NCC Spring Annual Meeting
April 11/12 2019
Washington DC
Introduction

• Bill West
  President & Director Arq
  rw.west@arq.com
Our management team

Julian A McIntyre  
Chief Executive Officer & Director  
- Founder and lead investor  
- Successful entrepreneur and investor in the infrastructure and resources sectors  
- Founder of Gateway Communications – sold to Vodafone for $700m

Richard Campbell-Breeden  
Chairman & Director  
- 27 years senior executive experience at Goldman Sachs  
- Former Vice Chairman of GS Investment Banking Division, Asia Ex-Japan (AEJ) & Chairman of M&A, AEJ  
- Current board member of Julius Baer

Mike Treanor  
MD, International Operations  
- 30 years senior executive/board experience at Shell and Siemens  
- Former CEO of Shell LPG, Shell Capital; Head of Global Downstream M&A  
- Former CEO of the Shell Coal business

Paul Groves  
Chief Operating Officer  
- Over 30 years experience in Business Development for Shell, BG, Petrofac  
- Managed the commercial development of Shell’s $20bn Pearl Gas to Liquids plant in Qatar  
- Various degrees from the University of Oxford (previously held an academic post)

Bill West  
President & Director  
- 30 years senior executive experience at US coal companies  
- Partner and Chairman of Millstone, an advisory and asset management firm  
- Former CEO of Appalachian Energy Holdings

CK Lane  
Head of Operations, US  
- Over 34 years experience in the mining industry  
- Former COO of James River Coal Company, managing 2,400 employees  
- Distinguished alumni, Virginia Tech University  
- Licensed Professional Engineer and former West Virginia Mine Foreman; former Chairman of Kentucky Coal Association

John Unsworth  
Chief Scientist  
- Over 40 years’ experience with Shell and British Coal  
- Technical Manager for Shell Global Fuels Marketing and Fuels Strategy and Alternative Fuels in Shell  
- Ph.D. in Chlorophyll Chemistry  

Venkat Siva  
Chief Finance Officer  
- Managed the investment portfolio at McIntyre Partners since 2009  
- Previous corporate finance banker within Goldman Sachs’ UK M&A team
Non-Executive Directors and observers

Mike Muller  
Non-Executive Director  
- Former Head of Global Crude Oil Trading and Supply at Shell  
- Joined Vitol in July 2018

Sir Mick Davis  
Non-Executive Director  
- Former chief executive of Xstrata plc  
- Current Chief Executive of the Conservative Party  
- Experienced financier and fund raiser

Bernie Bulkin  
Non-Executive Director  
- Former Chief Scientist at BP  
- Other BP directorships including VP Environmental Affairs and Chief Technology Officer, BP Oil  
- Chaired two UK public companies  
- Various senior academic and government posts in the UK and the US

Jeremy Blank  
Non-Executive Director  
- Partner at York Capital Management  
- Previous VP in Morgan Stanley’s fixed income and M&A departments

Steve Jacobs  
Non-Executive Director  
- 30 years senior executive / board experience  
- Extensive experience across multiple industries and practice areas

Sim Mann  
Non-Executive Director  
- Partner and Chief Strategy Officer of Exigent Capital  
- Invested over $1 billion in distressed debt on behalf of York Capital Management  
- Various other non-executive roles

Charles Meintjes  
Board Observer  
- Chief Commercial Officer for Peabody Energy  
- Executive responsibility ranges from Sales and Marketing to Emissions Technology

Brian Belke  
Board Observer  
- Partner at Valinor Management  
- Previously Equity Research Associate at Fidelity Investments  
- Currently serves as a non-executive director of NextDecade Corporation
A break-through technology with a vast market opportunity

Arq has developed and patented a technology for extracting pure micro-fine hydrocarbons from coal and coal discard – Arq Fuel™

LOW COST – <$11/bbl when blended with fuel or crude oils
TRADEABLE – a commercially viable product that requires no change to supply infrastructure or end-user equipment
IMMEDIATE – first wet-cake product expected by mid 2019
SCALABLE – plans to establish 60 plants within 10 years, producing an equivalent of >1 million barrels per day
CREDIBLE – established marketing and supply partners (Peabody, Vitol)
PROFITABLE – the end product value significantly outweighs the operational cost
The greatest financial opportunity in today’s energy market

- Energy derived from oil has been valued at 3-9x that of coal.
- Previous industry attempts to purify coal expensive and environmentally damaging.
- Arq’s technology uses an ultra-low cost mechanical process.

50 billion tonnes of coal refuse across the globe - equivalent to almost 120 billion barrels of oil.

Over 1 billion tonnes of coal refuse is created each year - equivalent to throwing away c.7 million boepd.
The challenge…

How can we extract the hydrocarbons from coal in a cost effective way?

Coal is an agglomeration of different materials

… however, the hydrocarbon chains are similar in coal and heavy oil
Arq

Turning coal waste into valuable fuel
Modular design of Arq Plant™

1 RECLAMATION

Coal refuse

Water

2 MICRO-SIZING

Screening

Ball mills

3 MICRO SEPARATION

Flotation columns

Cyclones

Chemical solution & fine air bubbles

4 DE-WATERING

Chemical solution & fine air bubbles

Plate press filters

Nitrogen & hot air circular drying

Arq Fuel Oil, Arq Marine and Arq Crude

MECHANICAL DEWATERING AND SPECIALIST DRYING

5a BLENDING

Arq Met and Arq Thermal coal replacement products

5b PELLETIZING

Extruder

Arq.com – slide 11
Arq Fuel™ - a large and valuable market

Arq’s Technology™ produces an almost pure micro-fine powder (Arq Fuel) that can be blended into oil products

Why Arq Fuel™ works
- Disperses uniformly in multiple oil products
- Requires no changes in supply infrastructure or end-user equipment
- Is 99% pure hydrocarbon
- Identical combustion characteristics as RFO

Arq Fuel™ specifications
- <1% Sulphur content
- <10µm particle diameter
- <1% Ash content
- <2% moisture content

Valuable to blenders, refiners and end-users
- A low Sulphur alternative
- Consistent combustion performance
- Can be produced at scale and at low cost

Crude Oil (>4 billion tpa market)
- when blended with crude oil, 30%-60% of Arq Fuel converts to distillates during atmospheric and vacuum distillation
- Further processing can create valuable additional product – a major breakthrough

Residual Fuel Oil (>400 million tpa market)
- RFO market divided between the boiler and marine markets
- Arq Fuel™:
  - provides the same combustion performance as RFO at a significantly reduced cost
  - Arq Fuel meets the major product specifications as a blending component

Arq.com – slide 12
A supportive underlying market

Despite recent price volatility, the fundamentals of Arq’s markets are strong

- Relative scarcity of heavier oil products (Arq Fuel) has increased its value
- Long term business plan modelled on $60/bbl Brent flat (aligned to 5yr forward price)
- Arq Fuel can be priced at a 30% discount from the low sulphur RFO price (Vitol)
- Corbin: business plan assumes initial pricing of $240/tonne, based on a LSFO price of $343/tonne.

Arq Fuel is valued at c.$340/tonne at current spot LSFO prices ($480/tonne) applying an initial 30% discount
**Pelletized coal products - Arq Met® and Arq Thermal® testwork**

Used in specific industrial processes

<table>
<thead>
<tr>
<th>Thermal</th>
<th>Typical Coal</th>
<th>Arq</th>
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</thead>
<tbody>
<tr>
<td>Total Moisture</td>
<td>10%</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Mineral Matter</td>
<td>12-30%</td>
<td>&lt;5%</td>
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<tr>
<td>Volatile Matter</td>
<td>10-40%</td>
<td>Targeted</td>
</tr>
<tr>
<td>Sulphur</td>
<td>0.5-5%</td>
<td>&lt;0.8%</td>
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<tr>
<td>Heating Value</td>
<td>8,400 - 12,500</td>
<td>&gt;14,000</td>
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</tbody>
</table>

**Product benefits**

**Increased:**
- combustion efficiency
- energy density
- boiler efficiency

**Reduced:**
- slagging and fouling
- corrosion and erosion
- ash disposal
- ash carbon content
- consumption costs
- mill downtime

10% - 25% increase in energy density with lower delivery transportation costs and reduced associated CO₂ production

<table>
<thead>
<tr>
<th>Arq Met</th>
<th>Arq Thermal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Material</td>
<td>Feedstock</td>
</tr>
<tr>
<td>Total Moisture %</td>
<td>20.0%</td>
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<tr>
<td>Mineral Matter dry (%)</td>
<td>23.5%</td>
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<tr>
<td>Calorific value GAR (btu/lb)</td>
<td>9,225</td>
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<tr>
<td>Sulphur dry (%)</td>
<td>1.0</td>
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<tr>
<td>FSI</td>
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</tbody>
</table>
NCC opportunities and benefits

Arq’s technology provides various material benefits

- **Economic:**
  - Valuable new markets and cash flow from converting coal into oil products
  - Recovering high quality, low cost hydrocarbons from underflow
  - Additional production with no capital expenditures

- **Environmental:**
  - Reduced tailings management expenses and legal and environmental liabilities
  - Existing waste used as feedstock reducing volumes into tailings impoundments with a profitable path to restoration
  - Lowers lifecycle Green House Gas (GHG) emissions
  - Reduced Sulphur levels when blended into oil products

Key opportunity: Tailings Management

- Coal industry disposes of **ALL** washed coal <2mm in size
- Management incurs **extensive costs**
- Globally there are **over 50 billion tonnes** of coal refuse - equivalent to almost 120 billion barrels of oil
- **Over 1 billion tonnes** of additional refuse is created each year - equivalent to throwing away c.7 million boepd

Arq.com – slide 15
A partnership approach

- Peabody as a feedstock partner offers a pathway to scale and a credible template for other deals.
- Both Peabody and Vitol have made an initial $10 million equity investment in Arq as a show of confidence.

Vitol

- Vitol to exclusively distribute Arq Fuel™ globally
  - blend Arq Fuel™ into fuel and crude oil
  - sell Arq Fuel™ as a low-cost blending component
  - engage with customers for initial sales of Arq Fuel™

- Arq Fuel™ will be independently certified by Vitol

Peabody

Arq helps Peabody:
- expand existing efforts in resource efficiency
- improve the economics of existing resources
- Identify mine sites where Arq technology can be used

Peabody offers Arq:
- scale
- high-quality assets
- diversity in geography and products
- a specific team to support site selection

Arq.com — slide 16
Arq Plant – Corbin, Kentucky

- First plant expected annual throughput of c.100,000 tonnes of Arq Fuel
- c.16.5 million tonnes of fines with c.40% hydrocarbon content
- First cake production is targeted for Q2 2019, with Arq Fuel production and blending scheduled for Q4 2019
- Product used to satisfy initial customer testing and commercially demonstrating the technology

Process and logistics
- Processing plant produces an Arq Fuel filter cake (c.50% moisture)
- Transported to the oil terminal at New Orleans where the filter cake is:
  - thermally dried to <2% moisture
  - blended with oil products

Arq.com – slide 17
Corbin schedule – first production mid 2019
Arq Applications and benefits
Corbin – waste left by US Steel coal prep plant
Renewed investment in Corbin
“Getting more from less is the future of good energy”