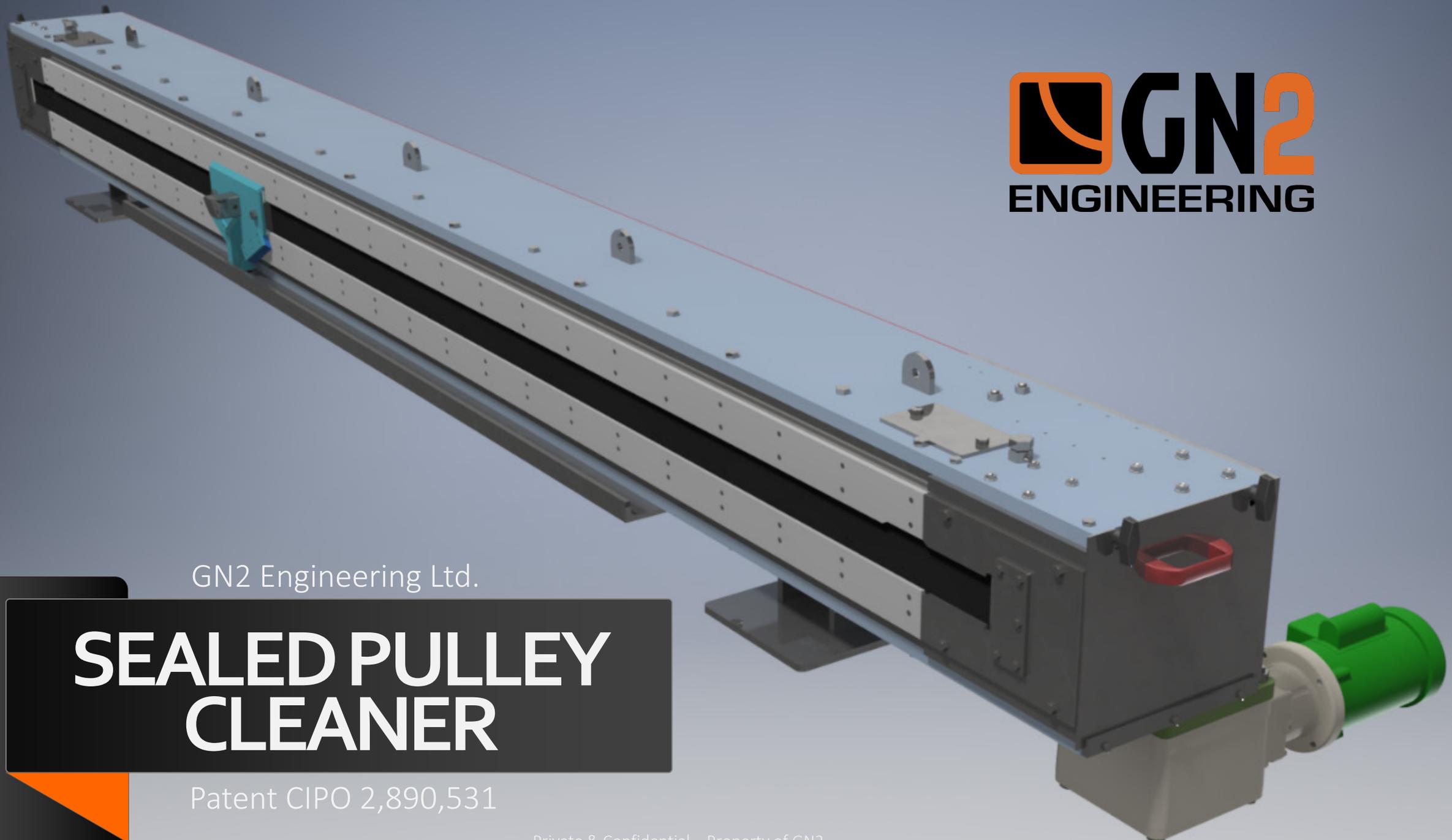


GN2 Engineering Ltd.

SEALED PULLEY CLEANER

Patent CIPO 2,890,531

Private & Confidential – Property of GN2



About Us

GN2 Engineering is an Alberta based engineering firm with strong roots in Fort McMurray and Edmonton. While GN2 primarily supports the Oilsands Industry, we provide a wide range of services to help our clients successfully navigate projects from concept to close-out.

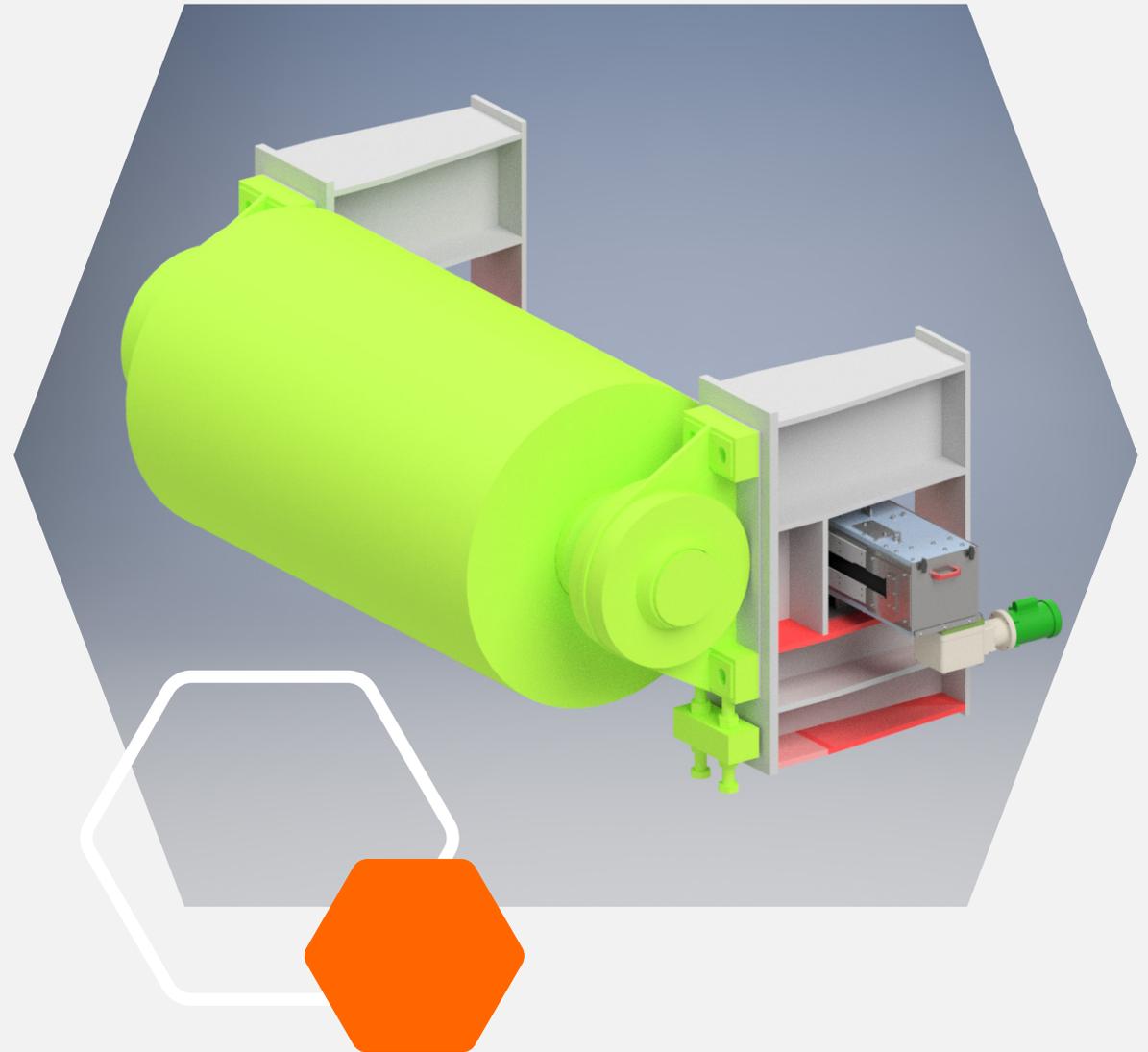
Established in 2014 and lead by industry experts, GN2 is a lean and dynamic engineering provider, staffed with experienced engineers, subject matter experts and designers. GN2 delivers fit for purpose solutions that are practical, constructible and cost effective.

GN2 consistently exceeds customer expectations by integrating multi-discipline engineering solutions seamlessly. For projects involving disciplines outside our in-house expertise we have strategic partnerships with specialized first class engineering firms to ensure the highest quality product is delivered to our clients.



Pulley Cleaner Overview

- Patented Design : CIPO 2,890,531
- Mechanical drive fully sealed from Oilsands & bitumen for increased reliability
- Maintain consistent ¼” of build up on pulley face
- Adjustable with conveyor in operation
- Replaceable wear resistant cutting tooth
- Easily changed from top cut to bottom cut
- Removable cutting tray for bottom cut cleaners
- Operate at site conditions (-40°C to +40°C)
- Withstand impact of Oilsand “pancakes”
- Scalable to fit various pulley lengths



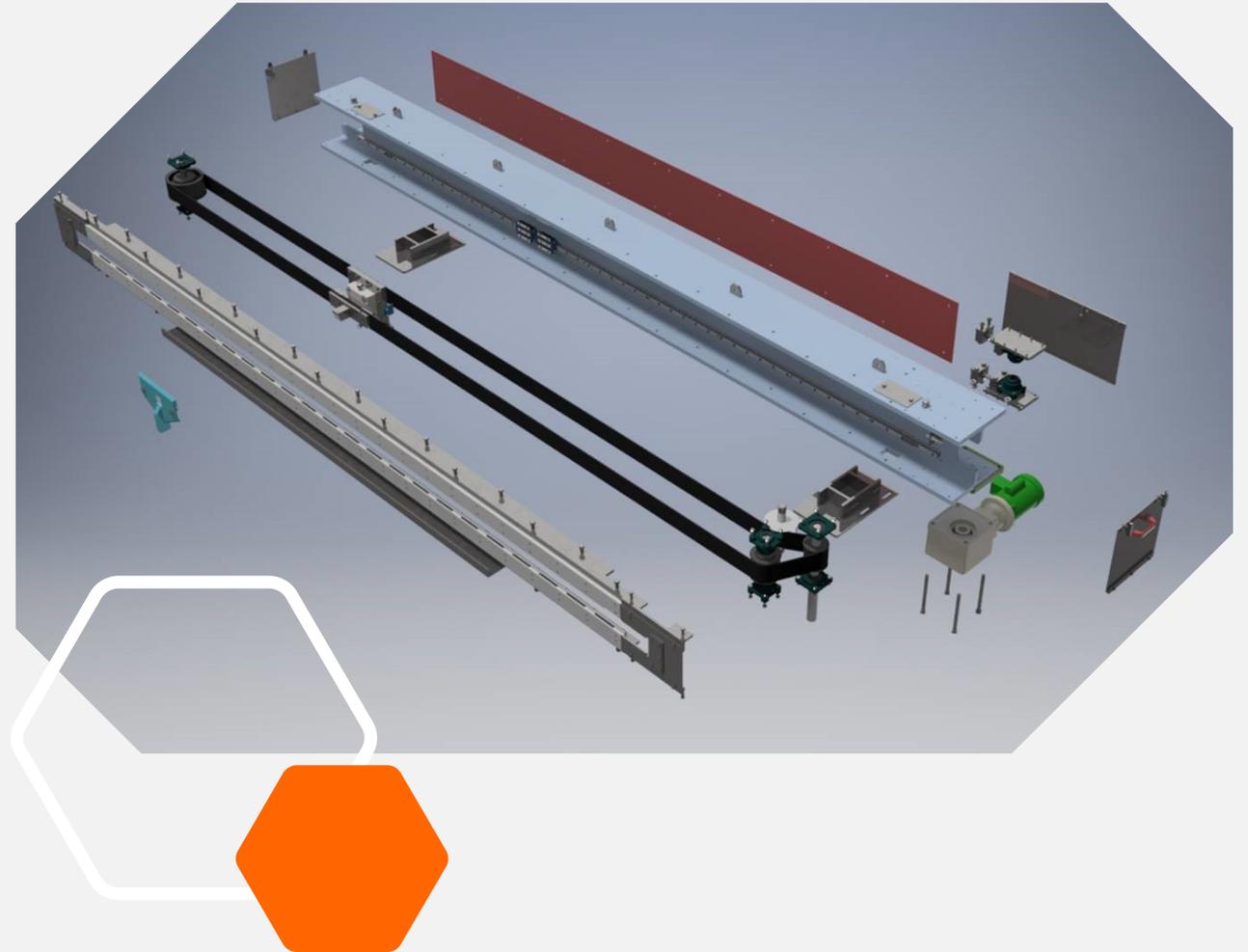
Proven Success & Lessons Learned

- GN2 designed & fabricated the first pulley cleaner prototype in 2016.
- Utilizes Acme lead screw drive with belt sealing system.
- Has been installed over one year since, with periods of up to 10-12 weeks of maintenance free, continual operation.
- Difficult conditions including neglect, wash down cycles & temperature fluctuations have highlighted limitations with current drive design .



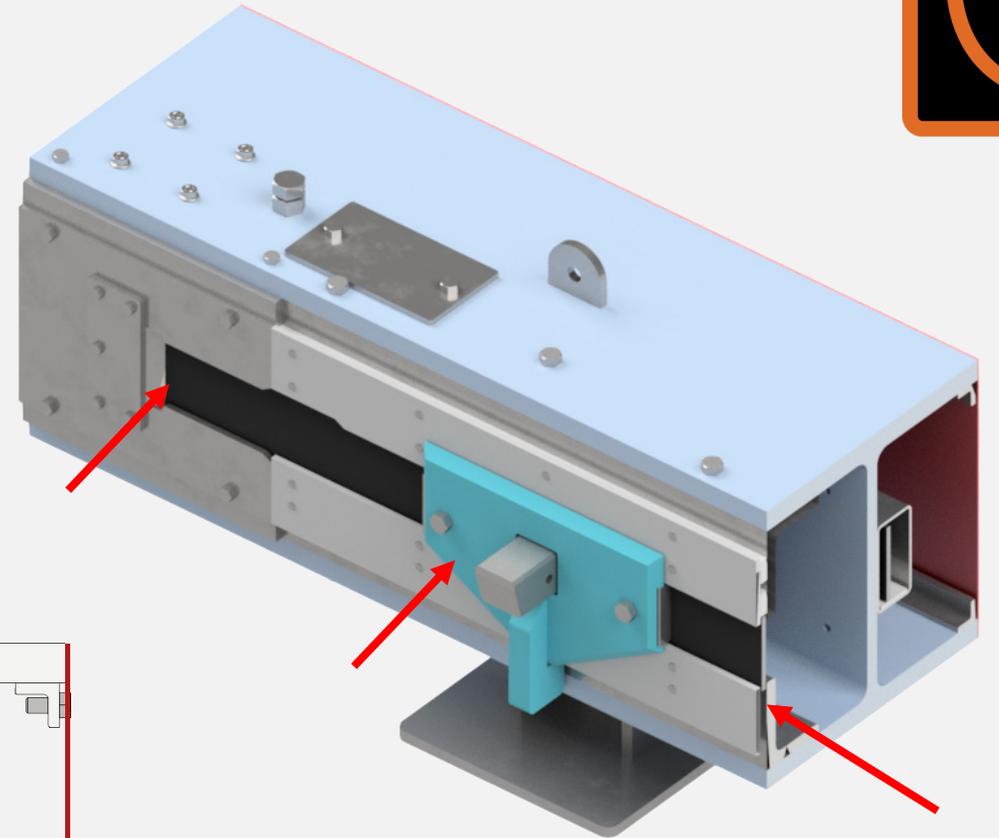
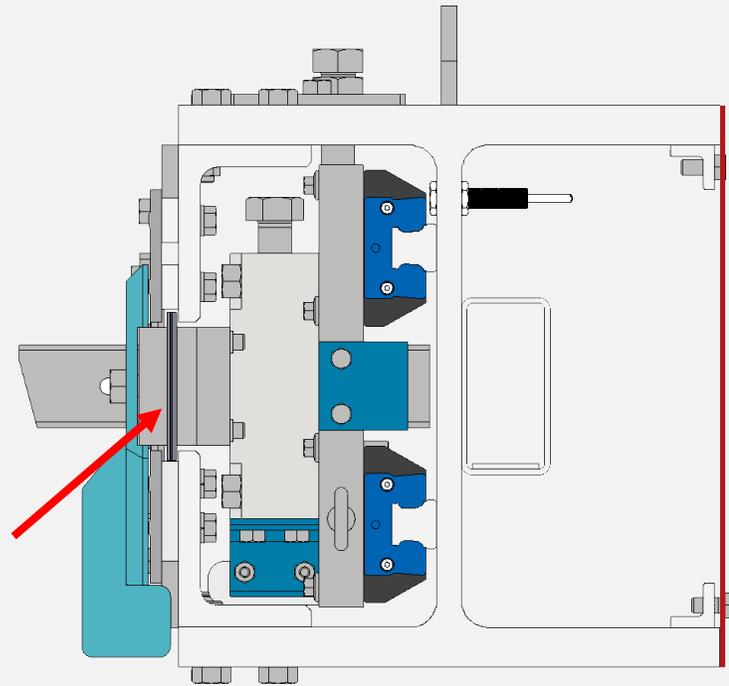
New Features

- Re-designed for increased reliability and ease of maintenance
 - Less custom components
 - Removable access panels for service
- Simplified drive design
 - Timing belt provides sealing and mechanical drive
 - Scalable to fit different pulley lengths
- Switched to Electrical Power
 - Motor speed controlled on VFD
 - Torque overload protection
 - Higher reliability than hydraulic drive
 - Lower power consumption - 1/4HP gearmotor
 - Electric strip heaters



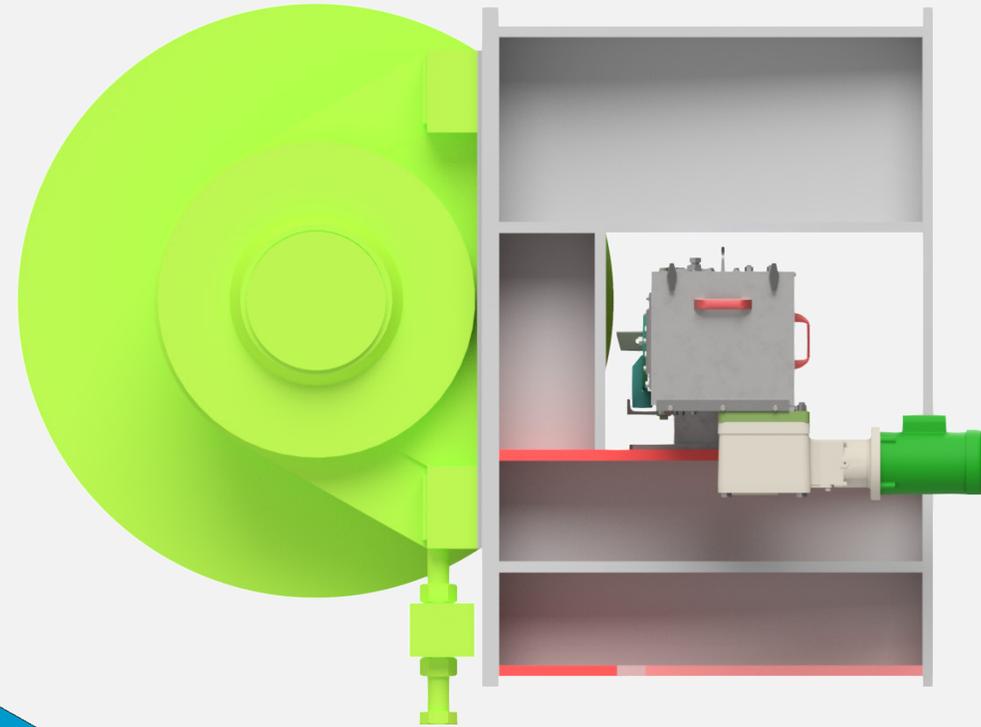
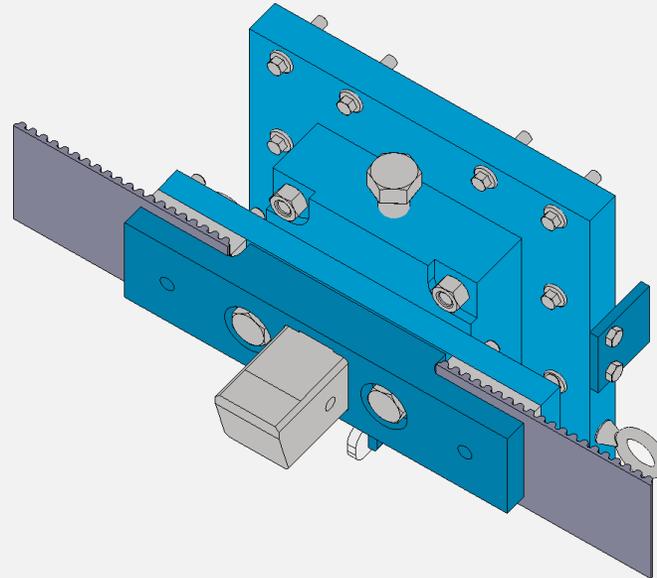
Sealed Mechanical Drive

- Main housing is closed to environment
- Steel reinforced polyurethane belt acts as continuous seal as carriage moves tooth back and forth
- Adjustable end scrapers that clean belt before entering housing
- Plate at cutting tooth deflects most of cuttings away from cleaner



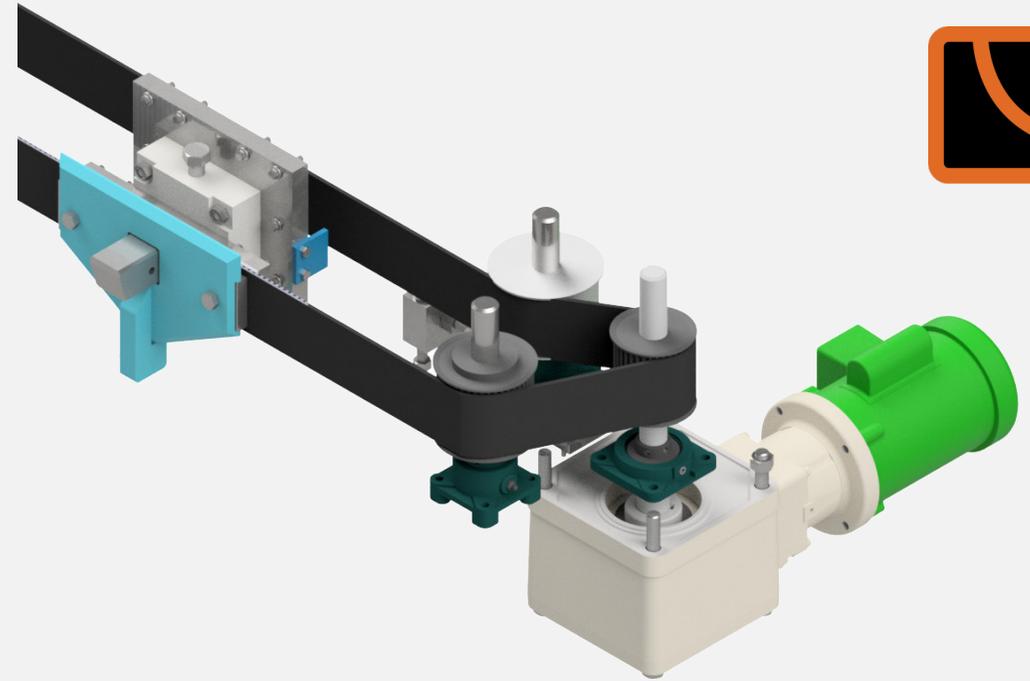
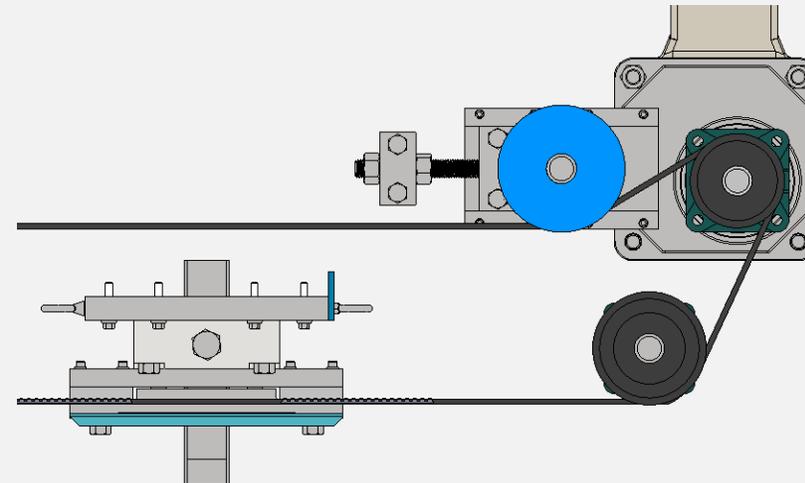
Adjustable Tooth

- Cleaner is mounted in fixed position in conveyor frame
- Tooth design allows 1-1/2" wear adjustment
- Go/No-Go tooth gauge for ensure correct stick-out
- Tooth can be flipped 180° for bottom cut applications
- Carriage moves to outside of conveyor structure for tooth adjustment/replacement



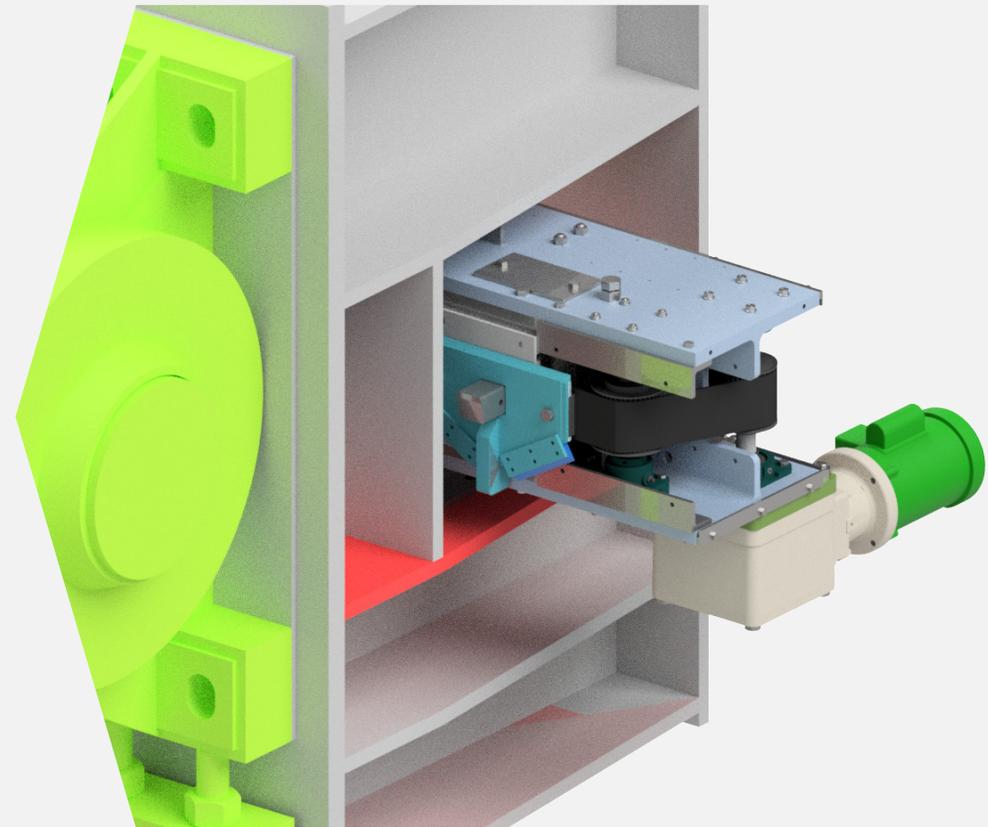
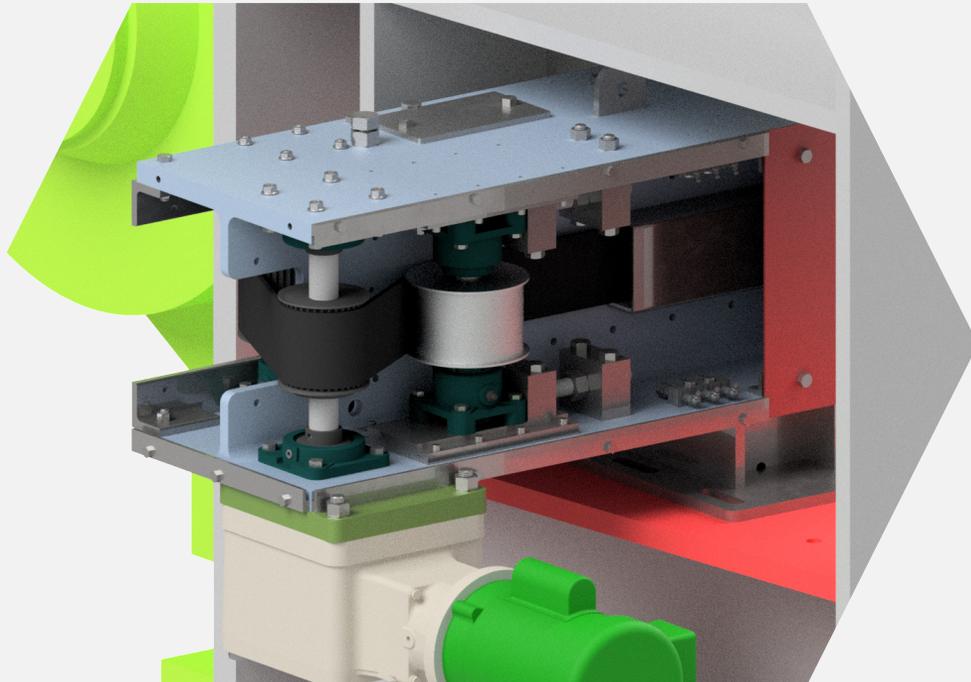
Timing Belt Drive

- Steel reinforced polyurethane belt driven by gear motor
- VFD adjustable speed \approx 1ft/min travel speed
- Adjustable tensioner for belt install – timing belt has very little elongation under load
- Drive design allows scaling for longer or shorter applications



Maintenance Access

- End covers removable for easy in-situ maintenance and repairs
- Primary access covers have toolless removal
- Access hatch for tooth adjustment





Thank You!

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