



ELECTRIC DRIVE TRACTOR

THE FUTURE
IS HERE AND
NOW



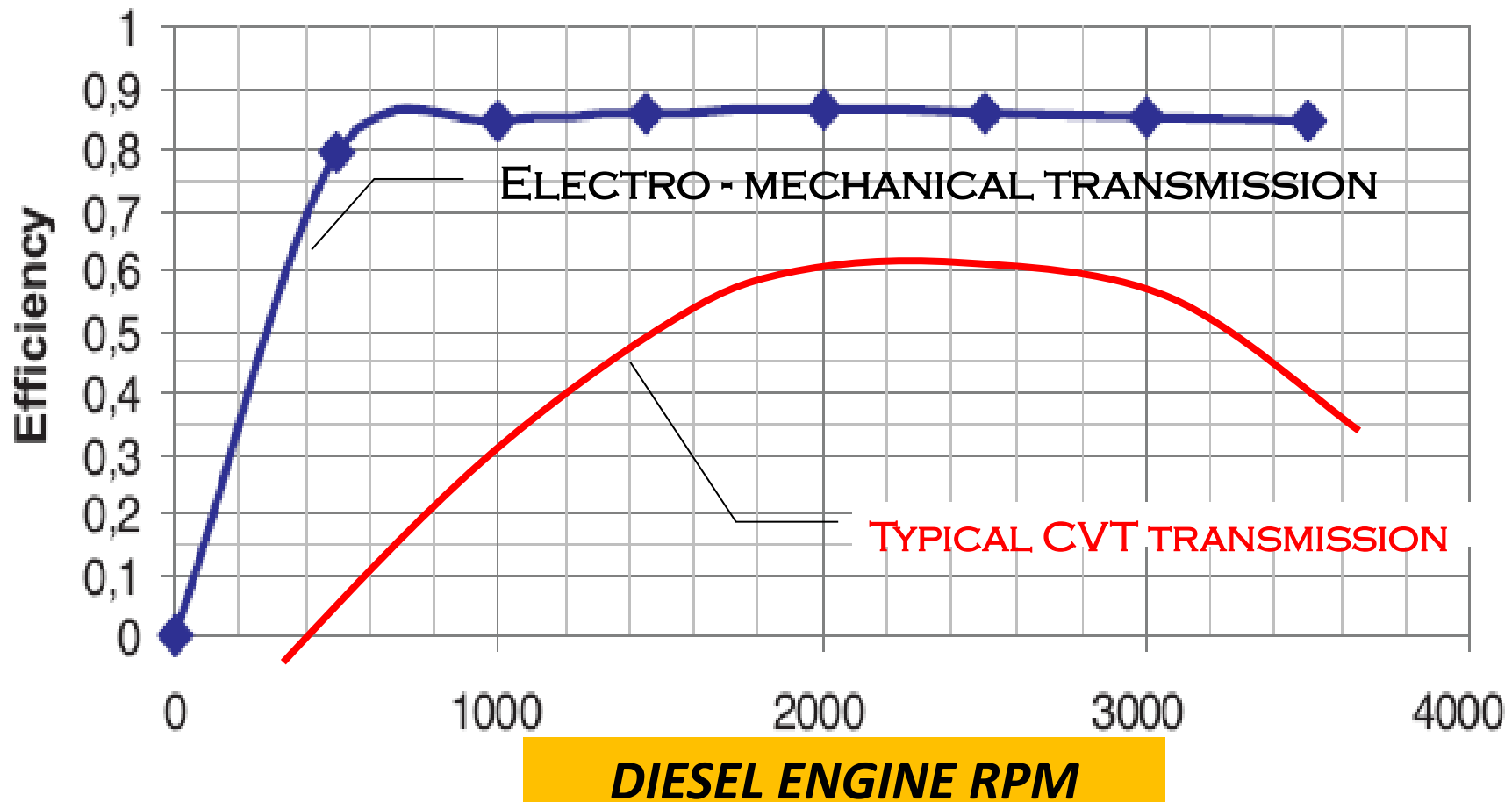
MTZ DIESEL ELECTRIC LOCOMOTIVE

PUTTING FARMERS 1st

- 15% LESS FUEL PER ACRE
- NO TRANSMISSION
- 270 kWt ELECTRIC STAND BY POWER
- YOUR OWN WINDOWS DIAGNOSTICS



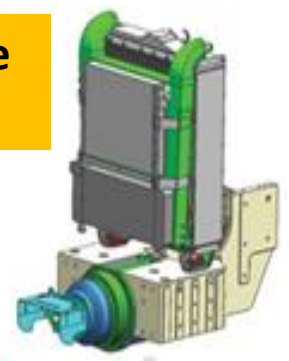
DRIVETRAIN EFFICIENCY VS DIESEL ENGINE SPEED (rpm)



Note the EM transmission high efficiency (~87%) in wide operating range!

270 kW

**Electric Drive
Front PTO**



50 kW, 1000 rev/min

**Electric power
Station**



Controller



**Indicators
and
controls**



**Windows
Service
Computer**

**Diesel Engine Reversible
Electric fan**



**Electronic
power block**

CAN

CAN

CAN

CAN

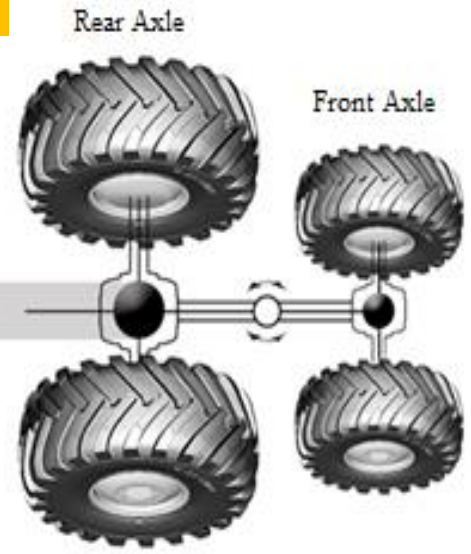
Diesel Engine



Electric Generator



Electric Motor



MTZ 3623 FEATURES



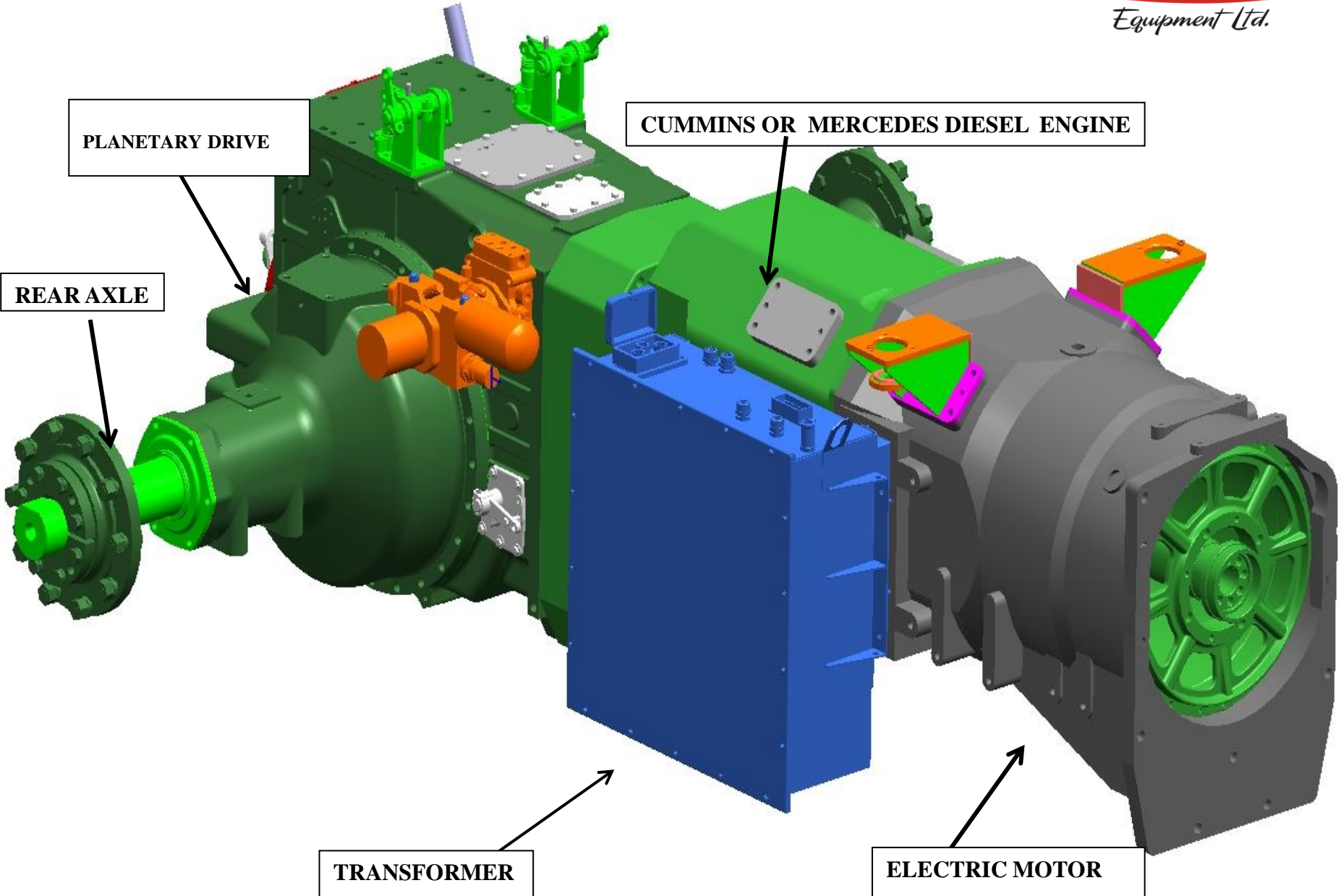
- QSL9 Cummins or OM470 Mercedes Diesel - Tier 4 Final Engines
- Reduced fuel use: 15% field work, up to 30% on road
- Increased starting and working torque
- Infinite speed selection in 2 ranges <Field .01 MPH – 11 MPH Road - 0.1 MPH – 26 (*32) MPH>
- Electric Motor Duty Cycle: 30,000-200,000 HOURS!
- Maintenance free 30,000 hours rated gear box.
- On board 270 kW power generator (drive powerful electric motors on implements)
- You own the diagnostic software - (Windows based)
- BATTERY READY – REPLACE THE DIESEL ENGINE WITH BATTERIES WHEN THE ENGINE WEARS OUT!



** Max speed no load is 32 mph – 26 mph max is recommended hauling heavy loads*

FUTURE “TESLA” OPTION

MTZ 3623 POWER TRAIN



PLANETARY DRIVE

REAR AXLE

CUMMINS OR MERCEDES DIESEL ENGINE

TRANSFORMER

ELECTRIC MOTOR

MTZ 3623 Technical Specifications



Electric Drive Transmission

Type	Continuous variable
Speeds	0-11,0-26 mph (0-18, 0-50 km/hr)
Quick shuttle	Yes
Life expectancy	30,000 hours, maintenance free
Front Axle	Planetary final drives, self locking differential
Rear Axle	Planetary final drive with differential. friction lock clutch, (dry clutch?)
Rear PTO	1,000 rpm, 223 hp
Front PTO (option)	1,000 rpm, 73 hp. Electric

Engine	Option 1	Option 2
Model	Mercedes OM 470	Cummins QSL9
Type	10.6 L. 6 cyl. in line	9 L. 6 cyl. In line
ENGINE HP	373 hp	360 hp
OPERATING RPM	1,700	2,100
Fuel Tank US gal (l)	132 gal. (500 L)	132 gal. (500 L)

Hydraulics

Closed Center

3 pt. hitch lift capacity,	Front: 11,000 lb. (4,990 kg) Rear : 22,000 lb. (9,979 kg)
Pump	53 gpm. (200 L/m)
Reservoir	46 gal. (163 L/m)

Dimensions and Weights

Front Tires	600/65 R34 Radial
Rear Tires	710/70 R42 Radial
Draw bar hitch height	22-23.6" (560-600 mm)
Drawbar hitch Category	Cat 3/4
Wheel base	10.83 ft (3,300 mm)
Turn Radius	18 ft. (5.5m)
Dimensions (LxWxH)	22.3' x 8.6' x 10.6'
Shipping Weight, lb. (kg)	26,400 lb. (12,000 kg)
Operating weight, singles lb. (kg)	28,160 lb. (12,800 kg)
Maximum weight, lb (kg)	44,000 lb. (20,000 kg)



OPTIONS

- **DIESEL ENG. COOLING FAN & RADIATOR**
(recommended for high duty cycle operations)
- **ELECTRIC DRIVE FRONT PTO – 1000 RPM**
- **ON BOARD STANDBY ELECTRIC POWER GENERATION – 270 kWt**
- **FRONT CATEGORY III – 3 POINT HITCH**
- **TRIMBLE GPS AUTO STEER**
- **DUALS**
- **WEIGHTS**



ELECTRIC POWER STATION



ELECTRIC POWER SPECS

- ✓ Output voltage frequency 60 ± 0.5 Hz;
- ✓ Line voltage output 3 x 400 V (circuit without ground wire);
- ✓ Output phase voltage 3 x 220 V (circuit with ground wire);
- ✓ Output voltage adjusted pre-set +5\ -10%;
- ✓ Output voltage THD factor < 5%;
- ✓ Active output power 270 kW
- ✓ Efficiency at rated load $\geq 95\%$;
- ✓ Dimensions 47.25" x 31.5" x 11.8"
- ✓ Weight 187.5 lb.
- ✓ Protection level IP65
- ✓ Easy connection to electric motors to reduce hydraulic load demand.

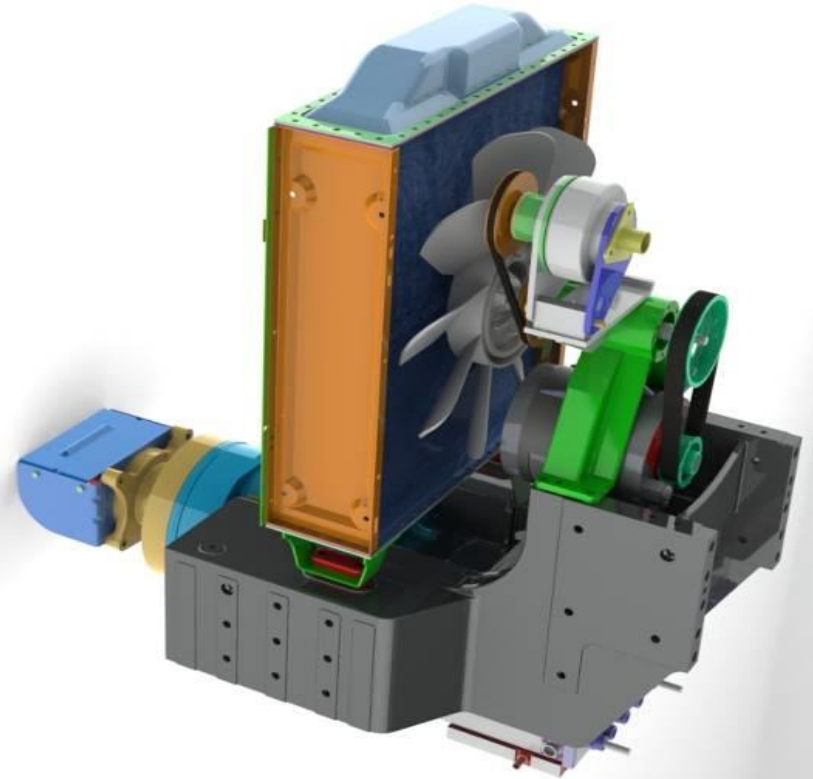


US List \$ 13,400

FRONT PTO DRIVE LESS HITCH

FRONT PTO SPECS

- ✓ Power 55 kW (73 hp);
- ✓ Torque on shaft 105 Nm;
- ✓ Current 90 A;
- ✓ Motor efficiency $\geq 93\%$;
- ✓ 30,000 hours rating
- ✓ Maintenance free



US List \$ 6,820

REVERSIBLE ENGINE COOLING FAN

REVERSIBLE FAN SPECS

- ✓ Maximum power 20 kW;
- ✓ Motor efficiency $\geq 93\%$;
- ✓ 30,000 hours rating
- ✓ Maintenance free



*RECOMMENDED FOR HIGH DUTY CYCLE
AND DUSTY OPERATING CONDITIONS*

US List \$ 4,800


FRONT 3 PT. CAT III HITCH INCL. 1000 RPM PTO & HYDRAULIC REMOTES

Capacity: 12,000 lb. (5,000 kg)

US List \$18,920



DIESEL ELECTRIC LOCOMOTIVE ADVANTAGES

- Locomotive durability and service life.
 - Simple and reliable “CVT like” transmission with fewer components.
 - High efficiency (>87%) power utilization at any speed
 - Electric motor acts as brake improving braking efficiency by over 200%
 - Quick shuttle (forward/reverse) – effective for silage packing, snow removal etc.
- 
- Only 1 manual switch: “field” or “road” mode.
 - Smooth transition from field to road.
 - “CREEPER” Speed (as low as 0.1 mph)
 - Pulling power same as 420hp dies
 - Battery ready! (think “Tesla”)





OPERATOR CONTROLS



SIMPLE CONVENIENT CONTROLS

- **DRIVE TRAIN CONTROL MODES:**
 - **FOOT PEDAL SPEED CONTROL**
 - **JOYSTICK SPEED CONTROL**
 - **GPS CRUISE CONTROL**

- **SLOW SPEED REVERSE CONTROL FOR SAFETY DURING IMPLEMENT CONNECTION**

- **EXTERNAL HYDRAULIC 3 PT HITCH CONTROLS**

- **EXTERNAL FORWARD AND REAR MOVEMENT CONTROL FOR SAFE ONE MAN HOOK UP.**

- **TRIMBLE AUTO STEER (unlock extra)**



- HLC
- ICE
- CPC MG
- MG
- CPC TAM
- TAM
- PES
- GPS



- Brake 1
- Brake 2

- Overtemperature**
- PC_MG
 - MG
 - PC_TAM
 - TAM
 - Diesel
-
- SPEED INCREASE
 - SPEED REDUCTION
 - EMERGENCY BRAKE
 - SMOOTH ENTRANCE



Friction clutches

N 1 2

Zone

Stop N W

Mechanical transfer

N 1 2



- READINESS
- MOD. PERMISSION
- CONTROL ON SPEED
- CONTROL ON TORQUE



- READINESS
- MOD. PERMISSION
- CONTROL ON SPEED
- CONTROL ON TORQUE
- PARKING



Error code =	0000
Tskai (°C)=	0
Tbearing1(°C)=	0
Tbearing 2(°C)=	0
Loading (%)	0
fuel (t) =	0
Tice (°C)=	0

Error code =	0000
Tskai (°C)=	0
Tbearing1(°C)=	0
Tbearing 2(°C)=	0



MG

TAM

WINDOWS BASED DIAGNOSTIC AND SERVICE SOFTWARE COMES STANDARD WITH YOUR TRACTOR - INCLUDED IN THE PURCHASE PRICE. Value \$10,800

MTZ

Equipment Ltd.



COMING SOON - 450 HP ELECTRIC DRIVE "MTZ/BELARUS ET-450MK



KIROVETS 455 HP 4WD ARTICULATING ELECTRIC DRIVE

COMING SOON

MTZ
Equipment Ltd.





COMPETITIVE PRICE COMPARRISON JANUARY 2022



	TRACTOR MODEL	Rated hp	List, \$ US	Front PTO + 3pt hitch, est.	270 KwT Generator	Total, \$ US LIST
	MTZ 3623 DIESEL ELECTRIC Incl. frt, pdi and diagnostic computer	360	\$ 298,000	Inc	\$13,400	\$398,000
	MF 8470 S	370	\$368,000	\$33,000	Not available	\$401,000
	NH T8.380	347	\$490,400	\$33,709	Not available	\$524,109
	CNH MAGNUM 380 CVT	380	\$518,976	\$33,709	Not available	\$552,685
	FENDT 939 Vario	385	\$435,592	\$33,000	Not available	\$468,592
	JD 7R350	350	\$391,186	\$24,000	Not available	\$415,186
	400-420 hp competing models- same pulling power as 360 hp MTZ 3623	420	410,000	\$27,849	Not available	\$437,849

Est. Cost of Ownership over 5 years and 10,000 hours

<p style="text-align: center;">MTZ 3623 Diesel Electric</p> 	<p>LOCOMOTIVE</p> 	<p>Diesel IVT or CVT</p>
<p>New cost, Duals, Front PTO, 3pt hitch</p>	<p>\$398,000</p>	<p>\$500,000</p>
<p>Resale value @ 10,000 hours</p>	<p>*\$140,000.00</p>	<p>\$200,000</p>
<p>100% Amortisation interest 6.25% used in calc</p>	<p>\$44,203</p>	<p>\$63,443</p>
	<p>Per hour costs:</p>	
<p>Amortisation interest/hr.</p>	<p>\$4.40</p>	<p>\$6.34</p>
<p>DEPRECIATION COSTS PER HOUR</p>	<p>\$18.60</p>	<p>18.00</p>
<p>Lubrication and Maintenance</p>	<p>\$5.00/hr incl. tires</p>	<p>\$7.25/hr incl. tires</p>
<p>Fuel cost, @ 70% average work load 2.90 \$/gal.</p>	<p>\$29.00</p>	<p>\$36.75</p>
<p>Total variable cost/hr</p>	<p>\$34.00</p>	<p>\$44.00</p>
<p>Cost of ownership/ hr @ 10,000 hours</p>	<p>\$57.00/ hr.</p>	<p>\$61.09/hr</p>
<p>NET FINANCIAL ADVANTAGE</p>	<p>US \$111,000</p>	<p>- \$</p>

*The resale value may be higher because of the standby generator + simplicity and durability of the LOCOMOTIVE design

Electric Drive Technology – the Future of Tractors

Easter morning 1900: 5th Ave, New York City. Spot the automobile.



Source: US National Archives.

Easter morning 1913: 5th Ave, New York City. Spot the horse.



Source: George Grantham Bain Collection.

The only thing constant is change!

- 1876 Western Union refused to buy phone patents from Alexander Bell...
- In 2000 Blockbuster refused to buy Netflix for just \$50 mil.
- Around 2005, Kodak missed the market. Digital cameras rendered film obsolete.
- 2004-2007: LCD TVs overtook CRT (Cathode Ray TV) within just 4 years



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