



An Introduction to Geocycle Brookfield Co-Processing Upgrade and Pre-processing Platform

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Why a dedicated brand?

An independent brand helps to create distinct identity and position as a waste management solutions provider

What is Geocycle's vision?

The vision is to rethink waste and strive for a zero-waste future

geocycle

How did it come about?

Created in 2007 as the dedicated waste management brand in Holcim

What does Geocycle means?

Geo means 'earth' in Greek. Cycle evokes recycling. This describes what we do: turning waste into a safe, usable resource

Why the name Geocycle?

Geocycle was the most widely applied and furthest developed waste management brand in Holcim

Why is Holcim operating in the waste management business?



Cost Leadership

Co-processing of alternative fuels & raw materials (AFR) is a **value-creating business** through cost reduction, benefiting from economies of scale by using same assets & know-how

*2021 Savings
450.9mio CHF*



Competitive Advantage

By solving local society waste problems, Geocycle helps to secure and maintain **licenses to operate** Cement plants. Our products are also 'greener' than our competition adding to our value and goodwill

China runs 3 month more than competition



Asset Light

Investments required for implementing AFR are typically **fast payback** projects (1-3 years static) and compared to cement small in size

*Dynamic payback
3-4 years on an average*



Commercial Transformation

Through Geocycle, Holcim provides **zero-waste solutions to waste generators** in total compliance with regulations

Solution provider



Sustainability

AFR utilization contributes significantly to the sustainability of our operations by **reducing greenhouse gas emissions**

Municipal, Tire & Biomass derived fuel are strategic pillars

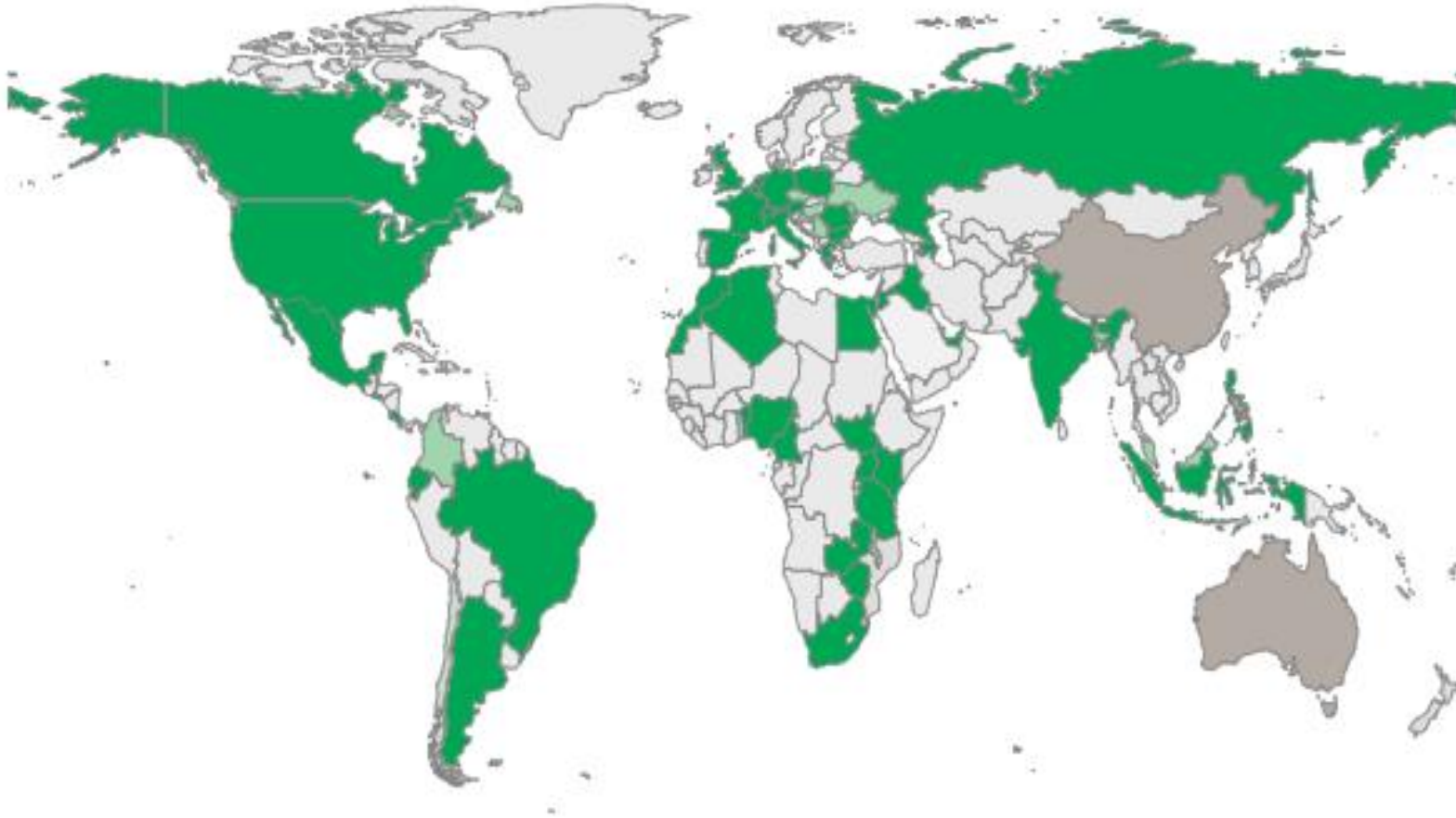
A truly global Waste Management Company

21.3% of thermal energy from alternative fuels (2020)

50 countries with waste management business

12.5 M Tons of co-processed waste (2020)

Led by 4 Regional organizations* and supported by a corporate function



10'000 customers



90 pre-treatment facilities



180+ co-processing facilities

** China & Australia – Non consolidated, but scope includes waste management business*

Our Jargon - your Jargon

- “**Co-processing**” means the use of waste materials in manufacturing processes for the purpose of energy or resource recovery or both, and resultant reduction in use of conventional fuels or raw materials or both, through substitution
- “**Pre-processing**” means the treatment of waste to make it suitable for co-processing or recycling or for any further processing
- **AFR** – Alternative Fuel and Raw material
- **GAV** – Gross Added Value (Total \$ savings from the utilisation of AFRs)
- **TSR** – Thermal Substitution Rate (% of heat energy from AFs against total heat energy to produce clinker)



Geocycle in ECAN (2021)

- 6 Co-processing facilities at 3 cement plants
 - BFD: (3) Liquids, whole tyres & plastics
 - STC: (2) Whole tyres and mix of construction & demolition (C&D) waste and biomass
 - BTH: (1) Mix of C&D, tyre fluff, biomass & plastics
- Thermal Substitution Rate 2021 12.7%
- Total Alternative Fuel volume 2021 - over 41 KTons
- Total Alternative Raw Material volume 2021 - over 218 KTons
- Total AFR GAV/ EBIT 2021- CA\$12.7 Mio

Current Alternate Fuels at the Brookfield Plant

Primary Fuels

- i. Coal
- ii. Bunker C
- iii. Light oil
- iv. Diesel
- v. Natural Gas
- vi. Petroleum Coke
- vii. Waste Oil

Approved Alternative Fuels

- i. Plastics with a maximum total chlorine content of less than 0.5%
- ii. Shingles
- iii. Tire Derived Fuel (TDF)

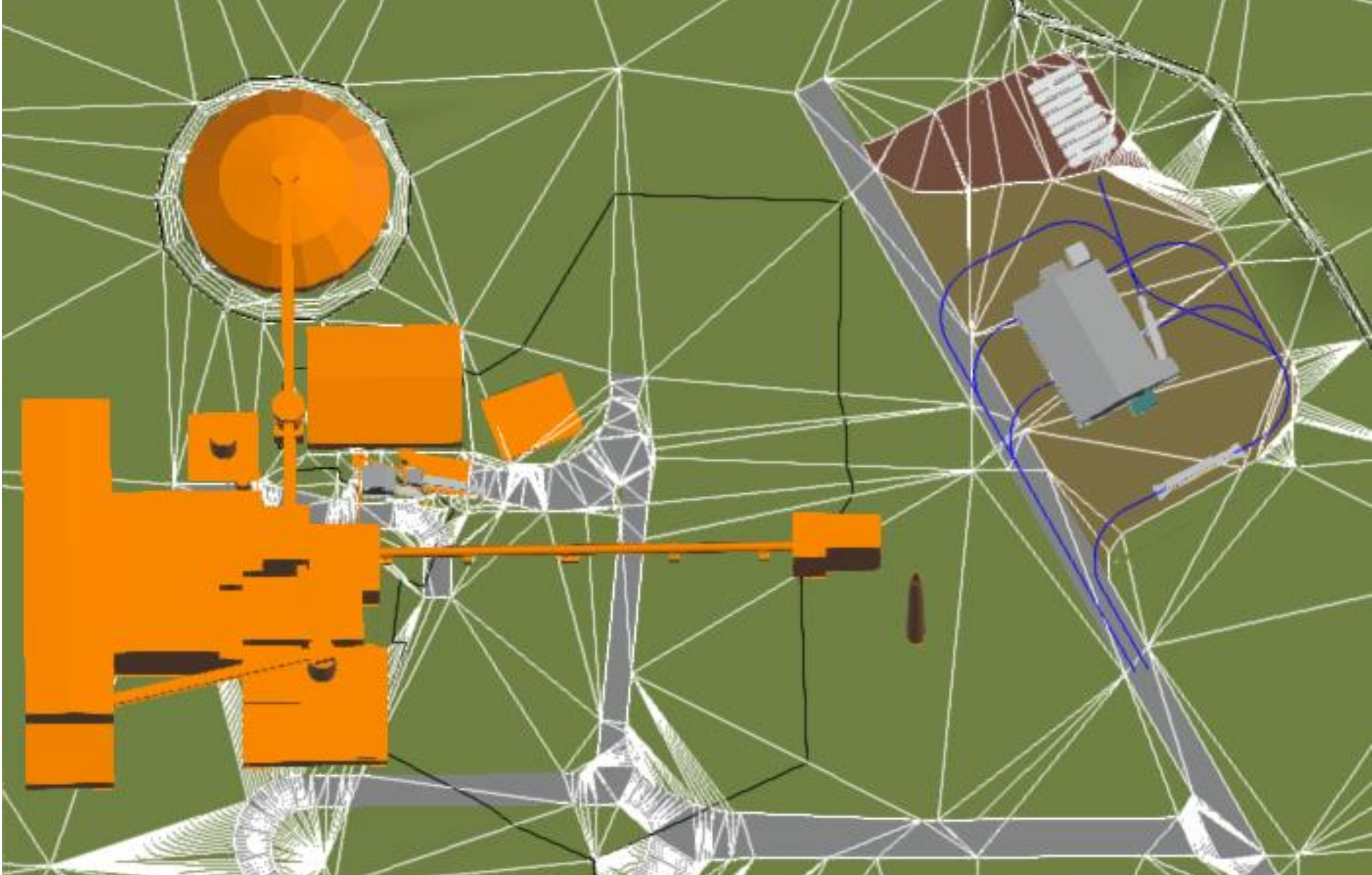
New Potential Fuels at the Brookfield Plant

Table 1: Alternative Fuels Not Requiring Environmental Assessment

Plastics* that do not meet manufacturing/producer specifications, materials from resource recovery facilities (that are non-approved waste or contaminated materials not fit or unable to be recycled or mixed debris from conveyor belt), plastics bags, shrink wrap packaging, plastic composites, single serve coffee pods
non-recyclable paper fiber, paper towels, materials that do not meet manufacturing/producer specifications, trimmings from paper recycling facilities (e.g. ragger tails), end rolls and cores
construction & demolition debris: including but not limited to carpets, textiles, floor laminates, wood flooring;
Sawdust waste from saw mills
Tire fluff
Rejected materials from compost screening that do not meet compost quality specifications, such as plastic bags and woody materials;
Used creosote treated railway ties, used creosote treated telephone poles;

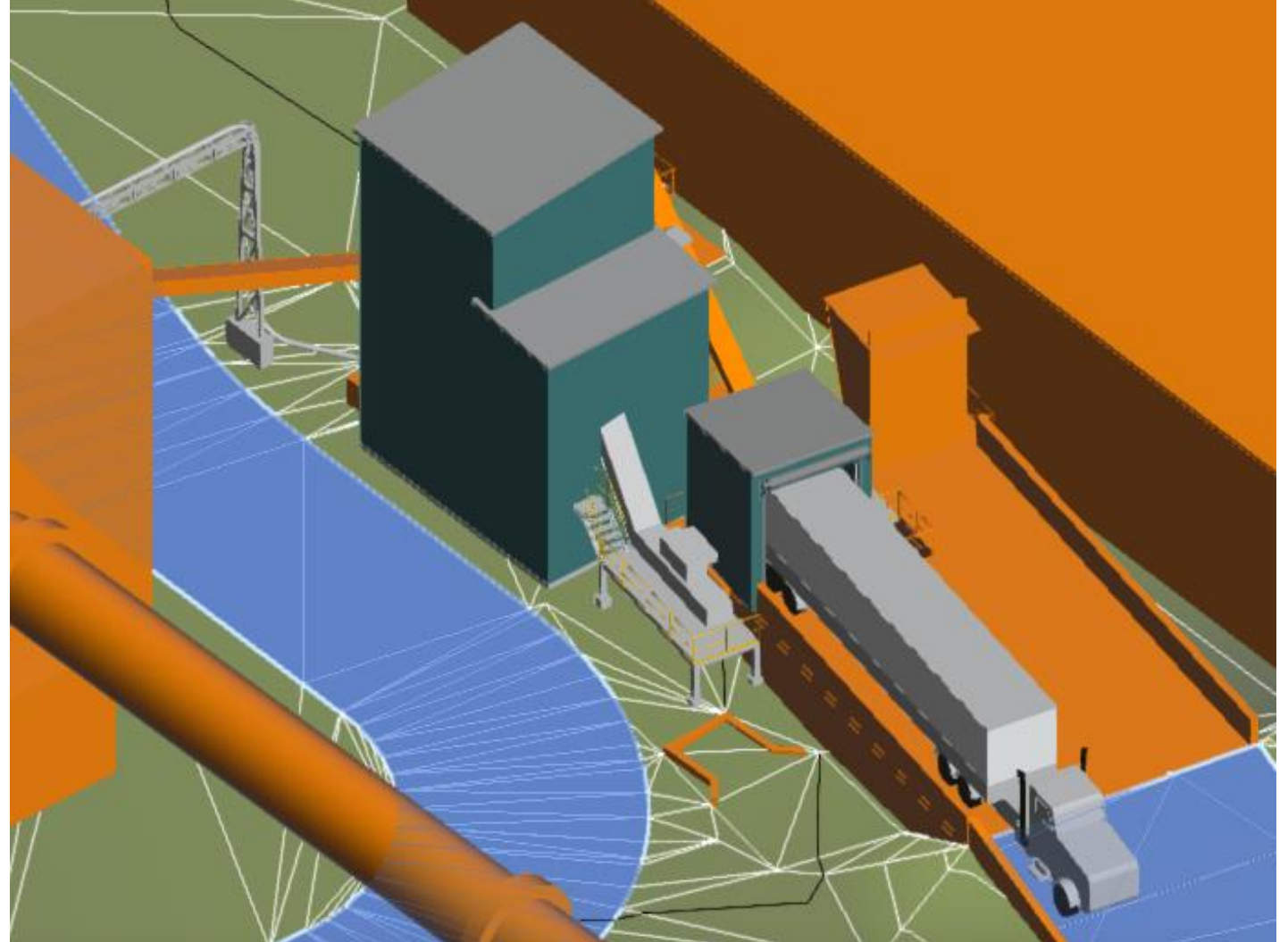
*maximum 0.5% Cl by weight, no PVC, vinyl or other plastics with an elevated Cl content

Brookfield Project



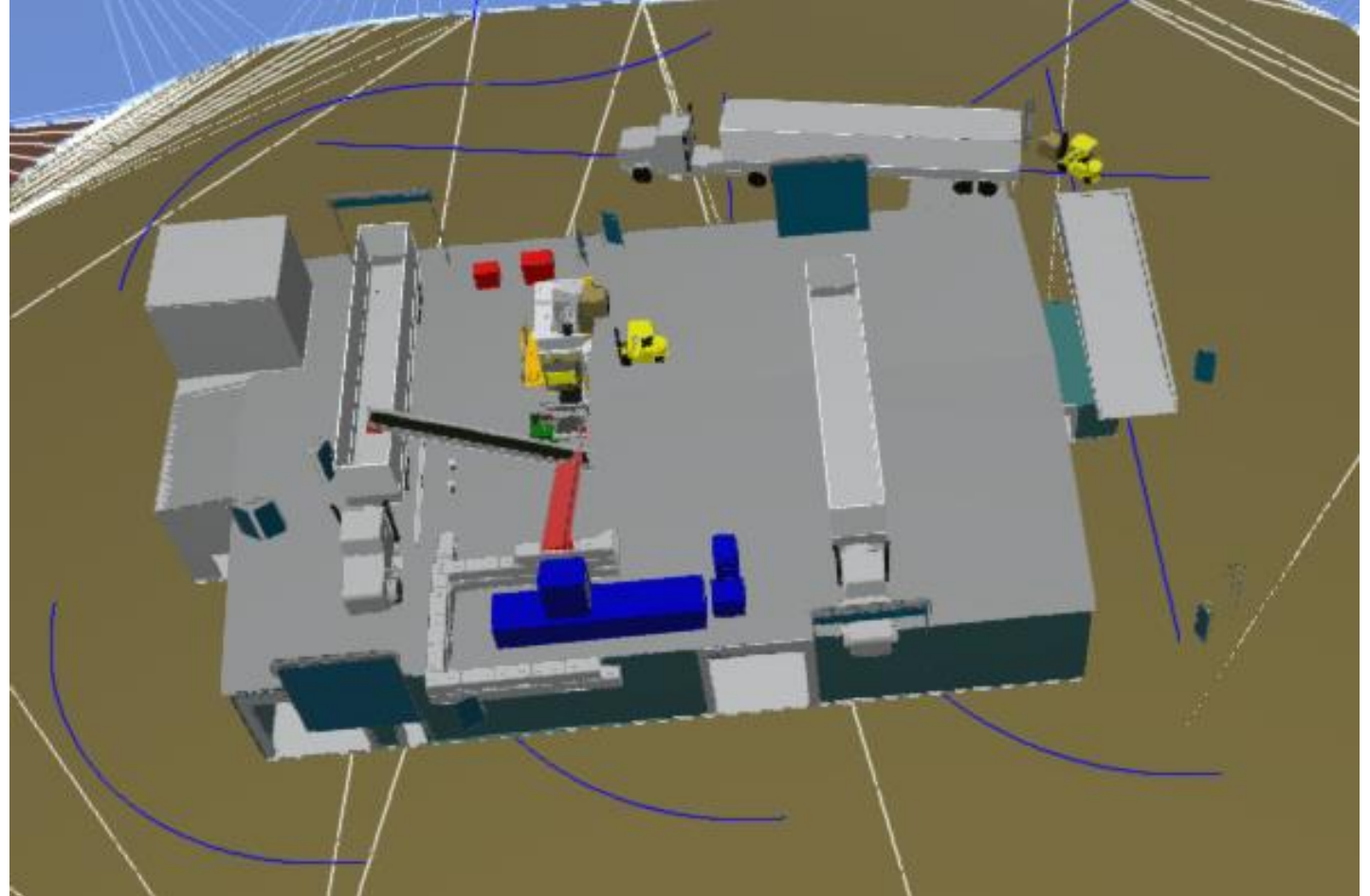
Lafarge Canada – Co-Processing Upgrade

- **Replace two docks with high efficiency single dock**
- **New high accuracy weigh bin and feeder screws**
- **Replace current drag chain conveyor system with fully pneumatic pipeline to kiln**
- **Increase fuel delivery rate from under 1 TPH to 4 TPH**
- **System will have complete fire detection and suppression**



Geocycle Canada – Pre-Processing Platform

- **Single pass full bale shredder to deliver >30 mm material**
- **Capacity of 7-10 TPH depending on material**
- **Cross belt magnet to remove metals**
- **Belt conveyors to load current walking floor trailers**
- **All storage will be under roof**
- **Offload dock, weigh scale and inside offloading**
- **Room for future expansion**





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