



Insights

SPOTLIGHT ARTICLE:

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Oil Sands in Kazakhstan

Aktau, Kazakhstan

HPC has been appointed by a long standing client to manage the exploitation of bitumen deposits from one of the world's largest deposits of oil sands, in Kazakhstan near the Caspian Sea.



The main purpose of this extraction is to use the extracted and upgraded Bitumen as a raw material for road construction. Kazakhstan is the ninth largest country in the world, covering an area of 2,717,300 km² and government programs have been agreed for the improvement of infrastructure and road construction across the country. The successful extraction of this oil supply is fundamental to the implementation of this infrastructure project.

The bitumen sand deposit covers an area of approximately 25 km² and is situated in a vast, desert-like area, approximately 200 km to the east of the city Aktau near the Caspian Sea. Environmental conditions in the area are challenging with rainfall occurring only in spring and winter and temperatures ranging from as high as 45° C in summer and minus 25° C in winter. Approximately 30 km away from the site is the nearest settlement, which nomads use as grazing land for camels, is home to a very old nomad cemetery and the area is also used for some rare birds to breed and grazing for other

wild animals. The environmental impacts of the project on this area must be taken into account throughout this project.

The brief for the project includes the following scope of works:

1. Preparation of a feasibility study for open pit mining
2. Preparation of a feasibility study for hydrocarbon extraction and treatment of bitumen sands
3. Assessment and investigation of Kazakh legal basis for the operation of an open pit
4. Preparation of a certified appraisal for the deposit according to international standards of evaluation
5. Detailed planning for the open pit for an operation time of approximately 25 years
6. Preparation of an Environmental Impact Assessment (EIA)

To ensure the successful delivery of the project, HPC has assembled a team of international experts for various stages of the project. The core planning tasks, open pit technology, geological models and raw material models are being managed by HPC's Merseburg office, which has a proven track record of experience in this sector.

HPC has called for specific support from Montan University, Leoben; The University of Alberta, Canada; and institutes in Salt Lake City, Utah; for their extensive knowledge of processing and extraction technologies. Detailed laboratory tests, investigations and large scale testing of sample material from the deposits are currently being carried out. HPC is also coordinating support from skilled experts in the crude oil sector for the support in preparing certified appraisals, and working with a major Kazakh engineering enterprise for access to existing documentation from the site, as well as

support with legal compliance for the project.

Initial works on the project have included the analysis of data from bore holes advanced in the 1970's, 80's and 90's, with subsequent investigation undertaken more recently. Approximately 150,000 data records are currently being collated and analysed using specialist geology and mine planning program Surpac™. Analysis is being carried out to determine how the access slopes will be constructed to ensure safe progress, where excavated material will be deposited and how 100,000 m³ of excavated sands, per day, will physically reach the processing stage.



A particularly complicated and challenging task is the separation of the bitumen from the sand. The biggest example of bitumen sand processing is in Canada, the world's second largest crude oil reservoir in Athabasca in the North state of Alberta, where a hot water extraction technology is employed. This extraction method can only be used for one particular bond of the bitumen with the grain of sand. Whether this bond exists in Kazakhstan is currently being analysed by a laboratory. Other extraction methods including solvents, electrolytes, heat and others are currently being investigated.

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Message from the President



Inogen is entering its second decade. Started in the early parts of this century Inogen has gone from strength to strength. We have now more clients in more

countries (last count 160+) than we ever imagined. And our team of enthusiastic consultants is second to none, in my obviously biased opinion.

We continue to innovate. Where we started filming one contribution from the Dutch Minister for the Environment for our Worldview® Conference in London we filmed the entire Worldview® in Copenhagen. Paradoxically this will mean that the small-scale event during the COP15 climate summit will reach our largest ever audience as we will distribute the DVD to all our clients. We're on YouTube already and it is my intention to bring more of our sometimes truly impressive speakers to a wider audience this way.

For me personally the highlight of last year must have been our chance encounter with Bishop Desmond Tutu in our conference venue in Copenhagen.

We have also updated our website (<http://www.inogenet.com>) with a modern look and feel. It is now easier to find that service that you need in the country you want it. We're also showcasing specific projects that may inspire you.

This year we hope to continue to grow, strengthen relationships and improve our service delivery.

*Many thanks,
Peter*

Peter Penning, President and CEO

WorldView® Conference Report

Inogen Associates travel to Copenhagen for Climate Change Debate Worldview® Conference

Copenhagen, Denmark

Business leaders gathered in the inspiring surroundings of the Schaeffergarden in Copenhagen to discuss the impact of COP 15 at a round table event organised by Inogen at its Worldview® Conference in December.

The event, held on the 11 December as the COP15 negotiations were in progress, was attended by Coca-Cola Hellenic, Absolut Vodka, ITT Water and Wastewater and Kuwait Petroleum. Before the round table discussion began, Professor Demetrios Lalas, who was in Copenhagen as part of the Greek Government's negotiating team, gave a fascinating insight into the complexities and challenges posed by the negotiations. Speaking in a keynote presentation he outlined the mind boggling dual track nature of the discussions and concluded that he was hopeful that an "agreement to agree" would be reached.

The round table event, chaired by Inogen representative Kevin Schofield, then went on to discuss whether customers or governments were driving the sustainability agenda; whether there are any business case benefits of carbon reporting; and whether governments could assist business by clarifying and harmonising carbon reporting standards on a globalised basis. A very lively, forthright and interesting discussion ensued allowing business the opportunity to state its case and demonstrating that in many ways, it is business and not governments who are pioneering by responding quickly to market and stakeholder engagement.

For those who were unable to attend the round table meeting, the good news is that the session was captured in a DVD, for the first time since the Worldview® Conferences began.

Speaking after the event, Peter said:

"This was a great event and by capturing the moment permanently on DVD we are able to share the round table session with many more customers than we would otherwise reach. This not only gives our Inogen customers and colleagues the chance to see the round table session at a time which is convenient to them, it also means that they don't have to travel to attend the session which cuts down on many flights and car journeys."

For further information or to receive a copy of the DVD, please contact Alex Gray: alex.gray@deltasimons.com of Delta-Simons Environmental Consultants Ltd.

The next WorldView® Conference, will be taking in place in Rio de Janerio on Thursday 15th April. The theme of the conference will be "Solutions for maximising Oil and Gas Asset Value." For further information please contact **J.R. Toren** at jrtoren@mehsi.com or go to www.inogenet.com.

Associate News Briefs

GCC Assists Beverage Industry to Complete Greenhouse Gas Sector Guidance

United States

The Beverage Industry Environmental Roundtable (BIER) completed the Beverage Industry Sector Guidance for Greenhouse Gas Emissions Reporting (Sector Guidance), Version 2.0 in January 2010. The Sector Guidance is a groundbreaking document, as it is the first greenhouse gas guidance document to incorporate both enterprise inventory and product carbon footprinting approaches for a single industry.

Tod Christenson of the Global Corporate Consultancy (part of Delta Consultants) is the Director of BIER, with overall responsibility for Sector Guidance development. "The Sector Guidance is a work product which required tremendous effort from the members of BIER," says Christenson. "With the completion of the latest version, BIER has developed a work product which can be used to establish the beverage industry as a leading sector, and BIER as an indispensable technical resource."

The Sector Guidance is intended to be used to enhance globally accepted greenhouse gas accounting protocols with instruction specific to the beverage industry. Currently, the Sector Guidance aligns with two leading methodologies. The Greenhouse Gas Protocol, prepared by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), and was used as the foundation for enterprise inventory guidance. Similarly, Publicly Available Specification 2050 (PAS 2050), prepared by British Standards Institution [BSI] and co-sponsored by the Carbon Trust and the Department for Environment, Food and Rural Affairs [DEFRA], was referenced for product carbon footprint sections of the guidance.

The Global Corporate Consultancy (GCC) was instrumental in the completion of the Sector Guidance. As primary facilitator for BIER, the GCC contributed to the working group that developed the Sector Guidance, as well as facilitating discussions that led to highly specific appendices. Included in Version 2.0 of the Sector Guidance are appendices on: maturation of beverage alcohol, beverage retail and home refrigeration, transportation logistics and product distribution, and recycling allocation. Critical stakeholders, including WRI and Carbon Trust, participated in a formal review of the Sector Guidance and provided valuable comments.

The challenge for BIER now lies in promoting its work in light of emerging protocols. BIER has participated in the stakeholder comment period to the new WRI/WBCSD Scope 3 and Product Standards, and has multiple members who were selected to participate in the road testing of those documents. In this process, BIER members intend to use the Sector Guidance to enhance their calculation efforts, and promote the work of the industry to WRI/WBCSD.

Finally, BIER intends to adapt its document, as appropriate, to new standards. The GHG Protocol and PAS2050 were the leading global protocols at the time BIER embarked on Sector Guidance development, but BIER remains open to adjusting should other standards, including those developed by WRI/WBCSD or International Organisation for Standardisation (ISO), become more prevalent.

The Sector Guidance, Version 2.0, will be available for public download from BIER's website in March 2010.

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Spotlight Article

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Oil Sands in Kazakhstan

In the case that the water extraction method is the most suitable method for the Kazakhstan deposit, another challenge will be to source the estimated 200 m³ supply of water needed, per hour, in the existing climate. Hydrogeological reports from the 1980's illustrate groundwater occurrences in the area of the deposit in Kazakhstan which could provide an appropriate water supply. An alternative source of water supply currently under investigation is developing a water pipeline from the Caspian Sea.

All these technical and environmental influences are under investigation by HPC, and a comprehensive solution is being prepared for the client, to ensure that all are considered when providing a solution for this complex project.

For further information and updates on this project please contact **Thomas Noack:**
tnoack@hpc-ag.de.

Associate News Briefs

Inogen Associate Thrives in the Growing Energy Market in China

Guangzhou, Guangdong Province, China

ESD China Limited, Associate of Inogen in China has recently been commissioned by European Investment Bank (EIB) under a 2-3 years sole-source framework agreement to undertake a range of services for EIB financed renewable energy and energy efficiency projects under the China Climate Change Framework Loan (CCCFL). The various projects involved will range from industrial energy efficiency, solar power, wind power, small-medium hydropower to conversion of coke gas into LNG fuel.

Through the past decade, ESD China has developed a fully bilingual team, highly experienced in energy efficiency analysis, energy saving building consulting and sourcing of renewable energy technologies. The team also includes in-house experts highly proficient in International Financial Institution (IFI) project procurement management, institutional reform for municipal utilities and climate change policies and regulations. In the recent years, ESD China has been particularly active in energy efficiency project appraisal and implementation monitoring for IFI, including the World Bank/GEF, Asia Development Bank (ADB) and European Investment Bank (EIB). Its private sector clients on energy projects include Wuhan Iron and Steel Group Co. (for virtual steel mill modelling), British Petroleum (for EPCM of biomass pelletizing plant), Gazeley (for Eco-Initiatives design of Wal-Mart logistic warehouses), GSE (for energy saving design at Alstom boiler plant in Wuhan) and The Coca Cola Companies (for energy saving assessment at facilities in East Asia).

It is currently participating in a Social and Environmental Impact Assessment (ESIA) for the proposed Sino-Myanmar Pipelines of approximately 850 km for Petrochina, which is led by IEM Thailand, an Inogen Solution Provider.

For more information, please contact **Allan Zhang** at azhang@esdchina.com.

Associate News Briefs

GCC Assists Beverage Industry to Complete Greenhouse Gas Sector Guidance (cntd. from page 3)

BIER is a technical coalition of 17 leading global beverage companies collaborating to share best practices, benchmark performance and engage external stakeholders. Upon its launch in 2006, BIER focused its agenda on water stewardship activities, but recognising the need to align greenhouse gas emissions calculations across the industry, expanded its agenda in early 2008. The Sector Guidance has been the single focus of the Greenhouse Gas Working Group over the past two years.

Current BIER Members include: AB InBev, Bacardi Limited, Beam Global Spirits and Wine, Brown-Forman Corporation, Carlsberg Group, Coca-Cola Enterprises, DANONE, Diageo, MillerCoors, Molson Coors, Nestle Waters, New Belgium Brewing Company, Ocean Spray Cranberries, Pepsi Bottling Group, PepsiCo International, Pernod Ricard, and The Coca-Cola Company. Additionally, BIER includes American Beverage Association, Ecolab and JohnsonDiversey as contributory members.

For more information visit <http://www.bierroundtable.com> or contact Gregory LeMay, Global Corporate Consultancy: glemay@deltaenv.com

Model for Carbon Footprinting Soil Remediation Processes

United States

How do you put into perspective the various soil decontamination processes and their effects on the environment? This question is the driving force behind the innovative Carbon Footprint Calculating Model. This is a useful tool when such decisions have to be deliberated. The location is always the starting point. The various choices in decontamination processes are dependent on a variety of factors such as: cost, duration of process, the desired result, etc. Having knowledge of the carbon footprint now means that the environmental impact of a process can also be included in the decision making process.

The decontamination of contaminated land is good for the environment, but what are the consequences for emissions of CO₂ by such an operation? HMVT, a sister company of Oranjewoud, wanted to investigate this and developed a tool that would offer an extra dimension to remediation projects – the Carbon Footprint of the remediation approach. The model has a database of every relevant activity and its production of CO₂; from the number of litres of chemicals or biological substrate to the distance that trucks carrying excavated soil have to travel.

Currently, work is being carried out on a revised version of Carbon Footprint by Delta, Soresma and HMVT. The three parties conduct regular meetings via the internet to discuss their progress and to coordinate developments. This is a good example of the international teamwork and innovation within Inogen.

This new concept considers the options available knowing that soil remediation not only costs energy but also has an effect on other environmental issues. By recycling energy and using renewable sources during a remediation process it is possible to reduce CO₂ emissions. Available options include solar panels and heat exchangers. These two energy options, or 'green credits', are also included in the model. A start has been made with the calculations from a number of sites in the USA, including a Delta remediation project, the McCandless site in New Jersey. Green Remediation is especially useful for larger contaminated sites and remediation processes that will require lengthy operations and maintenance.

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Model for Carbon Footprinting Soil Remediation Processes (cntd. from page 4)

Time is an important factor within the concept of Green Remediation. By spreading a remediation process out over a longer time period, it is possible to gain greener efficiencies in utilising energy, fuels and transportation to minimise the carbon footprint, and to produce an overall greener cleanup solution compared to past remediation practices.

The California state regulatory cleanup authorities have already taken steps to include CO₂ emissions from soil remediation in their policy forming. They have written an initial policy description in which both Delta and HMVT have a role to play with the Carbon Footprint forming the basis.

For further information contact **Mike Martinson**, Delta: mmartinson@deltaenv.com

Alternatives to Crucial Pipeline Route in Colombia

Bogota, Colombia



Geoingenieria S.A., the Inogen Associate in Colombia, is working closely with Ecopetrol S.A, the Colombia states oil company, to ensure the transport of liquid gas from Barrancabermeja's refinery to Cartagena, the main Colombian harbor in the Caribbean, through a 600 km pipeline running across a wide variety of natural ecosystems, ethnic communities and native reserves. The objective is to present a variety of different environmental alternatives for the route, using multicriteria analysis (scoring methodology) to select the most favorable one for the engineer.

The key aim of the project is to find the best solution which has the minimal impact on the natural environment and ecosystems, whilst taking into account the social issues and considering the below additional factors:

- The length of the alternatives, looking for the shortest possible alternative
- The use of areas already affected by previous projects
- Presence of existing roads that will minimise additional impacts
- The complexity, hazards and risks associated with the construction in relation to geographical and geological issues

The magnitude of the project and the areas affected by the pipeline increase the level of significance for the country. The pipeline crosses the Magdalena river, the most important watercourse in Colombia, the Dique Canal, plus a diverse number of wetlands and flooding areas associated to this important hydrological system, making the selection of each section of the route a very complex process.

The innovative methodologies used to implement this project and the overall experience of Geoingenieria S.A. in the area, allows the local authorities to assess in the best way all the options, supported in technical, environmental, social and economic aspects.

For additional information on this or any other project contact **Fredy Mora** at +571 3276300 or fmora@geoingenieria.com.

Associate News Briefs

DCS/Delta Team to Expedite Services Mississauga

Mississauga, Ontario, Canada

Decommissioning Consulting Services Ltd, a component of New Inogen Associate SENES/DCS, recently partnered with Delta Consultants to deliver an accelerated service request from Ashland in Ontario, Canada, DCS's home province.

Ashland, a global Delta client, requested an environmental assessment to complete the expedited sale of a former manufacturing and food processing storage/distribution facility in Mississauga, Ontario. DCS maintains a unique understanding of environmental drivers in Ontario real estate transactions, which enabled DCS to respond with a proposal and organise a representative onto the site within 24 hours of the request from Ashland Real Estate personnel.

A comprehensive Phase I Assessment and report was completed within 30 days, meeting Ashland Real Estate's schedule to obtain information before the end of 2009. DCS, Delta and Ashland are currently discussing Phase II evaluation and additional requirements to assist Ashland in completing the transaction.

Ashland Inc. (NYSE: ASH), is a FORTUNE 500, global specialty chemicals company with sales and operations in more than 100 countries worldwide.

Contacts: Jerry Hincka, Global Ashland Account Manger, Delta Consultants: jhincka@deltaenv.com; Rick German, Senior Principal, DCS: rgerman@dcsltd.ca

Associate News Briefs

Wind Power Expansion in Sweden – a New Market for DGE Group

Kalmar, Sweden



On a national level, Sweden has set out to decrease CO₂ emissions by 4% between 2008-2012. To achieve this, a dramatic expansion of the wind power segment will be essential. The general goal is to increase wind power production from about 2 TWh per year today to 30 TWh by 2020. This means that the number of wind turbines will have to increase from about 1,000 up to 3,000,000 depending on size.

DGE Group is currently assisting one of Sweden's leading wind farm developers, Eolus Vind AB, through permission processes and environmental assessments in several projects in southern Sweden. Together, these projects cover 25 wind turbines, which will generate 125 GWh annually. Further projects are in the pipeline.

During the financial year 2008-2009, Eolus established 29 wind turbines with an installed power of 48 MW in total. Over the coming years, Eolus expects to establish approximately 50 turbines per year. Eolus is listed on the unofficial market place NASDAQ OMX in Stockholm and had 1700 share holders in August 2009.

For further information contact **Lina Kristoffersen**,
PhD: lina.kristoffersen@dge.se.

Regulatory Update

Major Set Back in Australian Emissions Trading Scheme Legislation

Melbourne, Victoria, Australia

The current Australian Government, led by Prime Minister Kevin Rudd, has been working frantically since the Prime Minister took office to prepare Australia for a greenhouse gas reduction strategy. Australia, which has a large stake of its economy investing in energy intensive industries such as mining and aluminum smelting, and a heavy reliance on coal for its energy, has a big task ahead.

The Government has put in place a range of measures to try to reduce carbon emissions, including legislation which commits Australia to increase its renewable energy contribution by 20% by 2050, and mechanisms to encourage energy efficiency and research into new technologies. It is debatable on whether the Government is doing enough in this area, however the area that has attracted the most media attention in Australia, and abroad, has been around the implementation of the Government's major climate change policy, the Carbon Pollution Reduction Scheme, or CPRS.

In the lead up to the meeting of all world leaders in Copenhagen (COP15, 7 December to 18 December 2009) to discuss international action on Climate Change, the Australian Government had a major set back in the week of 30 November 2009 as the legislation for its Emissions Trading Scheme (ETS) (known as the CPRS) failed to pass through the Senate. This was primarily due to a deep rift in the Opposition party which saw the current leader of the Opposition, Mr Malcolm Turnbull, who supported the CPRS legislation, ousted by his party and a new party leader elected. The new party leader, Mr Tony Abbott, is unimpressed with the Government's CPRS as he believes it would impose unacceptable costs to the Australian community, and he will seek a different strategy, other than an ETS, to reduce Australia's emissions.

This was a major blow for Prime Minister Rudd, who had wanted to go to Copenhagen with the legislation passed in the hope that this would encourage other nations to take up similar schemes to reduce emissions. Given the fact that the meeting of COP-15 was unsuccessful in setting binding global emissions targets, it will be interesting to see if Australia will change tack, and instead implement a straight forward carbon tax, as has been operating in Denmark for some years, or whether the Government will push ahead with another amended CPRS.

For further information contact **Peter Clark**, Peter J Ramsay & Associates,
peter.clark@pjra.com.au

Significant Changes in the Environmental Agency and Legislation in the State of São Paulo, Brazil

São Paulo, Brazil

The São Paulo state leads the agricultural, financial and industrial activities in Brazil, generating a GDP of approximately 670 billion dollars (35% of the Brazilian GDP).

Since the significant economic growth in Brazil and in Sao Paulo in the mid-90's, some of the resources dedicated to environmental enforcement and the environmental regulations have had to be reviewed and improved. In 2009, a series of new regulations were released. These included a total restructuring of the state environmental regulator agency (CETESB), approved by the state law 13542, from May 8th 2009.

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Significant Changes in the Environmental Agency and Legislation in the State of São Paulo, Brazil

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Going forward, most of the environmental licensing and permitting will be under CETESB's responsibilities. The new attributions, previously divided by several different state agencies and entities, will also include the management of some natural resources and the overseeing of environmental impact studies that might take place in the state.

According to Ana Cristina Pasini da Costa, currently the CETESB Director for Engineering, Technology and Environmental Quality and one of the key note speakers in the Inogen Worldview® Conferences in Guarujá, Brazil in 2008:

"This restructuring will allow CETESB to speed up the environmental licensing processes in the state, as the majority of the decisions will now be centralised in a single entity"

She also commented that other areas of old environmental rules and regulations will be reviewed as well.

"These changes will result in a stronger capacity by the state of São Paulo to face the environmental challenges in the coming years."

Also in 2009, the São Paulo State released the new state law on contaminated areas. This is the first state legislation that is strictly linked to this issue after the release of a series of technical documents and guides. The state law 13.577 from July 8th 2009 includes a series of definitions, procedures, management practices and legal instruments that will work as an incentive for the reuse of contaminated areas in the state of São Paulo.

This law will bring significant changes to the way these areas are being managed in the state of São Paulo, including, for some projects, very challenging new perspectives on issues like stakeholder communication, professional insurance and project financing.

For further information please contact **Hilton Lucio**, Commercial Director of Angel Ambiental, hilton.lucio@angelambiental.com.br

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