



Opportunities in the Oil Sands Supply Chain

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Introduction to AITF



Introduction to AITF

- **Alberta Innovates – Technology Futures (AITF)** was established on Jan 1st, 2010 (merger of *Alberta Research Council*, *Alberta Ingenuity*, *iCore* & *NanoAlberta*)
- Non-profit corporation funded by Gov't of Alberta & industry
- “Tech Futures” offers:
 - ❖ Applied R&D and technical services
 - ❖ Innovation and talent development programs
 - ❖ Regionally accessible commercialization support
- 600+ Employees; 5 Research Centres; ARC est. 1921



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AITF Research Centres



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AITF's Research Focus



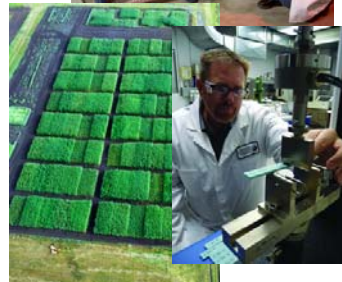
- Energy (Oil Sands, Oil & Gas, Alternative/Renewable)
- Sustainable Resources (Agriculture/Forestry)
- Environmental Sciences & Monitoring
- Eco-systems Management
- Geosciences and CO₂ Storage
- Advanced Materials & Manufacturing
- Industrial Sensors



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AITF's R&D Capacity

- 100,000 m² of bench and pilot-scale facilities
- 1,000 industry clients per year
- Funding programs focused on technology and business development
- Regional innovation networks
- Demonstration/scale-up
- Consulting & testing services
- Joint industry projects & collaboration



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Supply Chain Opportunities & Challenges in the Oil Sands Sector

Opportunities for Suppliers

- **Construction:** Investment in the Alberta oil sands is expected to exceed **\$100B** over the next decade.
- **Maintenance:** The oil sands sector spends over **\$3B** in maintenance and losses another **\$5-7B** in lost production every year (\$8B to \$10B loss)!
- Operators are looking for solutions to reduce both **CAPEX and OPEX costs!**

Opportunities for Suppliers

- Fluid handling systems (piping, fittings, pumps, valves, tanks, pressure vessels)
- Mining equipment
- Water treatment & steam generation systems
- Welding/Fabrication services
- Corrosion resistant materials (various including stainless steels)
- Corrosion solutions (coatings, chemical inhibition)
- Solutions for anti-fouling/scaling (e.g. heat exchangers)
- Instrumentation/Specialty Measurements
- Inspection services (NDT)
- Specialty materials (e.g. abrasion resistant coatings, polymer or rubber lined pipe)



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Key Success Factors for Suppliers

- Establish local presence to build relationships in the oil sands supply chain.
 - ❖ AB operations or sales
 - ❖ Partner with existing supply chain partner
- Have a unique value proposition (new, better or less expensive product or service).
- Ability to adapt products & services to specific needs of different customers
 - ❖ Understanding operator needs is essential!



Source: Conference Board of Canada 2012

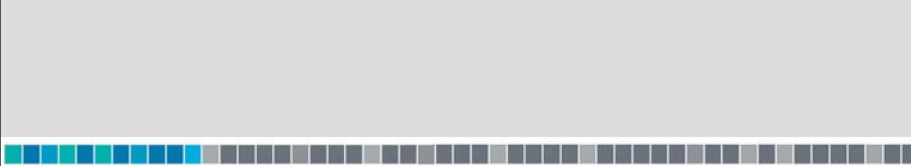
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Challenges for Suppliers


- Market access (often difficult to sell new products or services)
- Operator procurement practices (short-term, cost reduction focus)
- Differences in requirements/specifications between operators
- Changing personnel (turnover)

Keys for Successful Implementation of New Products in Oil Sands Applications


- **Cost effective solutions** are required (many technologies already exist – the main challenge is cost/feasibility at a large-scale).
- New technologies must be **durable** (harsh environments), and **reliable** in the required application (and for the required life expectancy) – operators have low risk tolerance.
- Need to focus on technologies which are a priority for oil sands operators (**avoid market push** of unproven technologies).

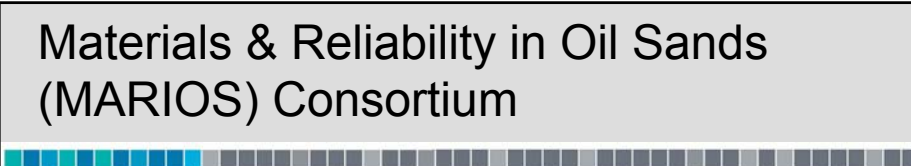


Materials and Reliability in Oil Sands (MARIOS) Consortium



MARIOS
Materials & Reliability in Oil Sands


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Materials & Reliability in Oil Sands (MARIOS) Consortium

- 40+ member R&D consortium managed by AITF and directed by the oil sands industry to collaboratively tackle materials, equipment, maintenance and reliability issues.
 - ❖ The oil sands sector spends over \$3B in maintenance and losses another \$5-7B in lost production every year!
 - ❖ 5th year of operation.
- Two tiers of memberships:
 - ❖ Oil sands operators (oil & gas companies)
 - ❖ Suppliers (any company selling materials, equipment or services in the oil sand supply chain)
- Areas of R&D (Mining & In-situ):
 - ❖ Coatings/Overlays, Welding, Slurry Systems, Corrosion, Wear (abrasion), Impact, Water Systems, Instrumentation

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MARIOS Membership 2012-2013

Participating Companies/Organizations: 43

Program Members:

Oil Sands Producers (7)

- CNRL
- Devon Canada
- Imperial Oil
- Shell
- Suncor Energy
- Syncrude Canada
- Total E&P Canada

Government (1)

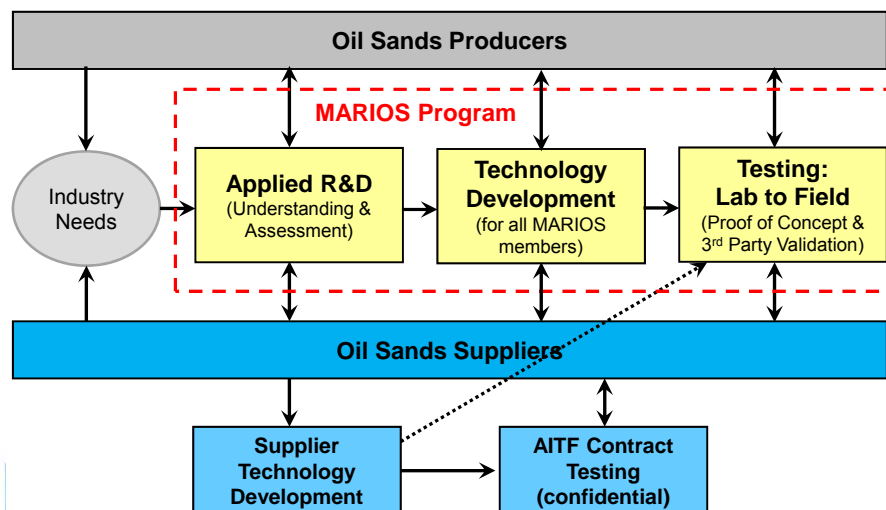
- AITF (2 Memberships)

Supplier Members (35):

- Aecon Industrial
- ARC Innovations
- ATI
- ArcelorMittal USA
- Bantrel Constructors
- Bradken
- Cessco/TIW Western
- ESCO Corporation
- Flint Field Services
- Gandytec LLC
- GC Clad
- GIW Industries
- H C Starck GmbH
- Hitachi
- Hunting Energy
- Imatech
- Iracore International
- Kennametal
- Ledcor Industrial
- Lincoln Electric
- Luxmox Technology Corp
- Manluk Industries
- McCoy (Inotec)
- Micralyne Inc
- Miller/Hobart/ITW
- PCL
- Posco
- PPM
- Plains Fabrication
- Raptor Mining
- Roplast GmbH
- Scanimetrix Inc
- Sulzer
- Western Hard Chrome
- Westpower Equipment



MARIOS Program Objectives



MARIOS Projects 2013-2014

- Assessment & Improved Selection of **Slurry Pipeline Materials**
- Optimization of **Overlays** for Oil Sands Mining/Extraction
- Welding Productivity and Spec Harmonization (**Semi-automated processes**)
- Review of current technologies for condition based monitoring of **mining equipment**
- Corrosion in **Water Treatment Systems** for In-situ Operations
- Developing material selection guidelines for preventing **Chloride/Sulfide Stress Cracking** in In-situ Operations



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Future MARIOS Projects

- Assessment and Development of New Sensor Technologies and Measurement Systems for Oil Sands Operations
- Asset Integrity Management of Water Treatment Systems, Heat Exchangers, Boiler Feed Water Systems and Steam Generators
- Assessment of Coatings and Corrosion Mitigation Methods
- Assessment of Anti-Fouling Technologies
- Non Destructive Testing (NDT) and inspection issues
- Quality and Productivity of Automated and Mechanized Welding for Oil Sands Applications
- Qualification of new materials for instrumentation, valve trim and vessel internals
- Down-hole Materials for Improved In-situ Operations
- Non-metallic materials (elastomers, polymers, ceramics, composites)



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Nano-tech SME Funding Pilot Program

- Funding for **small-to-medium** (SME) companies to join the MARIOS Consortium for 1 year (supplier members).
- **Main benefits:** develop understanding of operator issues, and engage operators to further develop new technologies.
- Proposals reviewed and ranked by an “Oil Sands Industry Advisory Committee” (MARIOS Producer Members).
- Applications due **October 4th, 2013**.



Thank you for your attention!

For more information, please contact:

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