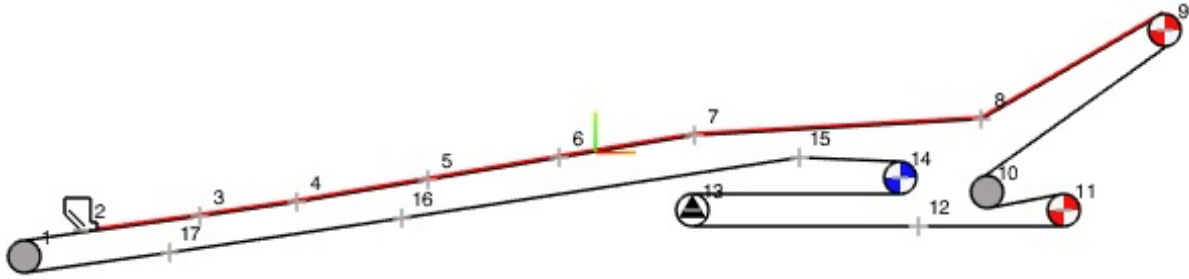


| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

CV202 5500tph ST4500 3m/s ISO



Dynamic Analysis Starting - Loaded

| Dynamic Belt Inputs | | Dynamic Calculation Inputs | |
|---|--------------------|--------------------------------|----------------------|
| Belt Modulus | 324000 kN/m | Calculation Run Time | 200 seconds |
| Conveyor Belt Spring Constant K | 583200000 | Start / Stop Ref Time (Tref) | 10.0 seconds |
| Max Conveyor Element length | 400 m | Time Step Interval dt | 0.1 seconds |
| Dynamic Friction f adjustment | 1 | Viscoelastic Delay Time Tau | 0.0105551 |
| Total Moving System Mass | 6683507 kg | Viscoelastic Damping Constant | 6155737 N/m/s |
| <input type="checkbox"/> Use Runge-Kutta 4th order ODE solver | | Runge-Kutta internal step size | 0.001 |

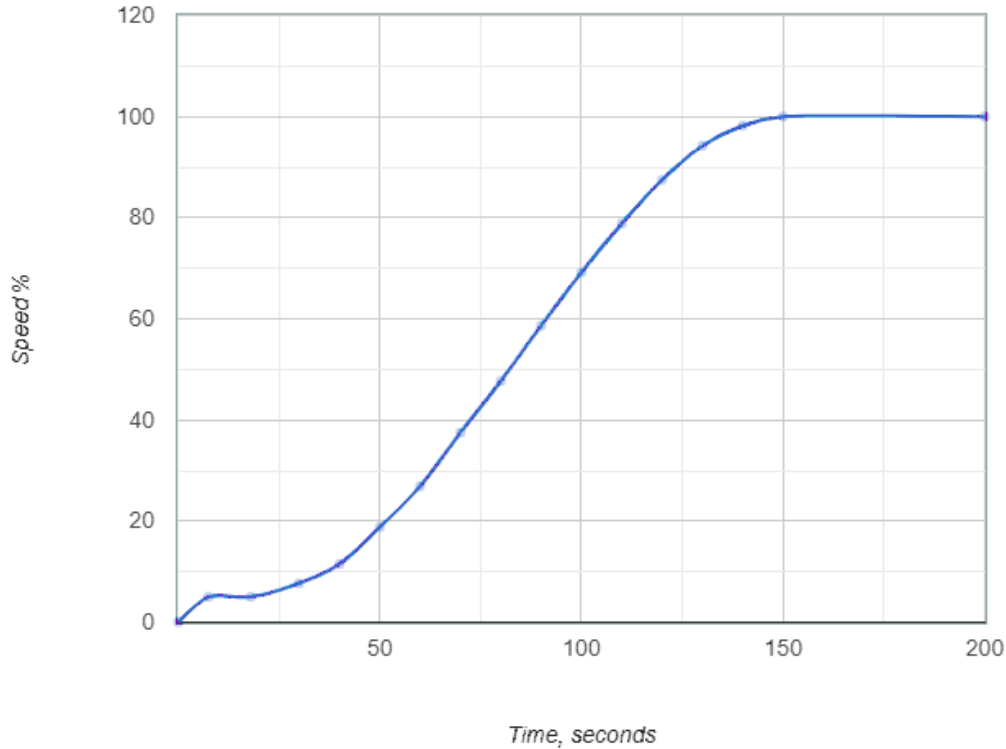
Takeup Mass & Lockup Capstan Winch (Optional)

| | | | |
|--|--------------------|---------------------------------|------------------|
| Takeup Mass Static Calculations | 43000 kg | Average Tension Running Full | 489.21 kN |
| Takeup Tension Static Calculations | 210.84 kN | Average Tension Belt Stationary | 207.51 kN |
| Capstan/Winch Appl. Time Delay | 0.5 seconds | Belt Stretch Tension Available | 281.70 kN |
| Additional Tension to add at takeup for Capstan / Winch Locking | | | 0 kN |
| <input type="checkbox"/> Lock-up Takeup Weight Rope with winch during Stopping | | | |

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

| Drive No: 1 Head | | Pulley No:9 | Drive Inertia | |
|----------------------------------|----------------------------|--|------------------------|--|
| Starter / Brake Delay Time | 0 s | Motor Inertia | 30 kg-m2 | |
| Load Share on Drive Pulley | 67 % | High Speed Coupling Inertia | 0 kg-m2 | |
| Number of Motors on Drive Pulley | 2 | High Speed Brake Disc Inertia | 0.00 kg-m2 | |
| Motor Power Rating | 1000 kW | Flywheel Inertia | 500 kg-m2 | |
| Low Speed Braking Torque | 0 kN/m | Gearbox Inertia (HSS) | 4.88094 kg-m2 | |
| Starter Category | VVVF 150 sec HDCV55 | Total Drive Inertia | 1073.7619 kg-m2 | |
| Starter Description | Dwell 150s Starter | Total Drive Equivalent Mass | 1269390 kg | |
| Starter Type | Speed-Time | <input checked="" type="checkbox"/> Holdback is installed on Drive | | |

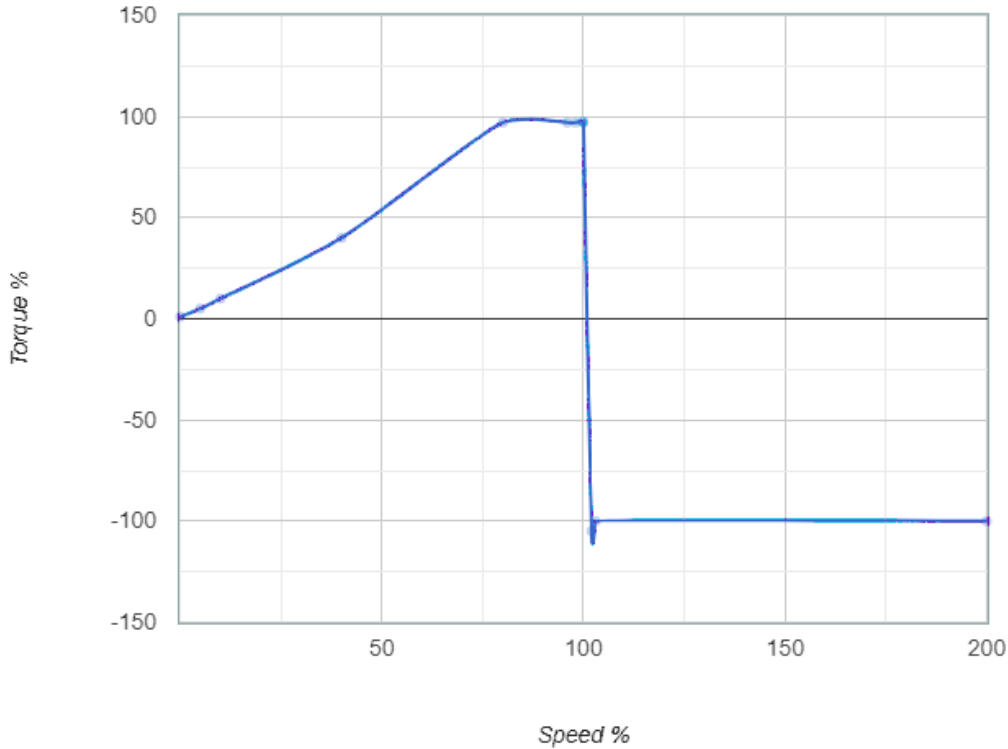
Starter Curve Category: VVVF 150 sec HDCV55
Dwell 150s Starter Type: Speed-Time



| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

| Drive No: 2 Return | | Pulley No:11 | Drive Inertia | |
|----------------------------------|------------------------------------|--|----------------|--|
| Starter / Brake Delay Time | 0 s | Motor Inertia | 30 kg-m2 | |
| Load Share on Drive Pulley | 33 % | High Speed Coupling Inertia | 0 kg-m2 | |
| Number of Motors on Drive Pulley | 1 | High Speed Brake Disc Inertia | 0.00 kg-m2 | |
| Motor Power Rating | 1000 kW | Flywheel Inertia | 500 kg-m2 | |
| Low Speed Braking Torque | 0 kN/m | Gearbox Inertia (HSS) | 4.88094 kg-m2 | |
| Starter Category | Slave Drive Starter | Total Drive Inertia | 536.8809 kg-m2 | |
| Starter Description | Slave Drive Starter example | Total Drive Equivalent Mass | 634695 kg | |
| Starter Type | Torque-Speed | <input checked="" type="checkbox"/> Holdback is installed on Drive | | |

Starter Curve Category: Slave Drive Starter
Slave Drive Starter example Type: Torque-Speed

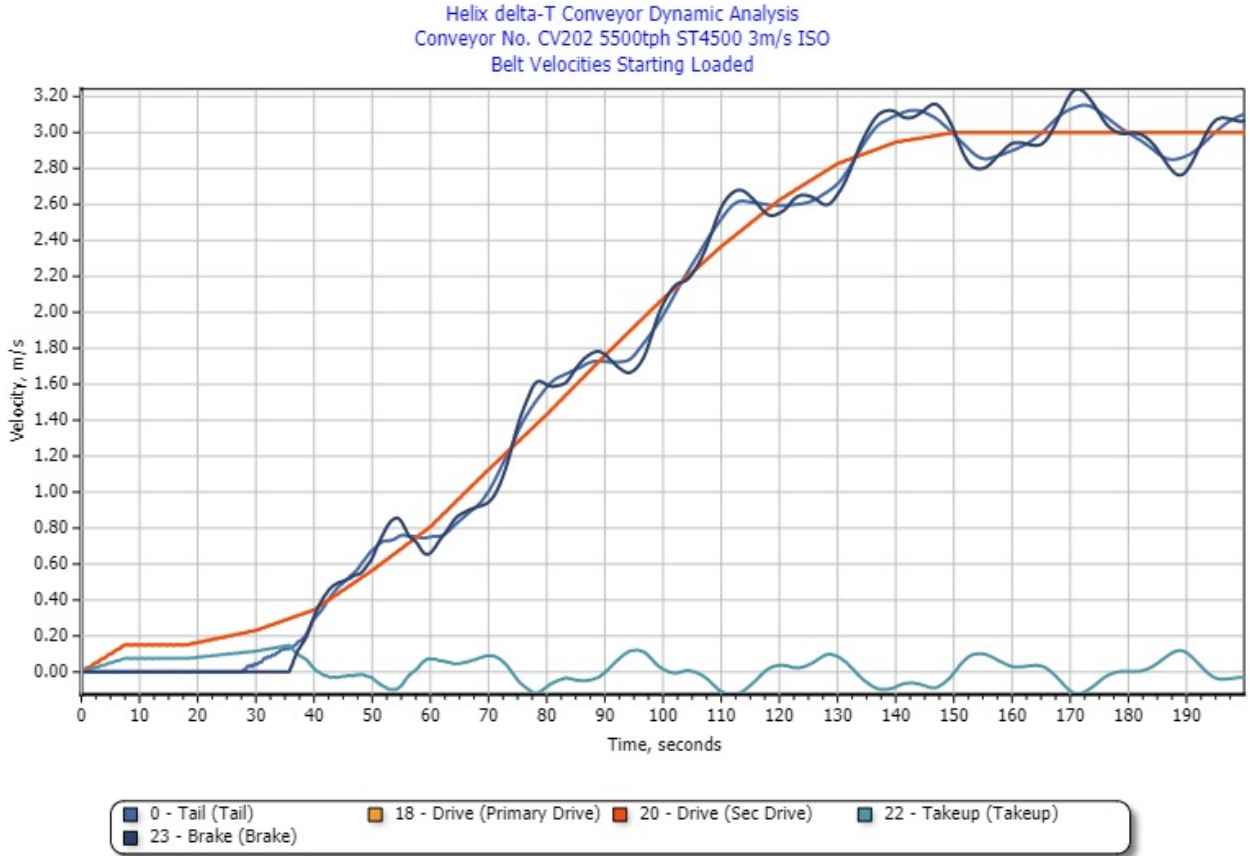


| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

| Drive No: 3 Brake | | Pulley No:14 | Drive Inertia | |
|----------------------------------|------------------------------------|---|----------------------|--|
| Starter / Brake Delay Time | 0 s | Motor Inertia | 1 kg-m2 | |
| Load Share on Drive Pulley | 0 % | High Speed Coupling Inertia | 0 kg-m2 | |
| Number of Motors on Drive Pulley | 0 | High Speed Brake Disc Inertia | 47.94 kg-m2 | |
| Motor Power Rating | 0 kW | Flywheel Inertia | 0 kg-m2 | |
| Low Speed Braking Torque | 70 kN/m | Gearbox Inertia (HSS) | 0 kg-m2 | |
| Starter Category | Slave Drive Starter | Total Drive Inertia | 0.01 kg-m2 | |
| Starter Description | Slave Drive Starter example | Total Drive Equivalent Mass | 0 kg | |
| Starter Type | Torque-Speed | <input type="checkbox"/> Holdback is installed on Drive | | |

| | | | |
|--------------|-------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Velocity Graphs

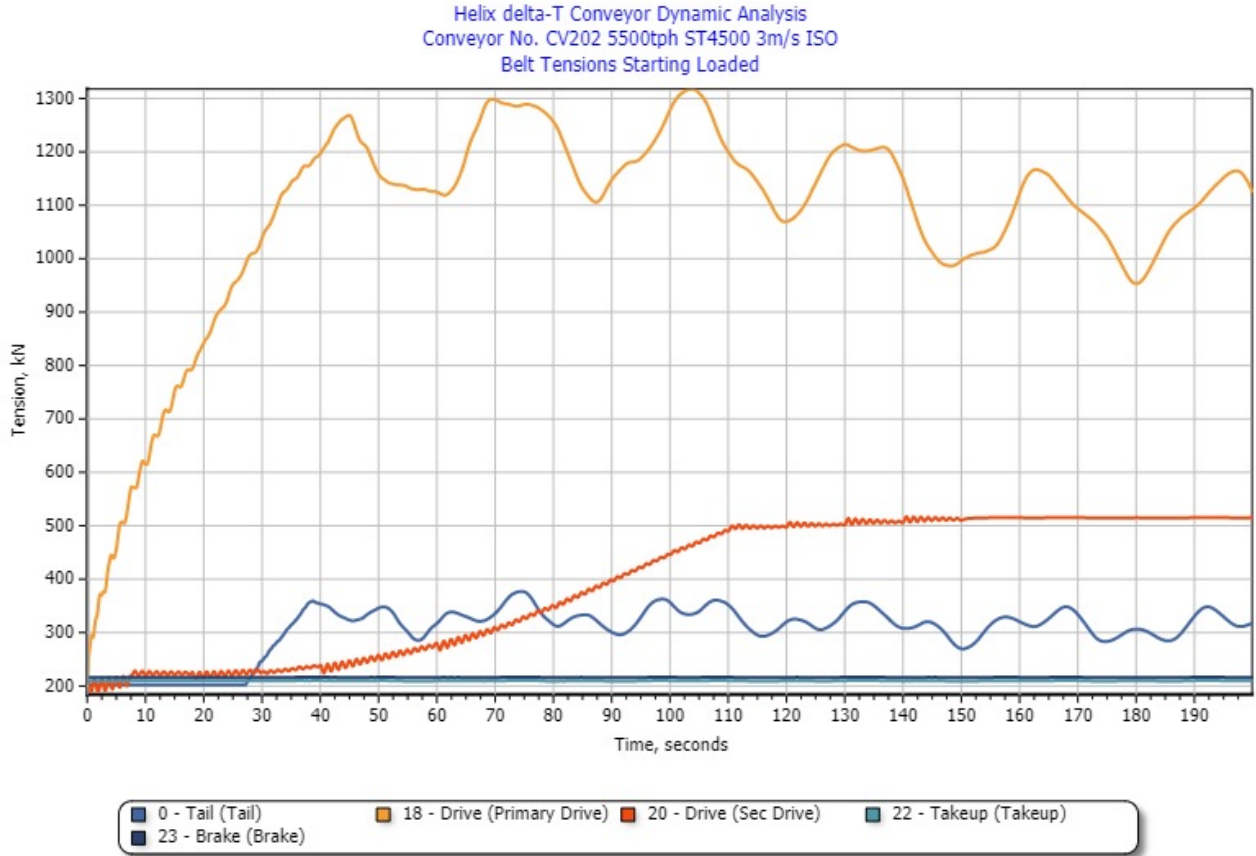


Helix Technologies Pty Ltd

Graph Comments Starting - Loaded

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Belt Tension Graphs



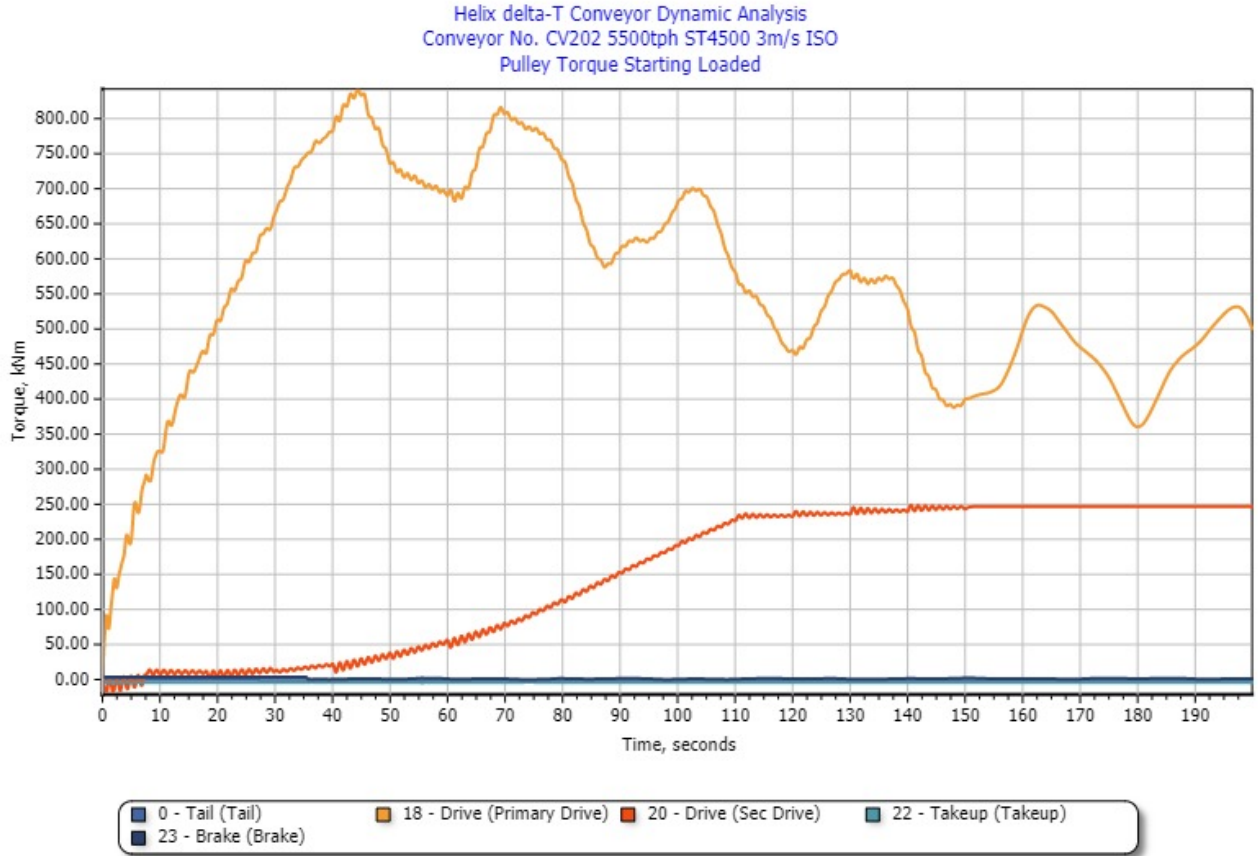
Maximum Tension = 1317.65 kN Belt Safety Factor = 6.15

Helix Technologies Pty Ltd

Graph Comments Starting - Loaded

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Pulley Torque Graphs



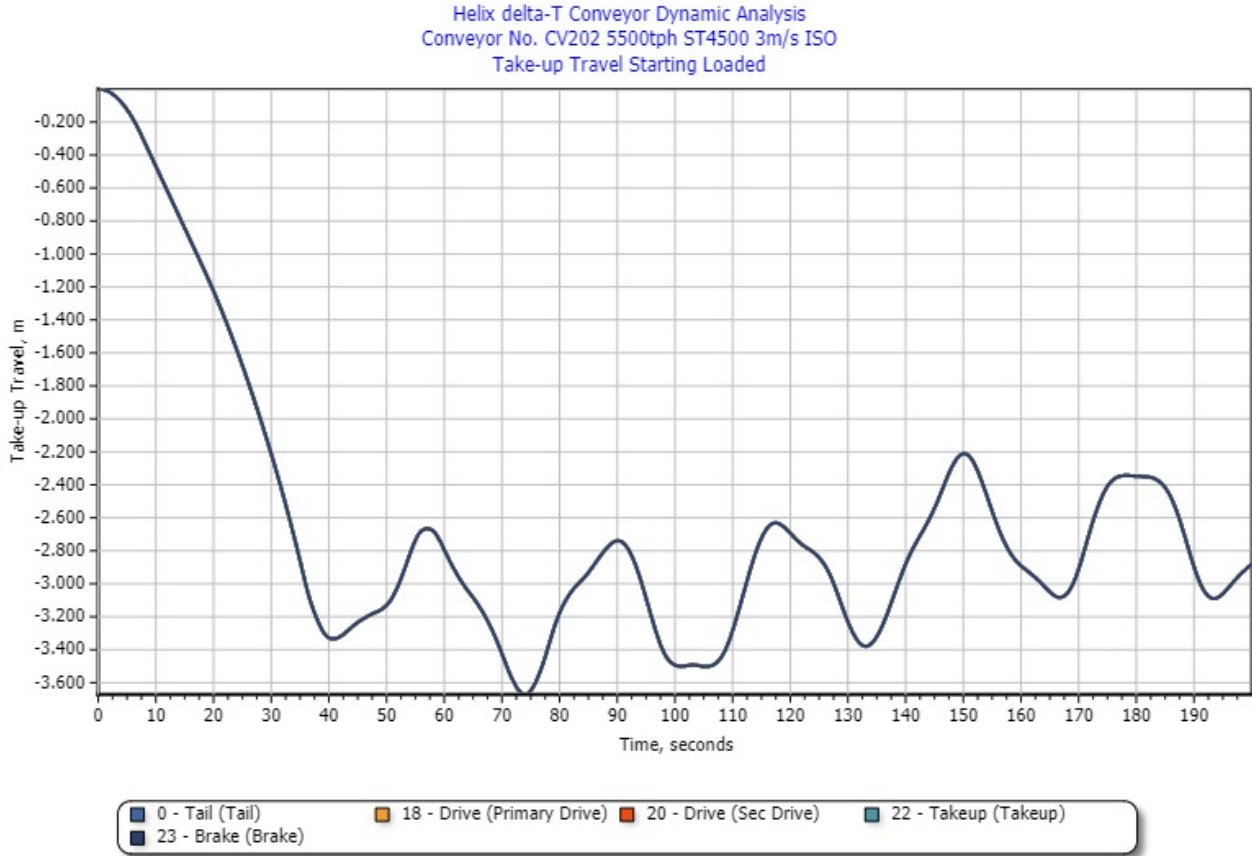
Maximum Torque = 842.22 kNm Minimum Torque = -21.21 kNm

Helix Technologies Pty Ltd

Graph Comments Starting - Loaded

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Take-up Travel Graph



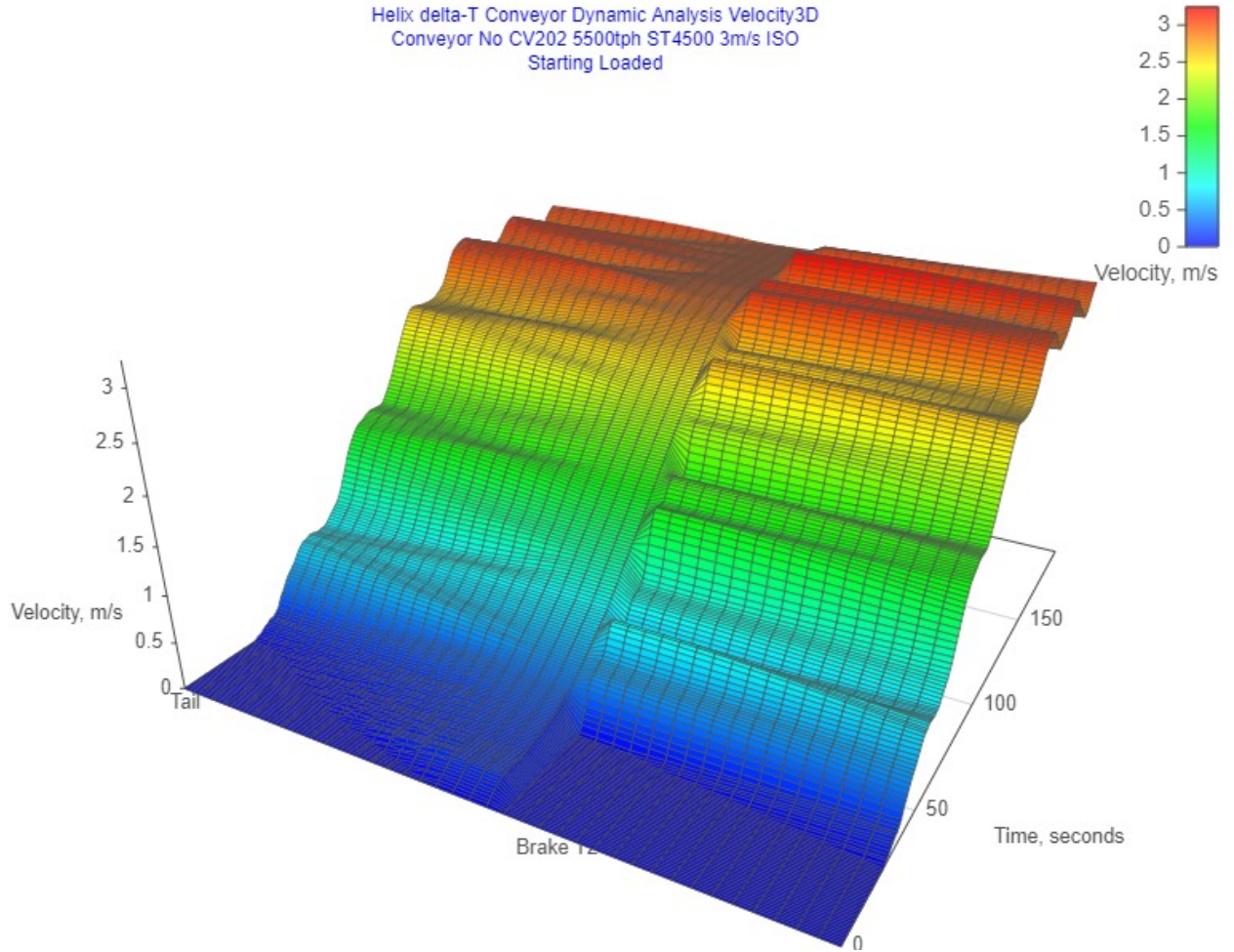
Maximum Take-up Travel Distance = 3.671 m

Helix Technologies Pty Ltd

Graph Comments Starting - Loaded

| | | | |
|--------------|-------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

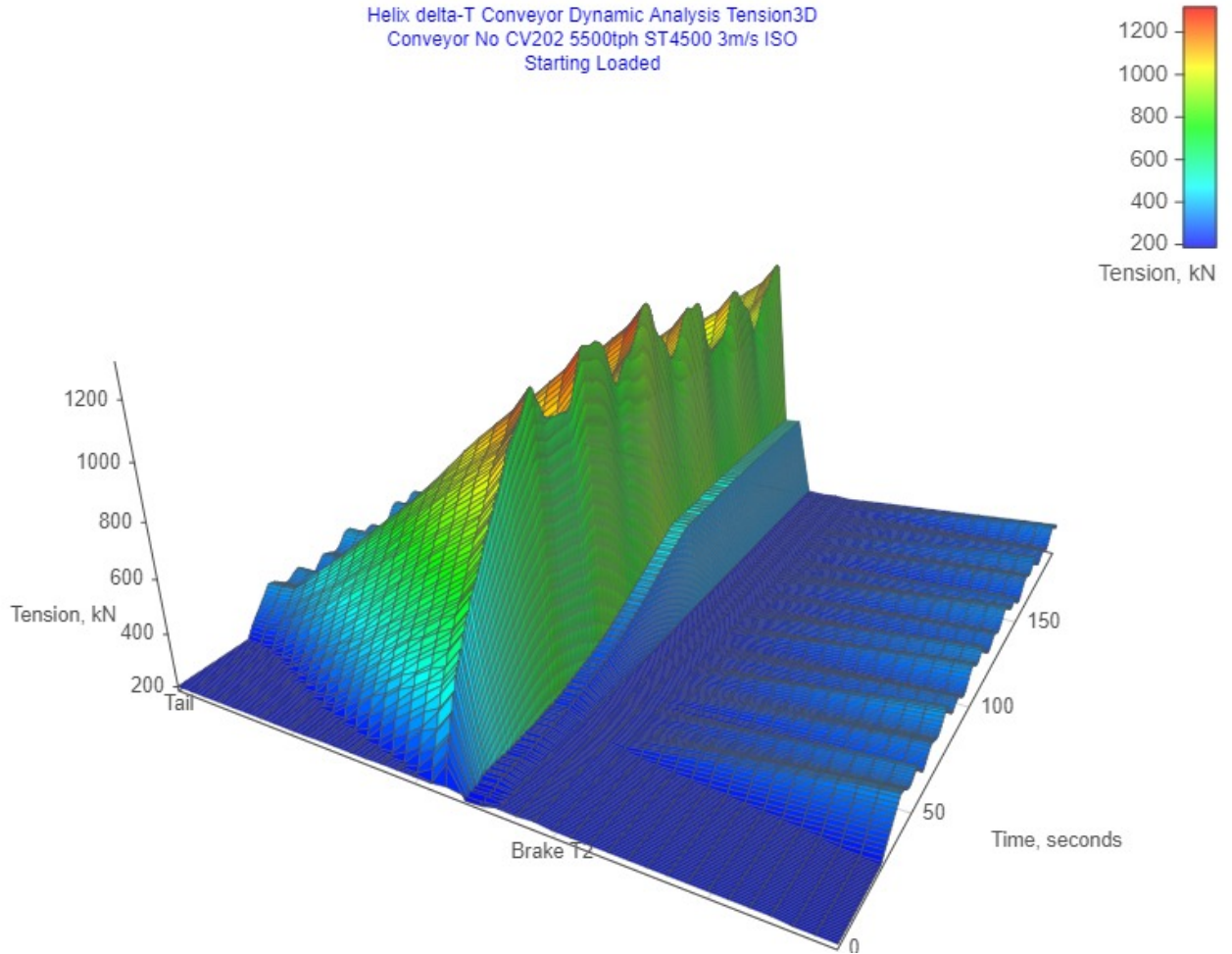
Dynamic Analysis Velocity Graphs



3D Graph Comments Starting - Loaded

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Belt Tension Graphs



3D Graph Comments Starting - Loaded

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Dynamic Analysis Belt Tensions Starting - Loaded
Maximum and Minimum Dynamic Belt Tension Table

| | Max kN | Min kN |
|-----------------------------|---------|--------|
| 0 - Tail (Tail) | 377.08 | 202.30 |
| 1 - Hopper (Hopper) | 380.21 | 202.28 |
| 2 - Int. Pt () | 390.45 | 202.28 |
| 3 - Int. Pt (CH300) | 439.52 | 203.25 |
| 4 - Sect 4/1 (CH300) | 493.44 | 203.25 |
| 5 - Int. Pt (CH1000) | 545.36 | 204.22 |
| 6 - Sect 5/1 (CH1000) | 602.52 | 204.22 |
| 7 - Sect 5/2 (CH1000) | 659.14 | 204.22 |
| 8 - Sect 5/3 (CH1000) | 714.95 | 204.22 |
| 9 - Sect 5/4 (CH1000) | 769.76 | 204.22 |
| 10 - Int. Pt (CH3000) | 823.65 | 207.13 |
| 11 - Sect 6/1 (CH3000) | 881.55 | 207.13 |
| 12 - Sect 6/2 (CH3000) | 945.76 | 207.13 |
| 13 - Sect 6/3 (CH3000) | 1008.06 | 207.13 |
| 14 - Int. Pt (CH4700) | 1069.02 | 210.04 |
| 15 - Sect 7/1 (CH4700) | 1125.19 | 210.04 |
| 16 - Sect 7/2 (CH4700) | 1180.34 | 210.04 |
| 17 - Int. Pt (CH6000 IP) | 1234.28 | 200.22 |
| 18 - Drive (Primary Drive) | 1317.65 | 219.35 |
| 19 - Snub (Snub) | 511.28 | 178.69 |
| 20 - Drive (Sec Drive) | 516.75 | 184.22 |
| 21 - Int. Pt () | 212.09 | 209.79 |
| 22 - Takeup (Takeup) | 210.84 | 208.54 |
| 23 - Brake (Brake) | 216.71 | 215.56 |
| 24 - Int. Pt (Brake T2) | 216.74 | 210.28 |
| 25 - Sect 15/1 (Brake T2) | 230.04 | 210.28 |
| 26 - Sect 15/2 (Brake T2) | 243.24 | 210.28 |
| 27 - Int. Pt (CH4700 rtn) | 256.23 | 210.28 |
| 28 - Sect 16/1 (CH4700 rtn) | 267.68 | 210.28 |
| 29 - Sect 16/2 (CH4700 rtn) | 278.89 | 210.28 |
| 30 - Sect 16/3 (CH4700 rtn) | 289.90 | 210.28 |
| 31 - Sect 16/4 (CH4700 rtn) | 300.72 | 210.28 |
| 32 - Sect 16/5 (CH4700 rtn) | 311.34 | 210.28 |
| 33 - Sect 16/6 (CH4700 rtn) | 321.74 | 210.28 |
| 34 - Sect 16/7 (CH4700 rtn) | 331.95 | 210.28 |
| 35 - Sect 16/8 (CH4700 rtn) | 342.00 | 210.28 |
| 36 - Int. Pt (CH1000 rtn) | 351.99 | 204.46 |
| 37 - Sect 17/1 (CH1000 rtn) | 360.40 | 204.46 |
| 38 - Sect 17/2 (CH1000 rtn) | 368.79 | 204.46 |

Helix Technologies Pty Ltd

| | | | |
|--------------|----------------------------------|-------------|----------------|
| Project | Demo 16 ABC Iron Ore Mine | Client | ABC Mining Ltd |
| Project No. | PO | Prepared By | P Burrow |
| Conveyor No. | CV202 5500tph ST4500 3m/s ISO | Design Date | 01 Oct 2019 |

Maximum and Minimum Dynamic Belt Tension Table**Max kN****Min kN**