



CARBOVATE DEVELOPMENT CORP.

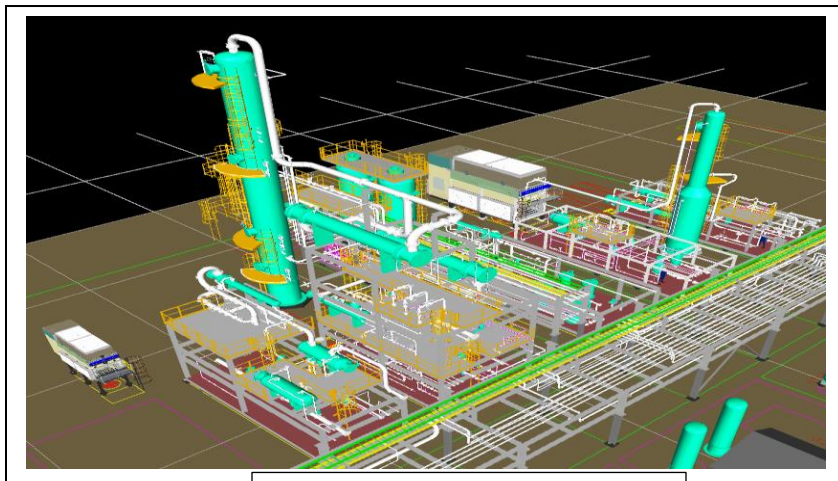
Carbon Materials Solutions Through Advanced Process Technologies

Breakthrough Patented Heavy Oil Separation Technology To Produce Asphalt Binder

LOW ECONOMIC BARRIER to enter the Asphalt Binder sector
Simple integration with existing refineries

Cost effective highly energy efficient Asphalt Binder production process with
low production related emissions using the

Modular CARBOVATOR BBCe™



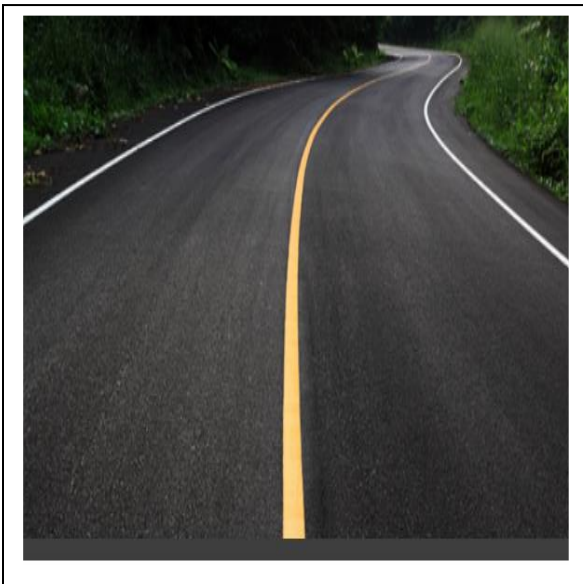
CARBOVATOR BBC6000e™

LOW ENTRY BARRIER

THE BENEFITS

Near Zero Emissions
Low Energy Use
Modular Construction
Low CapEx
High Efficiency
Very Low Water Use
Operational Simplicity
Electric Process Heater's

Diluent Separated and
Recycled (if present)



Business Model Focus?

Leverage select Alberta sourced
Bitumen or similar heavy oil to produce
straight run high quality Asphalt Binder.

The Result

Longer road life due to consistent
formulated high quality on spec PG grade
Asphalt Binder.

Market preference due to product quality
and environmental performance.
Unique certification by source

RE-THINKING BITUMEN RESOURCES

Typical Asphalt Binder Production Business Model

Think about how Asphalt Binder is produced; a by-product of oil refining, drawn from a mix of crude oil feedstocks, large environmental footprint, large refinery site, complex operations leading to questionable asphalt quality and consistency.



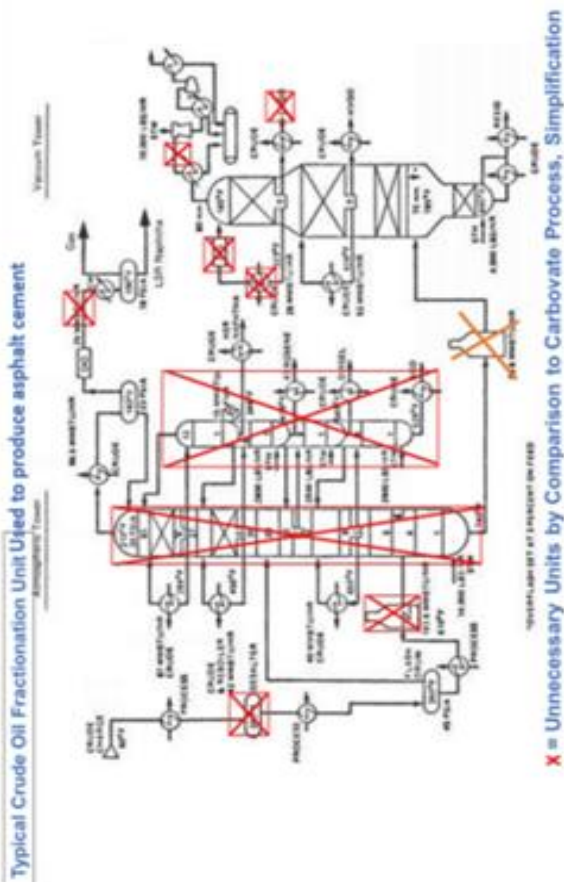
Now think about it in different way?

Consider a new high-efficiency asphalt binder product extraction process that is modular, easy to install, easy to operate, recycles diluent (if present) and is scalable. Design philosophy premised on a reduced environmental footprint, focused on producing consistent high quality Asphalt Binder product from feedstocks pre certified for their asphalt content.

On Purpose Asphalt Binder Processing

That's what the **CARBOVATOR BBCe™** means for Operations and Return on investment
Our patented process revolutionizes the way Asphalt Binder is produced.

Patents: [US11274255B220220315](#) [CDN3181320](#)



Process Highlights

- Low capital cost
- Diluent recycled (if present)
- Minimal environmental footprint
- Self-sufficient in steam
- Minimal water usage
- Electric Process Heaters
- Modular design
- CARBOVATE Flare Alternative System (FAS) available
- Optional Site Wide UPS
- Flexible feedstock handling
- Customer specific Feed Preparation Unit (optional)

**Near Zero Scope 1 Production Related Emissions
Pathway to Manage Scope 2 Emissions**

RE-THINKING ASPHALT BINDER PRODUCTION

Traditional oil refining is focused on producing fuels; asphalt production is secondary, and quality often compromised by mixed crude oil diet and competition for molecules to maximize fuels production.

CARBOVATOR BBCe™ ASPHALT FIRST plant design and business model focused on producing high yield Asphalt Binder as primary product from asphalt bearing crude oils.

VALUE ENGINEERING - CAPITAL MINIMIZATION

Equipment	Conventional A&V Unit configured for asphalt production	CARBOVATOR BBCe
Desalter	Yes	No
Atmospheric Fractionation Column	Yes	No
Atmospheric side cut strippers	Yes	No
Multiple Atmospheric pumpharounds/reflux	Yes	No
Atmospheric tower fired heater	Yes	No
Water Cooled heat exchangers	Yes	No
Process wash water	Yes	No
Preflash column	Yes	No
Feed Prep Unit	No	Optional
External Steam Plant Supply	Yes	No
Vacuum Fractionation Colum	Yes	No
Vacuum Tower process heater	Gas Fired	Electric
Multiple Vacuum pumpharounds/reflux	Yes	Single Pumpharound
Steam Ejectors/barometric condensers	Yes	No
Overhead Chillers	No	Yes
L/M/H-VGO	Sharp Cuts	Rough Cuts
Vacuum Pump	Large	Small
Secondary Wastewater plant	Yes	No

ENVIRONMENTAL PERFORMANCE

Environmental Parameter	Conventional Unit configured for Asphalt Production	CARBOVATOR BBCe
Cooling water discharge	Yes	No
Treated oily waster effluent discharge	Yes	No
Boiler Feedwater treatment unit discharge	Yes	Yes
NOx/PM/CO/CO2/HC heater stack emissions	Yes	No
Oil Contaminated Wastewater Production	Yes	No
Process Unit CO ₂ Emissions	Yes	No
Allocated Steam Plant Emissions	Yes	N/A
Flare emissions and flare event reporting	Yes	Optional Carbovate AFS
Heat Pump/High COP refrigeration/Plant UPS	No	Optional
Potential carbon credit sales & CCFD protection	No	Yes
Immune from carbon tax	No	Yes

PROJECTCo BUSINESS MODEL

Business Model Parameter	ProjectCo CARBOVATOR BBCe
Crude Diet Prioritizing Asphalt Quality	✓
Unit Operations optimized for Asphalt	✓
Straight Run Asphalt meeting SuperPave PG grades without additives	✓
Simplified Unit Operations	✓
Environmental Performance Statement	✓
Simple Environmental Performance Reporting	✓
Available Pathway to zero/net zero Scope 1 & 2 GHG emissions document	✓
Reduced routine maintenance	✓
Asphalt Certification and Chain of Custody	✓

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