



ASPARI

Paving the way forward

The ASPARI newsletter

Vol 1 – May 2015

This is the first in a series of short newsletters compiled to update our ASPARI founders and partners on what is happening within the research unit. We will in the near future broaden the newsletter to include short articles from students and founders on topics that may be of interest to all. If you have any suggestions regarding the format, what you would like to see in the newsletter or anything else, please email them to s.r.miller@utwente.nl.

Welcome to TPA/Strabag and Roelofs

Let me once again take the opportunity to welcome the two new founders to the ASPARI family. We look forward to working with you in the near future. Jeroen Heesbeen of TPA has already been to the UT for an initial introduction and mini-training session in the use of the PQi equipment. Roelofs intends holding its first PQi session after the summer vacation. Albertus Steenbergen and Gerrit Woudman will plan their first session with the UT.

PhD graduations

ASPARI researchers Frank Bijleveld and Alexandr Vasenev both graduated in the first quarter of this year. Frank's thesis titled "Professionalising the asphalt construction process - Aligning information technologies, operators' knowledge and laboratory practices" can be downloaded from the University of Twente's repository <http://purl.utwente.nl/publications/93791>. For a copy of Alexandr's thesis titled "Visualizing Asphalt Roller Trajectories in Context - Acquiring, Processing, and Representing Sensor Readings", please follow the link <http://purl.utwente.nl/publications/95330>. For more information on their work or should you wish to discuss specific aspects of their work, please contact them directly. Frank has recently joined Ooms Civiel and can be contacted via their Head Office in Scharwoude. Alex has joined the Faculty of Electrical Engineering at the University of Twente and can be contacted via email a.vasenev@utwente.nl

Now that Frank and Alexandr are gone (but not forgotten), we hope to have our first PDEng student starting ASAP.

MSc projects

Jos Olsman is currently still busy with his MSc project at Heijmans where he is working closely with Peter van Hinthem. His work focuses on studying the mysteries of Intelligent Compaction with the title "SMART Walsen - Een onderzoek naar het relateren van de vibratiemodulus (E vib) en compaction meter

value (CMV) aan de dichtheid van een asfaltverharding". We hope that Jos will publish his work since there are some interesting findings coming from his study. Watch this space for details!

BSc projects

Five new bachelor projects will soon be starting off in the next few weeks with students based at various companies. Three of the projects were formulated in direct response to the call we put out earlier for potential student projects. Two projects were formulated in the framework of a new ASPARi project being carried out this year with funding received from the 3TU consortium (some more about this project later in this newsletter). Thank you very much to those companies that responded with student projects and opportunities. It certainly helps us getting more students interested in asphalt related projects and hence get more new entrants into the industry.

All students are currently finalizing their pre-project reports (voorverslag) with them starting at companies in the middle of May. Students and brief project details are as follows:

- Marjolein Glaesloot will be based at the Asfalt Centrale Hengelo where she will study the effect of moisture on the asphalt production process. This is a follow up to the 2014 study of Christiaan Arbeider who studied and made explicit energy usage at the asphalt plant.
- Ruben Olthof will be based at the Asfalt Productie Westerbroek (APW) where he will be looking at the possibilities for reducing CO₂ emissions at the plant. The project came about as a result of a call from ASPARi newcomer company, Roelofs bv.
- Mark Castelijns, a student extremely interested in GIS applications, will be based at Boskalis. He will work towards developing a Risk Contour Plot for asphalt construction. In brief, can the current TCP and CCP plots from PQi monitoring exercises be extended to include video inspection data in a GIS application; and in so doing form the basis for developing a Risk Contour Plot. The background to his work is explained in the paper "Risico's van afwijkingen in asfaltproces te kwantificeren?" written by Berwich Sluer et al. See the link [http://aspari.nl/uploads/documents/artikelen/092-Risico-s-asfaltproces-te-kwantificeren-\(def\).pdf](http://aspari.nl/uploads/documents/artikelen/092-Risico-s-asfaltproces-te-kwantificeren-(def).pdf) for a copy of the paper.
- Sjon Van Dijk will be based both at BAM and at the UT working on one of the projects related to the 3TU funded project mentioned earlier. His project involves studying the application of passive RFID sensors to monitor asphalt temperature and other parameters during the construction process. He will spend most of his time on sites and may just call you for assistance. Our project website www.asphaltsavingenergy.nl will be up and running towards the end of May and will be linked to www.aspari.nl You can then follow the project from both sites. More information will follow once the website is active.
- Muzzafer Bahçeci will be based at the Boskalis laboratory. He will undertake a project in the context of developing mix-specific compaction operational strategies for roller operators. This is a follow-up study based on the work of Frank Bijleveld described in the Infradagen 2014 paper "Simuleren van het walsproces in het laboratorium". The paper can be downloaded from the ASPARi website. Muzzafer will also attempt to incorporate RFID passive sensors in the

laboratory process to test its accuracy compared to using the thermos-couple/data logger combination.

Recent PQi's

The following PQi's were undertaken in the latter part of 2014 and the beginning of the year:

- TWW at the UT Campus where the roller operators requested that several of their own operational strategies be tested. Construction consisted of the removal and replacement of one of the foundation layers and a new surfacing layer. The asphalt team formulated a strategy for each of the lanes to be constructed. The team decided beforehand which strategy they would apply in terms of rollers for the breakdown and final rolling phases. This successful exercise was concluded with a rather enthusiastic feedback session at TWW's annual Asfaltdag held in Hengelo.
- REEF, part of the Strukton group, held a monitoring exercise for their work carried out at the TT circuit in Assen (in very cold weather conditions during the recent stormy weather). All plots and animations have been produced and will soon be discussed and analyzed with REEF's Evert Scholten, Gerard Olde Lassink and Ooms Civiel's Frank Bijleveld.
- Boskalis recently undertook an exercise to compare the extent of temperature homogeneity of two paver set ups. The pavers operating in parallel, were fitted with a shuttle buggy and a feeder respectively. Initial indications are that the exercise was successful. The animations and TCPs should be ready in the next week. The results will soon be discussed with Boskalis' Jan Stigter and Berwich Sluer who took responsibility for the PQi exercise. This, in the absence of the person who shall remain unnamed and who moved to the former ASPARi founder member, who shall remain anonymous (wink, wink). On a more serious note, we hope to see AB and his new company back in the fold sometime soon. By the way Jan Stigter, welcome to the ASPARi family!!

Visit to MOBA

Seirgei Miller, André Dorée and Frank Bijleveld (Ooms Civiel) recently visited the MOBA Automation production facility and headquarters in Limburg, Germany. MOBA develops and manufactures high-end sensors, controllers and on-board electronics for asphalt construction and numerous other applications. We will soon test some of the MOBA equipment and work with them on some of their product development projects. The next equipment visit is planned for Monday 11 May 2015 and will be to the Wirtgen facility in Ludwigshafen, Germany. Should you wish to accompany us on the visit, please contact Seirgei or André.

3TU project - Using RFID sensors to measure the energy consumption of Warm Mix and Recycled Asphalt

In the latter part of 2014, Seirgei and Frank (then still a PhD student), submitted a project proposal to the 3TU consortium titled "Using RFID sensors to measure the energy consumption of Warm Mix and Recycled Asphalt". The project has been awarded a small grant to conduct research this year. Our project website www.asphaltsavingenergy.nl will be up and running towards the end of May and will be linked

to www.aspari.nl You can then follow the project from both sites. More information will follow once the website is active.

The main aim of the project is “To measure the energy consumption during asphalt construction using RFID-sensors and to determine the relationship with the asphalt quality (durability) of WMA using laboratory experimentation.” Some of the proposed project activities include:

- Monitoring the energy consumption for different operational compaction strategies in the laboratory and during three field projects;
- Measuring the roller pressure, the number of roller passes and the temperature window for compaction using RFID-sensors;
- Drilling asphalt cores from the constructed road and determining the asphalt quality characteristics, such as resistance to rutting and cracking, in the laboratory; and
- Monitoring and displaying vehicle load pressure and road surface temperature on dynamic display boards.

We will be calling upon some of you soon to involve you in some way or another since it is our intention to involve as many of the founders as possible. Should you have any ideas or should you wish us to link on to one of the projects at your company, please contact us ASAP.

South African visit to ASPARi

A group of 18 South Africans visited ASPARi on 5 and 6 March 2015. The purpose of the visit was two-fold. Firstly, to learn more about asphalt construction process control i.e. the work being done here in the Netherlands to professionalise the asphalt construction process. Secondly, since the Netherlands has extensive experience regarding longer guarantee periods than what is currently implemented in South Africa (where the guarantee period is mostly one year post-construction), the visiting group was keen to learn about the implementation of extended guarantee periods and integrated contract forms in particular. Other than the UT researchers, ASPARi members Frank Bijleveld, Rinus Kok and Marco Oosterveld provided essential opportunities for the group to learn from Dutch experiences.

In closing

Please note the following regarding the ASPARi website - we are trying to clean the website to make it much easier and more attractive to the outside world. Please bear with us whilst it is “Under Construction”. That is it for now folks. We hope to bring you at least three newsletters per year to update you on what is happening in the unit. As mentioned earlier, suggestions and contributions to the newsletter are most welcome. Take care and enjoy the school holidays if you are going to take some time off from your busy schedules.

Kind regards,

Seirgei and André