synthetic can be very misleading when applied to base oils in the UK. It may refer to a Group II or a mix of Group I or Group II base oil – possibly in combination with Group III or synthetic PAO base oil (Group IV). Hence there can be significant amounts of cheaper Group I oils in a semi-synthetic or indeed none at all. The term semi-synthetic alone will not necessarily give a good indication of overall base oil quality.

Recycled oils may also be used on occasion, especially by smaller companies blending lubricants. Recycling oil can involve re-distillation or other processes including filtration. Recycled oils are cheap and have inferior properties. Some lower priced lubricants may contain a % of recycled oil as standard.

Let's look at Groups I, II and III which are the mineral oils that have been refined to different levels:

Group I: These use a solvent refining process where some of the aromatic and chemically unsaturated components of the oil have been removed. The process is a solvent wash and a significant amount of unsaturated material and some sulphur compounds are left in the base oil. The oil will have an appreciable colour and odour. The oil will have a relatively low viscosity index. The viscosity index (VI) is a measure of how much the base oil viscosity will change with temperature - a low VI means a bigger change in viscosity with temperature. High VI is desirable since the lubricant properties will change less over a wider temperature range, for example, think of an engine oil that needs to perform on start up in winter when it might be very cold and then that same oil performing well when the engine is up to its normal running temperature. With the exception of recycled oils, Group I are the cheapest base oils on the market.

Group II: These base oils typically get the unsaturates content down further by using a hydrotreating process. This chemically reacts some of the unsaturated materials with hydrogen and turns them into saturated materials. The base oils have less odour, less colour, less unsaturates, less sulphur and higher viscosity index. It's important to note that the unsaturated material in base oil is more reactive than the saturated material – over time, especially at high temperature, it will oxidise faster and the oil will become acidic and begin to break down and this can affect viscosity and form varnishes and sludge – this can further lead to corrosion and a drop off in performance.

This photograph of a piston from a gas engine show some varnishing and carbonaceous deposits deriving from thermal oxidation of the lubricant

Group III: Production of these base oils may use additional refining steps including hydro-isomerisation and iso-dewaxing, the latter being a chemical process to render liquid some of the waxy material present in the oil and so benefit low temperature performance.

An additional claimed benefit to highly refined base oil is better response from the additives used with them.

PetroCanada are a leading global producer of highly refined Group II and III base oils. The refining generates a water-white and clear base oil with almost no odour. Once formulated with additives, some colour and odour can be introduced (so it is not always clear from appearance of a finished product what type of base oil is used)

Products based on more refined base oils are more expensive than those based on solvent refining alone but they have superior properties. Refined products will give better equipment protection and longer service life, in most cases these cost benefits can more than cover the extra product cost. An oil that runs for twice as long but only costing 50% more will be cheaper on oil costs - but that's far from the whole story – if you consider lower replacement filter costs, less maintenance, better protection and longer machinery lifetime then the benefits can be very significant. It's a shame that in many cases the decision is taken to go with the cheapest base oil due to the lower price per litre, without further consideration. Generally however across industry and transport, Group II base oils are now produced and used in the largest volume – this is a large shift from even a number of years ago when Group I base oils predominated.

If we look beyond Group III to Group IV we enter the category of poly alpha olefin (PAO) products. These materials are essentially synthetic hydrocarbons made from alkenes (which are then polymerised to make longer chain materials) and have very good properties but at significantly higher prices.

Group V fluids being any chemistries that are not in the other four groups cannot be said to be superior – they are just different. Some of the chemistries have exceptional properties whilst some might be inferior in other aspects to the fluids in the other groups.

Biodegradable Oils

Biodegradable oils are normally esters such as natural plant oils e.g. rapeseed oil or synthetic esters partly derived from plant material. However other chemistries and materials can be used in biodegradable lubricants.

Biodegradability is normally determined for lubricants in relation to an OECD 301B test (modified sturm test). This laboratory test exposes the material under test to a bacterial inoculum and measures carbon dioxide evolution. A material is classified as 'readily biodegradable' if at least 60% of the theoretical carbon dioxide that could be released by its biodegradation is released within 28 days under the test conditions. If under the test conditions greater than 20% but less than 60% is achieved in the 28 days then the test fluid is classified as 'inherently biodegradable'.

Sometimes an 'inherently biodegradable' fluid might be the preferred option if it shows less toxicity to the turf than a readily biodegradable fluid.

Greases

Greases provide lubrication through release of the base oil that makes up the largest component of the product. A thickener is used to turn the base oil into a grease and the amount of thickener used can be varied to give the grease its 'stiffness'. The 'stiffness' of a grease is defined by its penetration value and fits into an NLGI category. Most greases are made to NLGI grade 2 which gives a soft butter consistency. The type of thickener plays a key role in the temperature range the grease can operate to as well as its water resistance. Lithium complex greases are widely used on grease points and bearings on grass cutting equipment however they do not have the water resistance of calcium sulphonate thickened greases and the latter offer advantages for machinery used outdoors.

Summary:

Use of cheap oils can be a false economy – less refined base oils will not protect the internal surfaces and moving parts as well over time as more refined oils. There's an analogy to a poor diet over time and its effect on internal organs and the circulatory system - longevity and performance of the system will be compromised.

PetroCanada Lubricants – some of the finest in the world – and bought from a direct distributor can be surprisingly cost effective to source.

Bigger, Newer and Better!

On 19th November GBR Technology moved across to our new facility on Easter Park, Aldermaston.

Work had been underway for some time preparing our new building for our arrival.

The new facility offers 11,300 square feet of modern warehousing, production and office area.

The warehousing and production area are now split with separate areas for amenity and lubricants. More raw materials are now on hand to allow faster and more efficient production and our picking and packing operations are now also more optimally laid out – again to aid speed and efficiency. The laboratory area has been expanded significantly to support the growing business.

GBR Technology has seen steady growth in much of its lubricant business over recent years however, the amenity side of the business is growing particularly rapidly and needed more space to allow further growth.

The new premises are a significant step forward. Staff have all pulled together to effect the move, which has been a very major undertaking but we are now reaping the rewards and there is a renewed excitement in the air. Ultimately, it's about giving the best possible service to more customers and having room for growth over the next 10 years.

GBR Technology attend Parliamentary Reception

On 27th and 28th November, GBR Technology were invited to events taking place at Westminster with the highlight being a Parliamentary reception in the Churchill Room.

The events, organised by Leidos and a number of MP's in the Defence Select Committee, related to SME manufacturing organisations supplying the Ministry of Defence. Ten long term suppliers were selected across a range of different items including food, clothing, gym equipment, footware, medical supplies and lubricants.

GBR Technology as a supplier of lubricants to the MOD since 2000 were able to showcase some of the products supplied and take part in a workshop to consider how further improvements can be made in Collaborative Engagement, Sustainable Approaches and Joint Performance Reviews.

The following day in Parliament Rt Hon Julian Lewis MP and Rt Hon John Spellar MP co-hosted the reception and gave some key-note speeches around the topic of the Defence Supply Chain. Invitees including a number of MPs, were able to network, visiting the supplier displays.

This was an exciting event for GBR Technology who have been supplying high quality critical lubricant supplies to the MOD under strict contractual guidelines and for use in various demanding applications around the world. Suppliers to the MOD have to go through rigorous selection procedures, now managed by Leidos and supply robust products under contracts with necessary strict demands and regular review. GBR have long been proud of our supply position to the MOD and believe it is another demonstration of the quality of our products and service.

Q&A

MD Paul Morris answers questions

Hi Paul, so in this months Q&A you were keen to focus on lubricants – why is that?

Yes I was – it was largely because it was a chance to talk about an exceptional manufacturer – PetroCanada - and to discuss how base oils vary in quality. Of course we have an agenda – it's an honourable one though I believe – to get more PetroCanada products selling into amenity markets – we know they will benefit our customers!

Why now though?

We sell a fair amount of PetroCanada products into the vacuum industry and also to military applications and bits into general industrial applications and of course we already have sales into amenity, but we believe this can grow significantly.

What's so special about PetroCanada?

They produce some of the purest mineral oil in the world and are one of the largest producers of white oil in the world. Their refinery in Canada has processes that generate >99.9% pure base oils. We have been a distributor for around 15 years and for such a large oil company they are refreshing to deal with. The European operation is headquartered in the UK and they are an innovative company that really care about their customers. They are growing strongly in Europe and will continue to do so with great products and great service. They make over 350 different lubricants and sell into more than 80 countries.

And this base oil – why is it better?

I've covered base oil types in another article in this newsletter. The PetroCanada oils are essentially water white and odourless (before the additives are put in) – the most reactive species (chemically the unsaturates and sulphur) are removed and the oil has much greater resistance to oxidation. The contrast is dramatic versus a solvent refined mineral oil that is amber in colour and has an appreciable odour (ask one of our sales staff to show you the difference!).

Do you want to know what happens to an oil when it oxidises?

Go on then...

In a hot application chemically a mineral oil starts to breakdown – wear metals generated from moving parts in an engine can also accelerate this and so too can soot and other chemicals generated from the combustion chambers. An oil will darken and oxidise – this creates acidity in the oil which can corrode and tarnish surfaces – also the oil will lose its viscosity profile and so too its ability to properly lubricate. Your parts thus corrode and wear faster.

And PetroCanada products don't do this?

No, no I'm not saying this – they do of course oxidise – but crucially – not as fast – significantly not as fast – they maintain their properties for longer – they protect better for longer. Another consequence of using purer base oils is that they get better response from the additives used.

Are PetroCanada products the best then?

I'd answer yes to that one! It's hard for the user to understand relatively what are the best products quality-wise – the ones that can last longest and protect your equipment assets best for the long term. In marketing literature – nobody says "this is a lower quality product based on group I base oil with a bit of recycled oil – it meets the minimum requirements of the spec of course but don't expect it to give as good protection" – no they all talk about high quality and position the oil as premium – even if it's not as refined and long lasting.

What about the oils offered by the machinery manufacturers - are they good?

Yes, the OEM brands are generally good – they are normally made by the oil majors e.g. Shell and others but carry the OEM brand. Often they have the highest prices.

And how do PetroCanada Products Compare to the OEM brands?

PetroCanada products use the 99.9% pure base oil – they are excellent products normally exceeding OEM brands in performance – and they are often more competitive price-wise.

So here's the offer, I need to get that bit in – we are bringing in a number of pallets of PetroCanada products to offer at discounted prices to get more customers using them – PetroCanada have also supported us in this promotion. So engine oils, hydraulic and transmission oils, two stroke oil, lithium complex and water resistance greases. So if you are interested and serious about considering PetroCanada products speak to your GBR Account Manager and we may make a special opening offer on some product. Also, we'd be happy to supply some customers with oil sampling kits – used oil can be sent away for condition monitoring for an independent analysis on how the oil is performing (at our cost).

Thanks Paul - so to summarise then...

I'd recommend using higher quality lubricants – they can last longer, potentially you can get longer drain intervals (don't invalidate your warranty though!), so less maintenance and even oil and disposal costs but crucially they protect your very expensive equipment better – less wear and tear and longer asset life.

GBR Technology Ltd
Unit 42, Easter Park, Benyon Road, Silchester,
Reading, Berkshire, RG7 2PQ
Telephone: +44 (0)118 982 0567
Fax: +44 (0)118 982 0590
Email: info@gbrtech.co.uk
www.gbrtech.co.uk/amenity