Fifteen years at the forefront of highlighting asphalt advances

Modern Asphalts & Surface Treatments reaches its 15th birthday in 2012, and has firmly established itself as the leading source for news about new surfacing product developments. Materials and standards specialist Martin Heslop, always a keen reader, looks back at the innovation and progress as charted in our pages.

Key product and process developments have all been reported within Modern Asphalts & Surface Treatments over the last 15 years, together with some essential reading concerning the client perspective. It features the latest trends by the most innovative companies and the photographic content is excellent.

Starting with thin asphalt surfacing, the magazine helped to launch several proprietary products from 1997. The names of the producers have changed over the years, mainly by acquisition: Associated Asphalt; RMC; Redland; Tilcon North; ARC; Foster Yeoman – but interestingly the names of their thin asphalt BBA/HAPAS products are retained, even though some have been redesigned.

Highways Agency’s Graham Bowskill’s concerns about ‘Innovation: managing the risks’ from issue seven in 2000 is worth a re-read from the online archive. His piece contained the quote: “The performance required of some materials is close to their limit given requirements for ever thinner layers and rapid maintenance processes often carried out in less than ideal weather conditions”.

And where else would you get Gordon Lemon (issue four, 1999) warning about High Specification Aggregate used in thin asphalt surface courses at 30mm using twice as much of the precious resource as HRA pre-coats after extolling the virtues of Viatex only two years before (issue one). I am sure he influenced, quite rightly, the over-specification of high psv aggregate.

The development of polymer binders to improve performance has been frequently reported over the years; it is interesting to see the suppliers vying for the “high ground” – asphalt producers and their clients have surely been the beneficiaries.

The article by Robin Wilson, Chairman of

From the Archives

Issue four, Summer 1999
Foster Yeoman is relaunching its foamed bitumen product Foamix as a bespoke permanent cold lay mix which allows for recycled aggregates to be used.

Issue eight, Spring 2001
RMC has developed a durable haunch repair material for use on rural and minor roads in the wake of Britain’s wettest winter since records began in 1766.

Issue 12, Spring 2003
Porous asphalt laid on the M4 in south Wales in 1993 has proven to be very successful, says BP Bitumen.

Issue 16, Summer 2005
Failed footpaths relaid using Lafarge’s Axofoam product are said to contain 100% recycled material.

Martin Heslop
Materials specialist, Acland Investments
Martin Heslop is currently working with URS for the Highways Agency and consulting with industry to produce new guidelines for surface treatments and asphalt in DMRB HD37. He is also working for the Highways Agency, the Ministry of Defence’s Defence Infrastructure Organisation and ADEPT on a URS preservatives research project. Martin is also convenor of a European road materials working group.
the Worshipful Company of Paviors’ Charity Committee in 1999 (issue five), which would not have attracted space elsewhere, was great, and refers back to London road maintenance and standards from 1479 and the Charity is still supporting research in our field today.

The vehicle excise and fuel duty equation vs. expenditure on road maintenance and need for extra funding has often been discussed over the years: John Ekins RNMCS 1999 (issue four); Sunday Times “Pothole Britain” back in 2000 (six); AIA 2002 (11); John Cox 2003(13); AIA 2004 (15); Tim Green 2005 RUA (17); Matthew Lugg UK Roads Board 2008 (23); all were great reading and for debate. Lobbying is not our strength so pages like these continue to be critical. Protecting the asset is impossible with only £900M spent on asphalt and surface treatments for road maintenance every year.

Every now and then a major specification change occurs and in 2005 (issue 16) John Williams chose to announce in Modern Asphalts that the Highways Agency would publish a specification for EME2 (which my company, Acland, helped draft), this demonstrates the status of the magazine.

Bond coats reported in 2005 (16) and 2006 (18), also driven by HA, helped double the sales of polymer modified bituminous emulsions for this purpose and undoubtedly has improved the durability of road pavements in the UK in recent years.

The innovations in recycled materials are well covered (30 articles). John Barritt of WRAP: Taking the Sustainable Road 2003 (12), no doubt prompted some of these. The article by Dr. Ian Lancaster 2012 (30) is important – the first time rejuvenating aged binder problems are raised. Aged bitumen can never be rejuvenated to its original state; performance testing, especially after subsequent ageing is essential.

In recent years Modern Asphalts & Surface Treatments has been keeping everyone up to speed concerning carbon footprint and use of cold and warm mixture technology and the emphasis on surface treatments is welcome, especially in the current climate of trying to defer major maintenance. I am sure I am not alone with my view about going back to cyclic maintenance using surface treatments; we seem to have failed to intervene before critical decay, hence the state of our roads?

We look to Modern Asphalts & Surface Treatments magazine to continue to make us think.

Issue 20, Spring 2007

Velocity’s cold applied road remediation product Joint Filler can make good longitudinal joints, fill voids and correct problematic ironwork.

“What major changes have you seen take place in the asphalt sector over the last 15 years?”

Dr Cliff Nicholls
Senior academy fellow, research body TRL

Greater use of proprietary based products – with specifications based less on ‘recipe’ and more on ‘performance’. Customers today are less likely to simply order ‘bitumen’ or a ‘hot rolled asphalt’. Today they look for product names and this means the asphalt producer or contractor has greater ownership of what’s being laid.

Harmonised European standards have been introduced and a level of technical expertise has moved from county level to materials producers. Warm asphalts have come in, but care has to be taken when reducing temperatures so as not to use more carbon dioxide when producing warm material.

Professor Ian Walsh
Senior consultant, Road Consultants

Quality standard initiatives such as Sector Scheme 14 for the production of asphalt mixes, Sector Scheme 16 for their laying and BBA HAPAS approval for thin surfacings, applauded as the material ‘recipe’ and more on ‘performance’. Customers today are less likely to simply order ‘bitumen’ or a ‘hot rolled asphalt’. Today they look for product names and this means the asphalt producer or contractor has greater ownership of what’s being laid.

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Issue 24, Spring 2009

High performance Gussasphalt using a premium Nynas bitumen binder is being laid on Avonmouth Bridge to reduce future maintenance.

Issue 28, Spring 2011

Polymer modified binder Shell Cariphalte has been proving its worth for over 30 years on motorways, airports and racetracks.
Looking back

During the last 15 years recycling of road materials has increased, especially in situ to encapsulate tar, which is now termed a hazardous regulated substance. Hot asphalt may now incorporate reclaimed asphalt up to 10% and with approval up to 50% and higher; now controls are more scientific (see Dr Lancaster’s paper – issue 30).

Recycling reclaimed asphalt has encouraged foam and emulsion systems with the focus on carbon footprint; novel warm systems have been developed to reduce temperatures and volatile loss in asphalt production and laying.

Procurement of asphalt and surface treatments has changed markedly: PFI, Design & Build and DBFO are used; this change has not always encouraged innovation.

Environmental considerations, driven by the EU, such as noise and dangerous substances are now important. Tyre/road noise generation can be controlled by design of thin asphalt surfacing and multiple layered surface dressing, although monitoring of these ‘quiet surfaces’ has shown noise levels to increase. Aggregates and road products will now be tested to see that regulated dangerous substances are not leaching above maximum levels.

We need to invest to improve asphalt joints (heaters and echelon paving); prevent cold spots (shuttle buggies and dual layer paving); install long life drainage systems; and increase monitoring.

Looking back at specific years, asphalt quality took a major step forward in 1997. The ‘Second Party’ scheme initiated by Charles Catt in the Midlands and Professor Ian Walsh in Kent vastly improved consistency of production. This developed into Sector Scheme 14.

In 1998 the Highways Agency Manual of Contract Documents for Highway Works Volume 1 900 Series was updated. Slurry Surfacing and Surface Dressing were specified in performance terms. A Hot Rolled Asphalt performance related design mix encouraged the use of polymer modified binders to reduce permanent deformation. A clause entitled Thin Wearing Course Systems attracted attention and BBA/HAPAS had arrived in specifications for high friction surfacing, microsurfacing, binders and asphalt.

Additives used in asphalt and surface treatments such as polymers, fibres, adhesion agents, foaming chemicals, emulsions and resins have increased markedly since 2000.

EME2 was launched by Highways Agency in 2005. The debate about whether to use 35, 25 or 15 penetration grade bitumen persists. In 2007, BS 594987 replaced parts of BS 594 and BS 4987 and European standards for asphalt were now referenced and installation trials and type testing were incorporated. Published Document 6691 and Road Note 42 explained everything.

Durability was now understood to be controlled by minimum binder content, the minimising of air voids plus adhesion between layers – even base layers.

And in 2008 the Highways Agency added a five year guarantee period to Cl942 for use of Thin Asphalt Surfacing.

European end performance specifications for surface dressing and microsurfacing were launched in 2011 after 20 years of work. They only become ‘products’ after they are installed. Asphalt specification has moved from recipe to include some performance related tests and has CE marking in the ‘back of a truck’. The step towards specifying end performance of the installed asphalt (eg skid resistance, noise, durability) is regarded as a step too far. However, contracts are setting defect levels and longer guarantees, but this needs monitoring and sensible measurement tests.

Martin Heslop

Talking points from previous years

There is overwhelming evidence that investment in road maintenance and network enhancements represent excellent value for money. By spending small amounts now, the Government may also avoid the need for more costly improvements at a later stage.”

These were the thoughts of former Conservative roads minister Steve Norris, who wrote a comment piece for the first issue of Modern Asphalts back in 1997 while serving as the Road Haulage Association’s director general.

His final remark was that “the country and the economy cannot afford” for the condition of the road network to ‘get any worse’. This sentiment has been echoed by many over the intervening years by advocates of highway maintenance and official reports, not least by the 2012 Potholes Review produced for the current administration.

Themes of the articles contained in the first few editions of Modern Asphalts are broadly similar to those today. Tarmac, for instance, used issue two to promote the benefits of recycling asphalts and aggregates. And a news story from issue one of the magazine
A series of trials at America’s National Center for Asphalt Technology (NCAT) has demonstrated that a highly modified binder can help reduce pavement thickness while not compromising surface quality. Texas based Kraton Performance Polymers tested its HiMA bitumen product against the capabilities of other technologies as part of an accelerated pavement testing project hosted by NCAT. Kraton kept the same gradation and mix design and simply replaced the binder. The test found superior rutting performance using the modified asphalt material, which allowed for an 18% reduction in thickness compared to the control section.

“No cracking has appeared to date and our thinner section may significantly outperform the control in bottom up fatigue cracking as well,” says Kraton’s senior scientist Bob Kluttz.

Sponsors of the NCAT test track where the trial took place include several state departments of transportation as well as private industry groups.

For further details please contact Kraton: +1 (800) 457-2866 or visit www.kraton.com/products/hima.php

Reduced thickness asphalt shows exceptional performance

referred to a piece of research carried out by TRL promoting the benefits of designing long life pavements.

Fast forward five years and issue 10 of the magazine reported on the introduction of Britain’s new aggregates tax and efforts by the British Aggregates Association to get the new levy overturned. The spring 2002 issue also included details about a new asphalt product developed by Hanson to form a porous ‘cap’ for filter drains that contains stones safely.

Issue 20 of Modern Asphalts, published in spring 2007, introduced a new section to the magazine called ‘Client Side’ – with a report about work of the UK Roads Board which represents professionals involved in highway maintenance. The issue also took a look at efforts by Ringway to cut carbon dioxide emissions associated with asphalt production.

Modern Asphalts was renamed Modern Asphalts & Surface Treatments in issue 29, to reflect a growing recognition of the important role which specialist treatments play in highway maintenance. Articles from the last 15 years of the magazine can be read online at www.modernasphalts.com