Fortress Advanced Bioproducts

Chad Wasilenkoff – CEO of Fortress Global Enterprises Inc.

March 2018
Forward Looking Statements - Disclaimer

Forward - Looking Statements

Certain statements contained in this presentation constitute forward-looking statements. The words “anticipate”, “continue”, “estimate”, “expect”, “may”, “will”, “project”, “should”, “believe” and similar expressions typically are used to identify forward-looking statements. The use of forward-looking statements reflects our current views and/or expectations with respect to our performance, business and future events, and in this presentation includes statements relating to: the Company’s completion of the Share Purchase Agreement with S2G (“SPA”) and related agreements and the outcome of its financing applications and initiatives; the financial benefits, expected production capacity, expected timing and budget for completion of the xylitol project at the Fortress Specialty Cellulose Mill; expectations relating to the Company’s business plans at the Fortress Specialty Cellulose Mill and the expected effects of the acquisition of S2G on the business of the Company; the state of the xylitol markets; and expectations regarding future global demand for xylitol. The reader is cautioned that forward-looking information is not a guarantee of future performance and involves known and unknown risks, uncertainties, assumptions and other factors which are difficult to predict and that may cause actual results or events to differ materially from those anticipated in such forward-looking information. Forward-looking information is based on the then-current expectations, beliefs, assumptions, estimates and forecasts about the business and the industry and markets in which the Company operates. Assumptions underlying the Company’s expectations regarding forward-looking information contained in this presentation include, among others: the ability of the Company and other parties thereto to satisfy the conditions required in order to complete the SPA and all related arrangements; the Company’s ability to complete the necessary financing to successfully implement its business plan in respect of the xylitol project on satisfactory terms; the success, profitability and other expected benefits of the xylitol project; the expected effects of the S2G acquisition on the business of the Company; that the xylitol project will be economically viable and can be completed within the expected schedule and budget; and that the market conditions for xylitol will follow expected trends. Investors are cautioned that all forward-looking information involves risks and uncertainties including, without limitation: that the conditions to closing the SPA will not be satisfied and the Company will not be able to complete the SPA as contemplated or at all; that the Company will not secure the necessary financing to complete its business plan in respect of the xylitol project as planned or at all; that the xylitol project will not be successful or profitable and will not meet expected production capacities, or be completed within the expected timeframes and within the expected budget; that the Company may experience unforeseen delays, financing difficulties or costs that will impact its projects, operations, financial performance and liquidity; and those risks relating to our reputation, competition, changes in the market, potential downturns in economic conditions, dependence on major customers, fluctuations in the price and supply of raw material, foreign exchange fluctuations, labour, regulatory requirements and other risk factors listed from time to time in the Company’s public filings. 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All figures in Canadian dollars unless otherwise specified
All figures are metric tonnes unless otherwise specified
The C5 Sugar Opportunity

- The **C5 sugars** contained in the hemicellulose in the Pre-Hydrolysate Kraft ("PHK") liquor produced as a by-product of Fortress Specialty Cellulose Inc.’s (FSC) Thurso Mill’s dissolving pulp process are an **untapped source of value**:
  - The C5 sugars represent the building blocks for the production of high-value biochemicals and food additives
  - Today, the PHK liquor is burned in the Thurso Mill’s recovery boiler
  - In 2017, FSC decided to take the first steps towards unlocking the value in its C5 sugars
    - FSC initiated a ~$25M project, on-track to be completed in Q1/18, to add a fifth digester enabling the utilization of birch (a high-quality source of C5 sugars) and adding incremental dissolving pulp production capacity of 17,000 t/yr
    - Project designed to enable the cost-effective extraction of PHK for value-added processing.
Acquisition of S2G and Xylitol Project

• Acquisition is next step in realizing the C5 Sugar Opportunity

  • Fortress is acquiring S2G Biochemical Inc. for $2.5M in an all share transaction

  • S2G is a Vancouver-based developer of C5 sugar conversion technologies and exclusive global licensee of a xylitol process technology developed with Mondelēz International, Inc. (MDLZ: NASDAQ), one of the world’s largest snacking companies

  • S2G and Mondelēz International have developed and extensively tested the technology at pilot-scale and Fortress intends to build a demonstration-scale plant at FSC’s Thurso Mill site with the capacity to produce up to 2,000 tonnes/yr of xylitol, a high-value low-calorie sweetener

    • FSC mixed hardwood and birch C5 sugars are a preferred and cost-effective source of xylose for the production of xylitol

    • FSC’s existing infrastructure and investment in the fifth digester project make it an ideal site for the demonstration plant

  • Following successful completion of the demonstration, Fortress expects to construct a full-scale (~20,000 tonnes/yr) xylitol plant at FSC’s Thurso Mill

    • Mill produces enough C5 sugars annually to provide all of the required feedstock
• **Accelerate Value Creation from C5 Sugars** - Acquisition provides access to proprietary process technologies and expertise that will fast-track FSC’s plans to extract and add value from its C5 sugar stream

• **Reduce Cost/Tonne of Dissolving Pulp** - Project will increase dissolving pulp production at Thurso and reduce cost/tonne – diversion of C5 sugars to xylitol production will reduce the load on the mill’s recovery boiler

• **Position FSC as Low-Cost Producer of Xylitol** - Full-scale plant expected to be one of the world’s lowest cost producers of xylitol; potential for up to $40MM in EBITDA/yr

• **Establish Key Relationship** – Mondelez International, one of the world’s largest users of xylitol, as a technology partner

• **Open New Strategic Options** – Xylitol will be targeted but clean C5 sugars can also be the building blocks for other high-value bioproducts and biochemicals
• FSC’s hardwood feedstocks are rich in C5 sugars

• Birch offers the highest concentration of hemicellulose (38%) of available hardwoods
  – There is an abundance of underutilized birch in the FSC fibre basket

• With current fossil fuel pricing, xylitol has the highest earnings potential of the possible C5 sugar applications

• Given that xylitol is a food ingredient, as compared to the other non-consumable bioproducts in the chart, it is not dependent on the price of fossil fuels in order to sustain competitive economic viability
Benefits of Offloading The Recovery Boiler

- Diversion of C5 sugars reduces the load on the recovery boiler and increases dissolving pulp production

<table>
<thead>
<tr>
<th></th>
<th>Increase in production related to offloading</th>
<th>Contribution per tonne&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>Additional EBITDA/yr&lt;sup&gt;(2)&lt;/sup&gt;</th>
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<tbody>
<tr>
<td>Demo Plant</td>
<td>5-9 tonnes of DP/day</td>
<td>$540/t</td>
<td>$1M-$1.7M</td>
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<tr>
<td>Commercial Plant</td>
<td>39 tonnes of DP/day</td>
<td>$540/t</td>
<td>$7.5M</td>
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(1) $540 contribution assumes: FX of $0.80 CAD/USD; selling price of USD $930/t for dissolving pulp; cash cost of CAD $823/t.
(2) Assumes 350 days of production per year.
Mondelēz International is a world leader in biscuits, chocolate, gum, candy and powdered beverages

- Has worked with S2G since 2013 and provided financial support to develop the technology
- Has entered into a non-binding Term Sheet with Fortress and S2G which sets out a framework to modify certain terms of the license between Mondelēz International and S2G and to provide for a purchase relationship with Mondelēz International with respect to the demonstration plant and any future full scale plant.
• China accounts for >50% of the world’s xylitol production

- Feedstock is corn cobs
- Dissolved xylose has high salt levels requiring multiple stages of inefficient treatment to produce xylose
- Process captures ~40% of the available xylose; net yield of <15%\(^{(1)}\) xylose
- Xylitol production requires hydrogenation of xylose and an additional crystallization step
- Significant volumes of effluents

Notes:
(1) Kgs of xylose produced per kg of corn cob feedstock.

Source: S2G Management
S2G Xylitol and Bio-Glycols Process

Crude Hemicellulose from Mill

Conditioning
- Remove lignin/ash/colour from crude sugars

Conversion
- Catalytically convert mixed sugars to mixed alditols

Xylitol Separations
- High-yield xylitol extraction

Coproducts
- Convert remaining alditols to glycols

Xylitol

Biochemical Glycols
S2G Xylitol and Bio-Glycols Process Advantage

PHK Liquor
- Cost effective; sustainable

Advanced Conditioning
- High yield; sustainable; low cost

Mixed Sugars
- Simplified; high yield

Coproducts
- Additional value
At full-scale, Fortress/S2G process expected to produce significantly lower costs per tonne

- Chinese corn cob-based production costs estimated to be ~US$2,500/tonne\(^{(1)}\)
- Fortress/S2G Advantages\(^{(1)}\):
  - Lower cost feedstock
  - Higher yield\(^{(2)}\) - ~60% vs. ~40%
  - Lower consumption\(^{(3)}\) of costly consumables such as Activated Carbon, Sulphuric Acid and Caustic Soda
  - Less effluent + co-location with Thurso Mill effluent treatment infrastructure
- Fortress/S2G process expected to produce an 84% - 99%\(^{(4)}\) reduction in environmental impact

Notes:
\(^{(1)}\) All figures are approximate based on S2G analysis, and may vary from producer to producer.
\(^{(2)}\) Kgs of xylitol produced per kg of xylose contained in feedstock.
\(^{(3)}\) Kgs used per kg of xylitol produced.
\(^{(4)}\) An independently-validated Life Cycle Assessment, (LCA) compared conventional xylitol production from corn cobs with an integrated, wood-based xylitol process, such as the planned Fortress xylitol project. The LCA indicated an 84% to 99% reduction of the environmental impact based on various parameters using the wood-based process as compared to corn cobs feedstock. See DuPontTM Danisco® Xivia Xylitol Sustainability White Paper.

Source: S2G Management
Demonstration Plant

- Fortress intends to construct a demonstration plant at the Thurso Mill site

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<tr>
<td><strong>Plant Capacity (target)</strong></td>
<td>- Up to 2,000t/yr of xylitol</td>
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<td><strong>Project Timing (target):</strong></td>
<td>- Commencing Q2 2018</td>
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<td>- Completion first half of 2020</td>
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<td><strong>Project Cost:</strong></td>
<td>- ~$33M including working capital and ramp</td>
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<td>up (equipment and construction ~$20M)</td>
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<td><strong>Funding:</strong></td>
<td>- Fortress to contribute $5M in cash or in</td>
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<td>- The balance of the project to be funded</td>
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<td>from federal and provincial grants, other</td>
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<td>non-recourse provincial funding, other</td>
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<td>consortium partners and revenues from</td>
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<td>xylitol sales during ramp up</td>
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Once proven at demo-scale, Fortress expects to construct a full-scale plant at Thurso

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<tr>
<td><strong>Plant Capacity (target)</strong></td>
<td>~20,000t/yr of xylitol</td>
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<tr>
<td><strong>Revenue</strong></td>
<td>~$90M/yr</td>
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<td><strong>Cash Flow</strong></td>
<td>Up to $40M of EBITDA/yr(^{(1)})</td>
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| **Project Timing (target):** | Commence immediately after validating operations at the Demo Plant  
                           | Estimated 2021                          |
| **Project Cost:**      | ~$150M                               |
| **Funding:**           | Government grants and loan guarantee programs  
                           | Traditional debt financing  
                           | Off-take partners          |

**Notes:**
(1) Assumes C$/US$ exchange rate of $0.80; xylitol price of US$3,000 (2017), inflation adjusted at 2%; production costs of ~C$1,900/tonne (2017) inflation adjusted at 2%

All figures are Fortress/S2G estimates. Capital costs, capacity, cash flow etc. of a full-scale plant to be determined after successful completion of the demonstration project.
The Xylitol Market
Xylitol

• Xylitol is a superior sweetener that commands a premium price

**Benefits**

- Sweet as sugar
- ~40% less calories & low glycemic index
- Improved health – dental & obesity
- Best flavor and properties – no aftertaste

• Current market price ~US$3,500 - US$4,500/t (~C$4,300 – C$5,600/t) is significantly higher than the price of competing sugar alcohols like sorbitol (~US$1,100/t)

Trends in obesity prevalence among adults aged 20 and over (age-adjusted) and youth aged 2–19 years: United States, 1999–2000 through 2013–2014
Consumer demand for healthy, natural products is growing. To meet this demand, food and pharma companies are seeking low-calorie/non-sugar sweeteners.

Sorbitol and mannitol are used widely, but are derived from GMO feedstock and do not have the preferred taste or health characteristics.

Xylitol is a lower calorie, organic sweetener, offering better taste, easier handling, high sweetness, desirable mouth-cooling effect and unsurpassed oral health benefits.

“Consumers are clamoring for reduced sugar and all-natural products. If you can deliver both, it creates a huge opportunity.”

Jonathan Webster former Global VP Marketing, Gum & Candy, Mondelēz Global

Demand for xylitol is expected to grow at a CAGR of 6.5%\(^{(1)}\)

\(^{(1)}\)Source: Market Insights, Xylitol Market Report 2024 (volume)
Global Xylitol Market – Application Trend

Volume

- Chewing Gum
- Confectionery
- Food
- Personal Care
- Pharmaceuticals
- Nutraceuticals

Source: Market Insights - Xylitol Market Report 2024
• Average selling price (2016): ~US$4,200/tonne
• Volumes expected to grow at CAGR of 6.5% (2017 – 2024)
• Market expected to exceed US$1B by 2022

Source: Global Market Insights -Xylitol Market Report 2024, ICTS, EPA, FDA, EFSA, ADA
Summary

- Become a globally low cost producer of a product with attractive growth rates
- Mondelēz International as technology partner and will support commercialization
- Diversify our product portfolio at FSC to extract and optimize value from a current residual product
- Create a new bioproducts division which has the potential to generate up to $40M in annual EBITDA
- Attractive financing structure with government support