2650CX
Hybrid Shovel
General Specifications

**Machine overview**
- Operating weight: 817,889 kg / 1,803,134 lb
- Standard track pads: 1626 mm / 64 in
- Ground bearing pressure: 29.6 N/cm² / 43 PSI
- Engine output: 2,386 kW / 3,200 HP
- Bucket capacity @ 1.9 t/m³: 31.1 m³ / 40.7 yd³
- Rated suspended load: 127.5 mt / 140.5 st

**Operational ranges**
- Max reach at ground level: 14.64 m / 48.02 ft
- Max dig reach: 17.84 m / 58.53 ft
- Operator eye level: 8.9 m / 29.1 ft
- Max dump height: 11.54 m / 37.86 ft
- Height of cut: 18.11 m / 59.42 ft
**Diesel engines**

### MTU Detroit diesel engines

- **Model:** 2 x 12V4000 series
- **Type:** 4-cycle turbocharged
- **Rated power SAE J1995:** 2,386 kW (3,200 HP) @ 1,800 rpm
- **Number of cylinders:** 16
- **Stroke:** 159 mm (6.26 in)
- **Bore:** 160 mm (6.3 in)
- **Displacement:** 50.3 liter (3,069 in³)

### Cummins diesel engines

- **Model:** 2 x 65XS50
- **Type:** 4-cycle turbocharged
- **Rated power SAE J1995:** 2,386 kW (3,200 HP) @ 1,800 rpm
- **Number of cylinders:** 12
- **Stroke:** 200 mm (7.87 in)
- **Bore:** 226 mm (8.9 in)
- **Displacement:** 57.2 liter (3,491 in³)

**SR generators**

- **Type:** Single bearing, force air cooled
- **Main Cooling for engines and Auxiliary Cooling for hydraulic, electrical converters, and hydraulic pump drive transmissions**

**Exhaust system**

- **Type:** SCR aftertreatment (Cummins Tier IV only)
- **Main noise reduction**
- **SR generators**
- **Hydraulic system**

- **Main pumps for clamshell:** 2 x variable-displacement, axial piston variable motors
- **Max oil flow:** 6 x 468 L/min
- **Maximum pressure clamshell:** 260 bar / 3,800 PSI
- **Hydraulic system capacity:** 3,785 L / 1,000 gal
- **Hydraulic tank capacity:** 2,082 L / 550 gal
- **Bucket cylinders:** 2 x 300 mm
- **Rod diameter:** 160 mm
- **Cylinders:** 2 x 280 mm
- **Rod diameter:** 200 mm
- **High pressure in line filters:** 25 micron
- **Full flow return line filters (10 double elements):** 5 x 10 micron
- **Electronic positive pump control system for tilt, dump and propel functions**
- **Electrohydraulically controlled hydraulic oil temperature regulation**

**Electrical system**

- **System voltage:** 24 V
- **Batteries in series, parallel:** 6 x 12V, 6 x 210Ah
- **Working spot lights:** 2 x high brightness LED lights
- **Service lights:** 16 x LED lights
- **APU unit (optional):** 24VDC, system (260A)

**APU unit (optional)**

- **Type:** 24VDC system (260A)

**Hydraulic system parameters**

- **Propel system:**
  - **Travel speeds**:
    - 1st stage - max: 0.92 km/hr / 0.57 mph (low)
    - 2nd stage - max: 1.89 km/hr / 1.24 mph (high)
  - **Maximum tractive force**: 2720 kN / 611,487 lbf
  - **Crawler shoes per side**: 37
  - **Lower rollers per side**: 7
  - **Upper rollers per side**: 3
  - **Ground bearing pressure**:
    - Standard crawler shoe: 1,626 mm/64 in: 29.6 N/cm² / 43 PSI
    - Crawler shoe: 1,829 mm/72 in: 26.6 N/cm² / 38 PSI
    - Crawler shoe: 1,981 mm/78 in: 24.1 N/cm² / 35 PSI
  - **Each crawler frame is equipped with a high ratio, high torque planetary gearbox. Each gearbox is powered by (2) axial piston hydraulic motors. Gearbox is splash lubricated**
  - **Spring-set hydraulic release wet multi plate disc brakes - (1) set per motor**
  - **Patent pending P&H brand Delta drive low tension sprocket drive system with heavy duty cast crawler shoes**

**Swing system**

- **Swing motors**: 4 x P&H SR motors @ 200 HP each
- **Swing drives**: 4 x stage planetary transmissions
- **Max swing speed**: 3.12 rpm
- **Sheave ring gear**
  - Sealed triple roller swing ring, internal teeth
  - Switch reluctance (SR) electric motors each coupled with a compact planetary gearbox. Gearbox is oil filled and splash lubricated
  - **Spring-set hydraulic release wet multi plate disc brakes - (1) set per motor**
  - **Main swing bearing is a triple row, sealed cylindrical roller bearing with induction hardened races. Internal ring gear is integral to the swing bearing. Both bearing and ring gear are automatically lubricated**

**Crowd system**

- **Crowd motors**: 2 x P&H SR motors @ 400 HP each
- **Twin low inertia Switch Reluctance (SR) electric motors minimize stock loading**
- **Direct drive crowd eliminates belt maintenance and improves responsiveness**
  - **Two input pinions shared load for extended life**
  - **Dual spring-set hydraulic release brakes for reliable redundant operation**

**Hoist system**

- **Hoist motors**: 2 x P&H SR motors @ 1,250 HP each
- **Patent pending dual planetary system located at the interior of the hoist eliminates externally mounted transmissions and optimizes use of deck space**
  - **All gearing and bearings are both pressure fed and splash lubricated with filtered oil, providing reliable operation and eliminating the need for a heat exchanger**
  - **Large 68" diameter drum for extended rope bending life. Female becket system and dual hydraulic daggers are standard for efficient rope change**
  - **Spring-set hydraulic release wet multi plate disc brakes - (1) set per motor**

**Swing drives**

- **Max swing speed**: 3.12 rpm
- **Brakes**: Spring loaded / hydraulically released

**Swing motors**

- **Swing drives**: 4 x P&H SR motors @ 200 HP each
- **Swing drives**: 4 x stage planetary transmissions
- **Max swing speed**: 3.12 rpm
- **Sheave ring gear**
  - Sealed triple roller swing ring, internal teeth
  - Switch reluctance (SR) electric motors each coupled with a compact planetary gearbox. Gearbox is oil filled and splash lubricated
  - **Spring-set hydraulic release wet multi plate disc brakes - (1) set per motor**
  - **Main swing bearing is a triple row, sealed cylindrical roller bearing with induction hardened races. Internal ring gear is integral to the swing bearing. Both bearing and ring gear are automatically lubricated**

**Hydraulically controlled variable speed fans conserve fuel when cooling is not required**

**Engine radiator**

- **Cooling for hydraulics, electrical system and dual hydraulic duggers are standard for efficient rope change**
  - **Large 68" diameter drum for extended rope bending life. Female becket system and dual hydraulic daggers are standard for efficient rope change**
  - **Spring-set hydraulic release wet multi plate disc brakes - (1) set per motor**

**System voltage**

- **Type:** 24 V

**Batteries in series, parallel**

- **Type:** 6 x 12V, 6 x 210Ah

**Working spot lights**

- **Type:** 22 x high brightness LED lights

**Service lights**

- **Type:** 16 x LED lights

**APU unit (optional)**

- **Type:** 24VDC system (260A)
Control system—LINCS II

LINCS II
Microporcessor based modular design Vehicle Control Unit with monitoring and diagnostics including integrated data logging and storage

LINCS II uses a dash mounted full color touchscreen display as the operator interface: out of range conditions will cause an audible alarm along with a message screen that is color coded to indicate severity

In addition, the touch-screen display provides repair technicians with operational data and fault messages

Operator’s cab

Internal cab dimensions

| Length     | 2,450 mm (96.5 in) |
| Width      | 1,845 mm (72.5 in) |
| Height     | 2,320 mm (91.3 in) |

Fall-Object Protective Structure (FOPS) ISO 3449

Internal cab noise (high idle with AC on high) 74 dBA

Air conditioner 5.25 kW - 18k Btu/hr

2nd optional unit 10.5 kW - 36k Btu/hr

Heater 14.6 kW - 50k Btu/hr

Fluid capacities

<table>
<thead>
<tr>
<th>Fluid type</th>
<th>Volume (L)</th>
<th>Volume (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>8,574</td>
<td>2,265</td>
</tr>
<tr>
<td>Engine oil</td>
<td>2 x 190</td>
<td>2 x 50</td>
</tr>
<tr>
<td>RH/LH engine high temp coolant</td>
<td>1,317</td>
<td>348</td>
</tr>
<tr>
<td>RH/LH engine low temp coolant</td>
<td>639</td>
<td>169</td>
</tr>
<tr>
<td>MPG tank</td>
<td>235</td>
<td>62</td>
</tr>
<tr>
<td>OGL tank</td>
<td>575</td>
<td>152</td>
</tr>
<tr>
<td>Hydraulic oil tank</td>
<td>2,082</td>
<td>550</td>
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<tr>
<td>RH pump drive transmission</td>
<td>63</td>
<td>16</td>
</tr>
<tr>
<td>LH pump drive transmission</td>
<td>58</td>
<td>15</td>
</tr>
<tr>
<td>Propel gearcase</td>
<td>2 x 227</td>
<td>2 x 60</td>
</tr>
<tr>
<td>Swing gearcase</td>
<td>4 x 76</td>
<td>4 x 20</td>
</tr>
<tr>
<td>Crowd gearcase</td>
<td>530</td>
<td>140</td>
</tr>
<tr>
<td>Hoist gearcase</td>
<td>515</td>
<td>136</td>
</tr>
</tbody>
</table>

Clamshell bucket

<table>
<thead>
<tr>
<th>Nominal Payload</th>
<th>59 mt</th>
<th>65 st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard HD bucket @ 1.9t/m³ (2.1 heaped)</td>
<td>31.1 m³</td>
<td>40.7 yd³</td>
</tr>
<tr>
<td>Lip width</td>
<td>5,080 mm</td>
<td>200 in</td>
</tr>
<tr>
<td>Weight without wear package</td>
<td>67,719 kg</td>
<td>149,294 lb</td>
</tr>
<tr>
<td>Weight with wear package</td>
<td>70,105 kg</td>
<td>154,554 lb</td>
</tr>
</tbody>
</table>

Overburden bucket

Iron ore bucket

Service station

Ground level service station

Fuel
Engine oil
Engine coolant (RH)
Multi purpose grease
Open gear lube
Hydraulic oil

LH deck service station
Converter cooler
Engine coolant (LH)