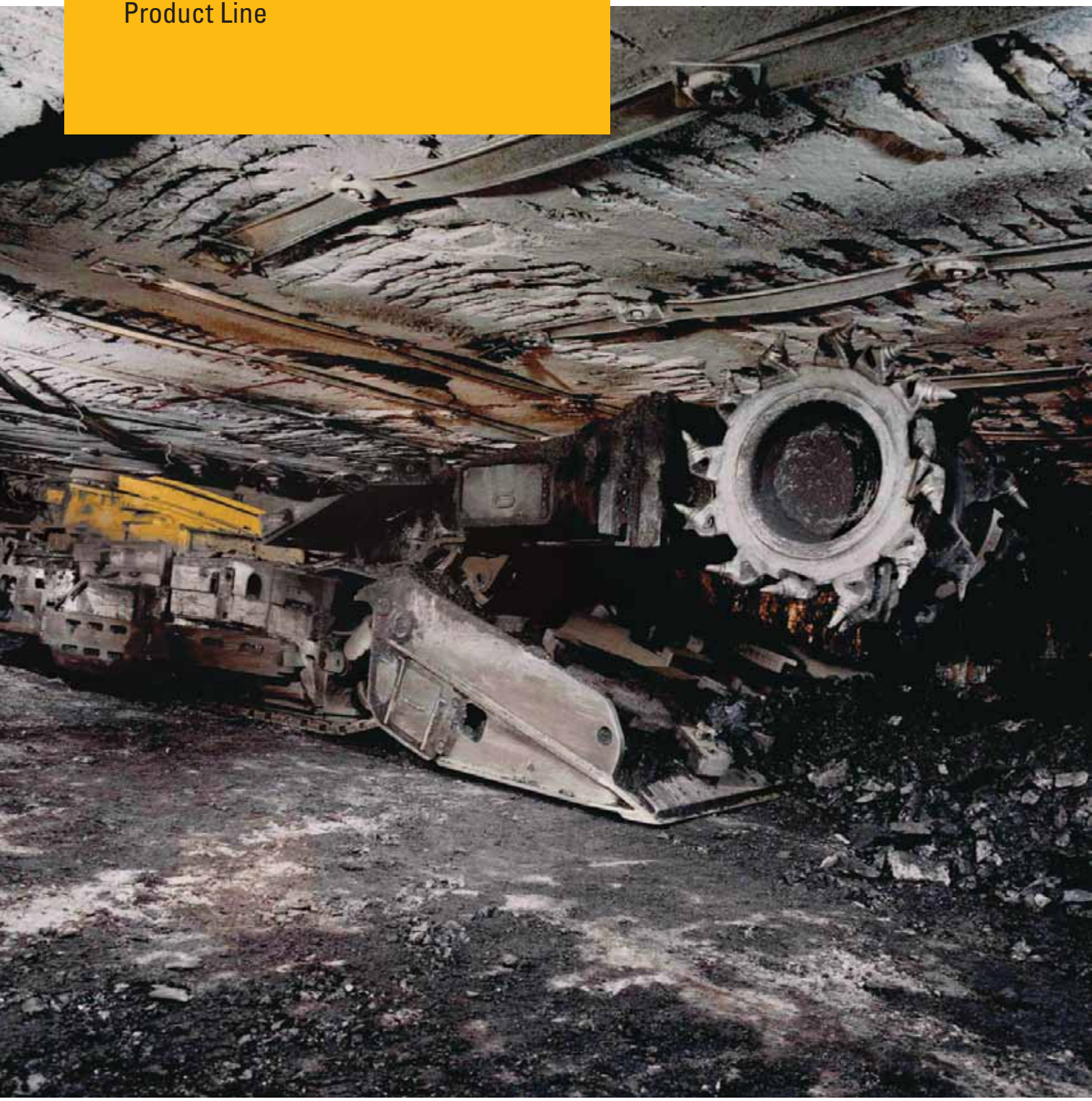
Continuous Miners

Product Line



Cutting-Edge Productivity

Caterpillar has a seamless range of continuous miners covering both soft- and hard-cutting applications in any seam thickness. The range includes machines capable of operating in seams from 0.76 m (30 in) to 4.70 m (15.4 ft).

Top Performance Underground

As the result of an all-out engineering effort, this complete range of miners is on the very cutting edge of underground mining technology.

As part of our complete range of Room & Pillar equipment, our continuous miners are based on operating experience in coal fields worldwide and incorporate the latest engineering findings and innovations. This expertise – combined with modular design and a large number of common components – means that all Cat® continuous miners offer superior performance and productivity combined with high availability and low maintenance; resulting in higher production, lower maintenance cost per tonne and, as a result, lower total cost of ownership.

Features

All Cat continuous miners offer:

- Heavy main frame for rigidity and stability
- Independent tramming for maneuverability
- Wide conveyor for maximum loading rates
- Wide crawlers for maximum penetration and low ground pressure
- Radio remote with self diagnostics available
- Easy access and low maintenance

CM200 Series

For thin- to mid-seams we have the CM200 Series – from the thin-seam CM210 with a minimum cutting height of 0.76 m (30 in) to the mid-seam CM240 for seams of up to 3.4 m (134 in).

MODEL	MINING RANGE	WEIGHT	TOTAL POWER
CM210	0.71-1.52 m 28-60 in	47.60 tonnes 105,000 lbs	503 kw 675 hp
CM220	0.86 – 2.39 m 34 – 94 in	52.2 tonnes 115,000 lbs	522 kw 700 hp
CM230	1.12 – 2.90 m 44 – 114 in	56.7 tonnes 125,000 lbs	563 kw 755 hp
CM235	0.86 – 3.25 m 34 – 128 in	61.3 tonnes 135,000 lbs	720 kw 965 hp
CM240	1.22 – 3.91 m 48 – 154 in	61.3 tonnes 135,000 lbs	563 kw 755 hp

CM300 Series

The CM300 Series ranges from the mid-seam CM330 to the CM345 for narrow pathways and the CM845 miner bolter. These miners have maximum cutting heights ranging from 3.1 m (122 in) to 4.6 m (181 in).

MODEL	MINING RANGE	WEIGHT	TOTAL POWER
CM330	1.20 – 3.78 m 48 – 149 in	70 tonnes 155,000 lbs	697 kW 935 hp
CM340	1.37 – 4.00 m 54 – 158 in	70 tonnes 155,000 lbs	697 kW 935 hp
CM345	1.80 – 4.62 m 71 – 182 in	74.9 tonnes 165,000 lbs	697 kW 935 hp

CM400 Series

The CM400 Series is designed for harder-cutting applications such as hard-cutting coal, trona and potash. They have a hard head-style cutting head. The maximum cutting height can be extended to 4.7 m (15.1 ft).

MODEL	MINING RANGE	WEIGHT	TOTAL POWER
CM440	1.63 – 3.91 m 64 – 154 in	85.0 tonnes 187,000 lbs	629 kW 850 hp
CM445	1.80 – 4.62 m 71 – 177 in	90.0 tonnes 198,400 lbs	629 kW 850 hp

**Final design pending*

Miner Bolter

MODEL	MINING RANGE	WEIGHT	TOTAL POWER
CM845	2.01 – 4.70 m 79 – 185 in	78.0 tonnes 172,000 lbs	738 kW 990 hp

CM210

CM230

CM340

CM445

CM845

Performance and Productivity

Rapid change of cutting heights

Longer Overhaul Interval

In addition to offering features that deliver superior performance, Cat continuous miners offer a whole range of engineering features that contribute to long, reliable service between overhauls. This means greater productivity and higher tonnage between rebuilds.

More Power

As a result of higher cutter motor power and a heavier chassis than competitive models, Cat continuous miners offer superior performance in hard-cutting applications.

Efficient Cuts

Infinitely variable tram control allows precise control of steering, speed and traction with independent control of the two sides. This high maneuverability allows faster positioning and optimum cutting, increasing productivity.

Cat continuous miners also have a lift kit that allows cutting height changes to be made within 3 hours. This rapid change is made possible by pin-on wire runners. Our competitors' machines require welding and cannot compete with this speed.

Weight

Cat continuous miners use a 75 mm steel plate for the main frame – 50% thicker than competitors. The heavier, more rigid frame allows a better cutting rate when sumping at the top of the seam and ripping to the bottom.

Ease of Operation

Caterpillar offers a Machine Control Unit designed to operate the entire Cat continuous miner. Based on a mine-duty PLC, this drive and control system combines maximized coal production and operator safety with minimum downtime. As traction motors are controlled by a microprocessor-based system, the design minimizes the connection points that are the major cause of downtime. It provides data logging, fast diagnostics and enhanced troubleshooting capability.

The optional ergonomic graphics display provides easy access to visualization, parameters, logs and help. Screens can be accessed via the transmitter and parameter changes can be made. The unit allows three modes of control: wireless for normal operation, umbilical and a mode for troubleshooting.

Graphics display

New Generation Controls

Caterpillar has ongoing development aimed at providing mining operations with reliable controls to the level of complexity that fits their needs. The system can be tailored to meet the needs of an operation with a combination or total of:

- AC VFD (Variable Frequency Drive) or DC Drive Options
- Integrated electronic overloads
- Color graphic diagnostic options
- Data logging
- Smart Hydraulic System

High Availability, Low Maintenance

The dimensioning of components and structural elements – such as motors, pumps, clevises and pivots – and their location and packaging ensure ease of maintenance, increase machine availability and reduce operating costs. Cat continuous miners are built to last. For example, the Cat clevis is 113 mm, compared to 100 mm for our major competitor, and pin diameter is 194 mm compared to 100 mm. The rugged design of Cat continuous miners ensures long maintenance intervals and higher tonnage between rebuilds.

A CM210 at work in an 860 mm (34 in) seam

CM220 Continuous Miner

Ease of Maintenance

Cat continuous miners are designed to facilitate maintenance, which in turn cuts costs and increases availability and productivity. Unlike our major competitor, the cutter head gearcases on Cat machines are independent. So if there is a failure on one side, only one half of the cutter head has to be replaced as opposed to changing the whole head.

Tram cases can be repaired on machine without having to pull the tram case off the miner, resulting in considerable time and cost savings.

The Centrifugal Loading Arm (CLA) has abrasion-resistant replaceable tips, allowing quick and easy refurbishment.

Commonality of Parts

The CM220, CM230 and CM240 have common components such as gathering head gearboxes, conveyor motors, tram motors, tram gearboxes, electrical boxes, radio control system, hydraulic pump, pump motor and crawler chain assemblies.The major common components of the CM330, CM340, CM345 and CM430 are the gathering head gearboxes, conveyor motors, tram motors, tram gearboxes, radio control system, hydraulic pump, pump motor, cutting head gearbox and crawler chain assemblies.

This commonality of parts has numerous advantages:

- Lower cost of inventory and higher parts availability
- Faster replacement
- Trained technicians can fix any machine in series
- Flexibility: for example, the CM230 can be converted into a CM220

Keeps on Keeping on

Cat continuous miners have a whole range of features designed to maximize availability, enhance maintainability, cut operating costs and extend overhaul periods and service life.

Motors

Motors are designed for heavy-duty 50 Hz operation so as not to compromise power, speed or production. Overheating and failure of these powerful motors is prevented by electronic motor overload protection. Cutter motors are protected by a clutch and have no torque shafts, whereas gathering motors and dual-reduction gathering gear cases are protected by quill shafts which, like a torsional spring, twist along their length. Cooling system monitoring ensures that the proper flow and pressure are available to cool the motor and electrical system.

Robust Gear Cases

The robust gears are made from carburized high-alloy steel with ground teeth for accuracy and quiet operation. The replaceable cutter head input gear cases allow quick and economical replacement of the components most susceptible to failure due to inadequate lubrication.

The long-life double planetary tram gear case has separately changeable planetaries and sprockets incorporating improved torric seal protection. The design of the high-speed gearing makes troublesome bevel gearing unnecessary. Helical input gears and spiral bevel gears maximize cutter gearbox life.

Other Features

The conveyor chain has an automatic hydraulic chain tensioner to ensure correct chain tension. Incorrect tensioning is the main cause of premature chain failure. Large-diameter pins and bushings lower contact pressure in the bushings.

Health and safety features include ventilation, dust collector, scrubber, discharge to left or right, dust ignition protection, water solenoid valve to minimize water use and spillage, methane monitoring, noise reduction, and remote control.

Life-Cycle Management

Low Overhaul Frequency

The overhaul interval is maximized by various measures to reduce wear and tear. All major wear areas – including spade, conveyor and cutter gear case webs – have long-life 13 mm Chrome Carbide Overlay (CCO) liners. Extra-large cutter boom pin and bush increase load and fatigue capacity, while traction liners are extra-thick for extended life. Cabling and hydraulic hosing are integrated for improved protection. Spigoted and/or keyed mounting of cutter motors, traction motors and traction gear cases isolate mounting bolts from the load.

Discharge boom with automatic chain tensioner

Frame

The heavy welded frame structure with one-piece main frame rails is extremely robust. The steel plate used for the main frame is 75 mm – 50% thicker than our major competitors – to ensure greater rigidity and stability.

Wear Resistance

The gathering head and conveyor deck both feature CCO plate, offering wear resistance many times higher than abrasive-resistant steel plate.

Wethead Compatibility

Cat® wethead technology delivers water right at the cutting edge, resulting in better dust control, noise reduction, operator comfort and visibility, as well as a substantial improvement in bit life.

Continuous Miners – Product Line

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at **mining.cat.com** and **www.cat.com**

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