



Much Asphalt

SurfaceTalk

Summer 2010



OUR NEW
WMA plant

P3



UNMANNED
weighbridge

P4



INFRARED
technology

P7

Murray & Roberts

A Murray & Roberts company

Making it happen!

What the World Cup *has already done for our country*

It is hard to believe that, more than six years after South Africa was named host nation for the 2010 FIFA World Cup, kick off is a few short weeks away.



“ We have taken our business to a new level to meet the upsurge in demand for our products.

We all await with excitement – and a little trepidation – an event that will be etched forever on the history of our country. I believe it is not only the World Cup that will go down in history, but also the developments that have taken place since we were announced as the host country.

By this I mean the airports, the stadia, the Gautrain, the rapid bus transit systems and, of course, our road network – all of which show our dedication to transforming our country from third to first world status.

Much Asphalt is one of many companies that have been dramatically affected by the World Cup. We have experienced one of our busiest years ever – perhaps our busiest – supplying asphalt products to the contractors upgrading our national road network.

Our plants, particularly in Gauteng and the Western Cape, have been working almost 24/7 to meet the demand. Despite some critical constraints in the availability of raw materials, Much Asphalt has been able to **Make it Happen** for our clients.

I must mention the enormous commitment and dedication of our people, who have truly walked the extra mile to ensure that we meet our commitments.

We have taken our business to a new level to meet the upsurge in demand for our products. We have introduced new and better systems and technology. We have ensured that our quality remains consistently high no matter how challenging the demand.

In this issue of *Surface Talk* you will see several examples.

We are constantly seeking ways to leverage our strengths through partnerships with our clients, government agencies, academia and other industry stakeholders.

Imagine the thousands of South African companies that, like us, have upped their games to remain competitive. Imagine how this has catapulted our country into the future. Imagine what we are capable of now. For me this is truly exciting.

Phillip Hechter
Managing Director

125 Years of expertise



John Onraët



Bennie Greyling



Spencer van Eden



Garth Miller



Colin Brooks



Raj Rajcoomar

Three directors and three senior managers at Much Asphalt last year reached long service milestones totalling 125 years.

Marketing director John Onraët topped the list with 35 years of service.

Operations director Bennie Greyling and financial director Spencer van Eden contributed 20 years of service each.

Garth Miller, Western Cape regional manager, has been with Much Asphalt for 20 years, while Colin Brooks,

regional manager in the Eastern Cape, and Raj Rajcoomar, quality assurance/HSE manager, each celebrated 15 years.

This represents a wealth of expertise that makes a solid contribution to our slogan, **Making it Happen**, and ensures we remain at the top of our game.

Warm mix asphalt plant *starts producing*

The revolutionary 300 tonne per hour warm-mix asphalt (WMA) plant built by Much Asphalt in Benoni, Ekurhuleni, has been commissioned.

The new plant, built by Astec in Tennessee, USA, enables Much Asphalt to employ foam technology for the manufacture of WMA for the first time in South Africa.

Commissioning took place from 29 March to 9 April 2010 and production for the commercial market commenced on 12 April. Brian Neville, group technical manager for plant at Much Asphalt, said the new plant would only start to supply the Gauteng Freeway Improvement Project (GFIP) once trials had been run and all the finer technical problems ironed out.

"Apart from the rain during January and February, the scope of works was underestimated, resulting in a longer erection and set-up period than expected," he added.

"Warm Mix Asphalt is still very much in the early stages in South Africa and the market is waiting eagerly for the new technology to come on stream. While Much Asphalt is keen to get trials under way as soon as possible, we are also mindful of the need to ensure that the plant is properly set up to deliver on our promises."



The new Double Barrel Green System uses foam technology to reduce the temperature at which the asphalt is mixed and placed on the road.

Temperature reductions of 20 to 30°C are possible, with the obvious benefits of cutting fuel consumption and decreasing the production of greenhouse gases. This will reduce energy costs and the carbon footprint at Much Asphalt's biggest and busiest plant. Customers will reap the benefit of easier handling and workability at lower temperatures.

South African trials

A second round of warm mix asphalt trials was completed last year by the industry representative WMA Interest

Group in South Africa, with a very positive outcome. The trials, carried out in Durban, included two WMA technologies, SASOBIT and REDISET. Conventional asphalt, manufactured and paved at the usual temperatures, was included as a control. All the mixes contained 10% reclaimed asphalt (RA).

Much Asphalt's plant at Coedmore was used to manufacture all the mixes.

Plans are under way by the WMA Interest Group for a third set of trials using several WMA technologies, with higher proportions of RA and lower manufacturing and paving temperatures. A guideline document on WMA is expected to be available by the end of this year.



Introducing our new chairman

Dr Orrie Fenn (54) has been appointed chairman of Much Asphalt. Orrie joined the board of Murray & Roberts in November 2009, succeeding Andrew Langham as executive chairman of Construction Products SADC cluster, which includes Much. He left PPC Cement, where he was chief operating officer and an executive director, to take up the post with Murray & Roberts. Prior to joining PPC in 1999, Orrie spent almost two years at Murray & Roberts as project director of Blue Circle Cement. Before that he worked for the Chamber of Mines Research Organisation (COMRO) for seven years, during which time he obtained a doctorate in engineering in the field of underground rock boring. He spent his early career in Anglo American and De Beers operations. Orrie is a member of the SA Institute of Mining and Metallurgy, a fellow of the SA Institute of Quarrying and has a Government Certificate of Competency (Mines and Works).

Unmanned weighbridge relieves congestion

Brendon Masters, plant manager at Contermanskloof near Cape Town, has successfully negotiated with the local quarry to allow aggregate collected by the Much Asphalt plant to be measured on an unmanned automated weighbridge.

The new weighbridge diverts all inbound material traffic from the existing weighbridges, significantly increasing the despatch capacity of the plant.

Much Asphalt continuously runs a 30 ton dump truck between the plant and the adjacent quarry, with up to 1 000 tons of aggregate collected in a day. In addition to freeing up the existing weighbridges, the new arrangement allows for a significantly shorter haul from the quarry, saving time, fuel and wear on the truck.



A loaded truck enters Much Asphalt's premises via the unmanned weighbridge.

“ A traffic light signals the driver when the load has been captured and it is safe to move off the weighbridge.

When the fully laden truck pulls onto the new weighbridge, a simple “black box” in the cab connects wirelessly to the automated scale to identify the type of aggregate. A traffic light signals the driver when the load has been captured and it is safe to move off the weighbridge. The same “black box” is also used to request a tare weight of the empty truck at regular intervals.

The new weighbridge is linked remotely to the plant despatch office, where loads are automatically captured into the weighbridge system. At the end of each day, a copy of the material received report is sent to the quarry for comparison with its despatch schedule.

The automatic weighbridge was supplied by Massamatic.

Despatch teams focus on customer needs

The despatch teams from all Much Asphalt's branches around South Africa gathered in Gauteng on Saturday 9 January for an intensive workshop to plan a way forward in 2010.



Much Asphalt despatch staff with marketing director John Onraët (front centre), who was the workshop facilitator.

The objective was to raise the level of service for both internal and external customers. The workshop resulted in the drawing up of a Despatch and Distribution Charter that will guide the actions of our despatch staff in the future.

The charter consists of five main requirements:

- 1 Transparent communication:** honesty, courtesy, professionalism, face to face and timely communication with customers, team work;
- 2 Maintain a safe working environment:** excellent housekeeping and a professional image;
- 3 Adhere to Much Asphalt's policies and procedures:** observe authorised credit limits, deliver administrative requirements, and adhere to the ISO9000 Quality Management System;
- 4 Deliver what the customer wants:** have a production plan in place, resolve service complaints, offer technical support, and do not overload delivery vehicles;
- 5 Train and educate ourselves:** inter-branch visits, customer education programmes and customer service workshops.

High Modulus Asphalt

technology transfer well under way

There is currently pressure from client bodies for development of ultra thin concrete pavements due to the poor performance of some asphalt pavements in high traffic loading conditions.

With this in mind, the asphalt industry decided to investigate an alternative to concrete pavements and EME (French terminology for High Modulus Asphalt – HiMA) technology looked like the appropriate option. Subsequent to a visit to France and the UK in 2008 to obtain knowledge on the theory behind the HiMA design, the Sabita HiMA interest group (representing the local asphalt industry) visited a construction project using HiMA in Reunion.

HiMA

The development of HiMA started as a result of severe rutting that occurred in France in 1976 during a very hot summer. This forced the French asphalt industry to investigate alternative methods of asphalt mix and pavement design.

One of the solutions was to use very stiff binders, decreasing the potential fatigue of stiff layers by increasing the binder content. The design methodology was also changed to include performance tests such as fatigue and water sensitivity.

The main advantages of HiMA are the improved stiffness, fatigue and rut resistance of the asphalt layer. Due to the improved stiffness, the layer thickness of the HiMA can be reduced. In addition to making it more economically viable, this is also a consideration on rehabilitation projects with height restrictions and helps save on raw materials.

Reunion visit

The Sabita HiMA interest group was hosted by Colas on Reunion Island in October 2009 to see the Grand Bois bypass project, where HiMA was manufactured and paved.

“ The main advantages of HiMA are the improved stiffness, fatigue and rut resistance of the asphalt layer.

The project entails the construction of 4km of freeway divided by a concrete barrier with two lanes in both directions. The six month contract entails 80 000t asphalt, 30 000m³ crusher-run and a 4000m concrete median barrier.

The use of the HiMA as base course resulted in a reduction of 60mm in the total asphalt pavement design, which equates to more than 20% less asphalt required on this project.

Valuable experience was gained on the practical aspects of mixing and paving HiMA that will be put to use when the second round of HiMA trials commence in South Africa shortly.

Progress of technology transfer

After the European study tour by the HiMA working group, aggregate and bitumen samples from South Africa were sent to Colas and Shell's laboratories in France for HiMA mix designs. The intention was to repeat the mix design procedure in South Africa using test methods that are currently part of the local design guideline and to "translate" it to our design method.

In-depth performance testing will then be undertaken.



Ermont drum plant on the Grand Bois bypass project.



A Titan paver paving HiMA with a rolling straight edge to improve riding quality of the asphalt.



Pneumatic tyred roller with "skirts" to keep tyres warm during compaction to prevent asphalt from sticking.



Henry Appollis

put our labs on the map

Henry Appollis recently retired as technical manager (South) based at our Eerste River, Cape Town, branch.

Henry's technical expertise and attention to detail will be sorely missed. However he has passed on his considerable knowledge to others at Much Asphalt and so his legacy lives on in the company.

Alec Rippenaar, manager of our central laboratory in Cape Town, has the following to say:

"I joined Much Asphalt in 1978 and worked under the watchful eye of Henry for some time. He has remained my mentor through the past 30 years and always pushed me to the limits. 'For your own benefit', were always his words.

"Almost all our lab staff countrywide came through teacher Henry's hands. He brought out the best in all of us. He was like a father figure and one could always go to him for sound advice, work related or otherwise. He led by example and was never scared to get his hands dirty.

"Henry is very well respected in our industry and customers will remember him for many reasons.

"We opened the central laboratory in 1988. Henry was one of the driving forces behind this new venture and helped grow Cenlab into what it is today. All Cenlab's achievements have been in part due to his enthusiasm

"Henry Appollis brought a sense of helpfulness and dedication to Much Asphalt. He taught me the finer details of mix designs and interpretation of results, and also how to look on the brighter side of life."

– Patrick Valentyn, production manager, Contermanskloof plant, Western Cape.

and dedication. Being the first asphalt manufacturer's laboratory to achieve SANAS Accreditation is one of the many feathers in Henry's cap. He also played a huge role in getting many major contracts off the ground on a good footing."

Reducing truck standing times

In November 2006 we started monitoring truck turnaround times at our Port Elizabeth branch.

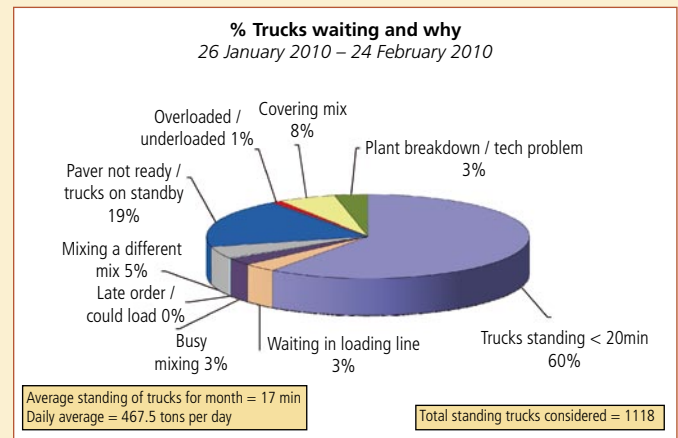
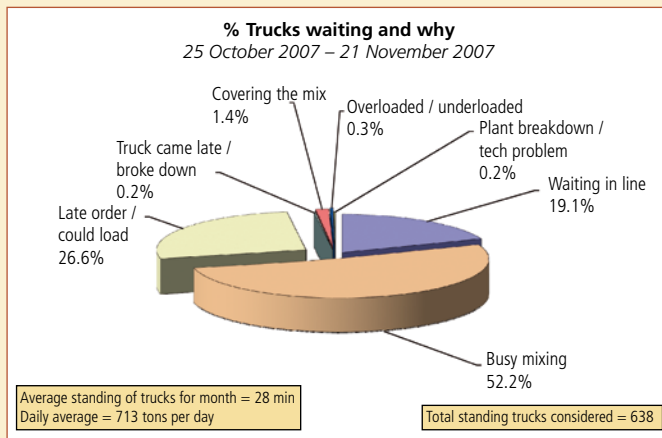
Customers were complaining of huge costs incurred for trucks standing at the plant and they were losing confidence in our ability to meet the demand for asphalt.

With some modifications to our in-house weighbridge system, we were able to log the time customer trucks spent at the plant and the reasons for delays. The average standing time

was 33 minutes. We decided that a truck turnaround time of 20 minutes was acceptable, and so the journey began.

A year later (November 2007) our average turnaround time had reduced to 28min and another year later (November 2008) to 23 minutes. By November 2009 trucks were standing for an average of 17 minutes.

The pie charts for October/November 2007 and February 2010 show how far we have come with this project.



Infrared cameras help to ensure efficiency and quality

Herman Marais, Director – Materials Technology

Much Asphalt is now using infrared (IR) cameras both for preventative maintenance in all its plants and to detect heat loss in asphalt products. The technique, known as IR thermography, aims to ensure continuity of supply and consistent product quality.

The IR camera as a maintenance tool is used to detect hot electrical joints, usually as a result of a loose connection, hot cabling associated with a damaged or undersized cable, hot contactors and circuit breakers indicating a pending fault, or any other hot spot in the plant's electrical system.

Hot motors, bearings and chains can also be identified, helping to avoid costly after failure repairs, plant downtime and delays in client deliveries.

The camera not only pinpoints potential problems, it also helps us ensure that the asphalt plant operates at peak efficiency. Heat loss is usually an indication of inefficiency. For example, if oil is heated as a fuel or to keep plant components

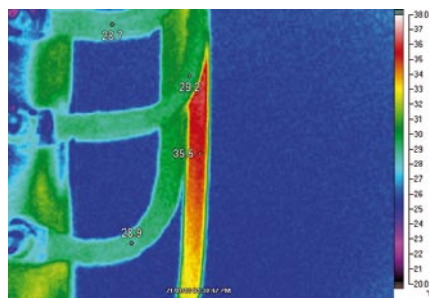
warm, any heat loss before the oil reaches its destination is inefficient. The source of this heat loss can be identified using the IR camera.

Asphalt Paving Temperature Control

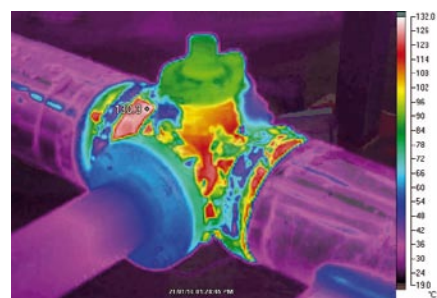
Asphalt temperature during placement is critical to the success of the asphalt layer. If asphalt is too cold it is difficult to compact. If too hot, it can be too pliable and move under the compaction equipment.

Temperature segregation – which is not visible to the naked eye – can be clearly identified behind the paver using the IR camera. This helps the paving contractor to ensure that a uniform asphalt mixture is placed over the full paving width.

“ The camera not only pinpoints potential problems, it also helps us ensure that the asphalt plant operates at peak efficiency.



Infrared image of an electrical cable



Infrared image of heat loss at a valve



Infrared image of asphalt being tipped into paver

Support for maths and science learners

Two years ago Surface Talk carried an article on Much Asphalt's involvement in science and maths enrichment for learners in Khayelitsha, Cape Town, thanks to a grant of almost R2-million from our parent company, Murray & Roberts.

The grant results from an agreement between Murray & Roberts and the Science Education Resources Initiative (SERI), a Western Cape based non-profit organisation. The beneficiaries are the *Fun'ulwazi* grade 8 and 9 enrichment programme and the *Get Building* programme for academically talented learners in grades 10 to 12 at the Centre of Science and Technology (COSAT), a specialist maths and science school in Khayelitsha.

Last year Murray & Roberts supported 40 Grade 10 learners on SERI's *Get Building* initiative through the grant. This support has helped the COSAT learners to gain exposure to vital extra-curricular stimulation. It also provides a stable environment where their social needs are met, allows for remedial teaching for weaker learners, and helps to bridge the gap between secondary and tertiary education for the more talented.



The *Get Building* learners supported by Murray & Roberts in 2009, pictured with COSAT principal Phadiela Cooper.

Coedmore plant gets a new lease on life

Much Asphalt's Coedmore plant in Durban, KwaZulu-Natal, is making huge strides in improving product and service delivery under the leadership of regional manager Warren Maher and branch manager Timothy Gradwell.

The market in Durban includes a high percentage of small contractors who compete for paving of driveways, parking areas and municipal tenders such as township roads, pothole repairs and water improvement projects.

This is in addition to the demand from large contractors for roads, freeways, airport runways, demarcated bus routes and other technically complex projects. "The production facility at Coedmore must therefore be able to cater to all the needs of this unique market dynamic," says Timothy.

"Our axiom is that there is no distinction between small and large customers. They are equally important to us."

However it has not all been plain sailing at Coedmore. After several breakdowns at the plant in early 2009, a team was assembled to sort out the problems.

The Five-S Lean Manufacturing technique (sort, straighten, shine,

standardise and sustain) was applied. All unnecessary junk and clutter was removed and other equipment was correctly stored. Process monitoring was implemented, instruments repaired or replaced and new equipment introduced in the interests of improving quality control.

The fuel burner, used to heat the aggregate before adding the bitumen, was serviced and recalibrated, resulting in a saving of about one litre of fuel per ton of aggregate (from 7.5 to 6.5).

An elevated despatch office has been built between the two weighbridges, allowing drivers to remain in their vehicles to complete documentation.

A critical variance report was implemented and a champion appointed.

A score board designed by staff is prominently displayed to record tons, fuel consumption, breakdowns, waste and other relevant information on a daily basis.

A culture of ongoing improvement has been established at Coedmore and changes planned for 2010 include construction of a separate entrance for sundry and cash customers who require sidewalk asphalt.



The new elevated despatch office.



A score board designed by staff records tons, fuel consumption, breakdowns and waste on a daily basis.

SAICE visits Eerste River

Much Asphalt's Eerste River branch hosted members of the Western Cape region of the South African Institute of Civil Engineers (SAICE) towards the end of 2009.

The visitors were given a guided tour of the mixing plant by Nathan Jacobs and Brendon Masters, Eerste River and Contermanskloof branch managers respectively.

They got to grips with the whole process, including crushed aggregate stockpiles, the cold feed bin calibrating and charging system, the heating and drying system and the handling and mass measuring of aggregate, filler and bitumen. Consensus was that the testing laboratory and quality assurance process were impressive.

The tour ended in the heart of the operation – the despatch office, controlling incoming raw materials and outgoing asphalt.