AC DIESEL-ELECTRIC TRUCKS

1 Ht HITACHI *Mining*

AC

HITACHI

AC DRIVE TECHNOLOGY. A MODEL OF EFFICIENCY.

The business of mining exacts a tremendous toll on the people and machines used to extract ore or coal from the ground. At Hitachi, our first priority is to lighten their load.

Power to carry the mail

AC drive technology is a very efficient means of powering large haulers. AC drives allow smoother acceleration at slow speeds, better gradeability, and higher top speed. AC drives also minimize routine maintenance with their brushless design.

Power on demand

The AC diesel-electric drive system is made up of several key components. The diesel engine functions as a mini power plant, producing AC power by means of a traction alternator.

The AC power is temporarily converted to DC by a diode rectifier. This voltage-stabilized and -conditioned power is stored in a common DC link. The electrical power passes through the capacitors to two inverters, which produce the AC power for the traction motors. The output frequency and voltage of the inverters is controlled to provide precise motor torque and speed.

More retard, less braking

One of the most significant advantages of a diesel-electric drive system is the powerful, dynamic retard capability which minimizes brake wear. The same electricity that is used to propel the hauler can be switched by "braking choppers" into resistance that can be used to slow the traction motors. Dynamic retard is so effective that the hauler can be slowed to .5 mph (0.8 km/h) without the operator ever touching the brakes. Retard is always enabled, and can be used in forward, neutral, or reverse. Input from the retard pedal overrides the accelerator pedal, so the amount of retard can vary from negligible to full — in perfect counterpoint to propulsion.

When needed, Hitachi trucks use an all-hydraulic brake system for precise control and quick response. Wet-disc rear brakes are engineered for long service life, even in the most extreme environments. The brakes are continuously oil cooled, with a dual-circuit design for added safety. Dual independent hydraulic circuits within the service brake system provide reassuring reserve braking capabilities. Four armature disc brake heads provide parking capabilities. The braking system complies with J/ISO 3450.

Check and balance

The brain of the AC diesel-electric drive system is the Traction Control Unit (TCU). The TCU controls:

- Engine rpm
- Speed and torque
- The balance between propel/dynamic retard
- Power switches
- Auxiliary equipment

The TCU also evaluates and stores:

- Current, voltage, temperatures
- Test programs

AC

AC traction motors have a high power-to-weight ratio. Brushless design eliminates brush failure and replacement.

Dynamic retard minimizes hydraulic brake wear and tear.

Dynamic retard is so effective that the hauler can be slowed to .5 mph (0.8 km/h) without the operator ever touching the brakes.

Hitachi AC diesel-electric trucks feature a standard Detroit Diesel, 16V-4000, turbocharged and low-temperature aftercooled engine.

BEAUTY MEETS BEAST. ENGINEERED FOR THE LONG HAUL.

With the strongest frame in its class, Hitachi brings new meaning to the word rigid. Our AC drive EH5000 is in the same general vehicle class as Caterpillar's 793 and 797 — yet the Hitachi outclasses both trucks in frame and suspension strength.

Hitachi wins the Cat® fight

Cat trucks use a suspended kingpin design — a design that increases tire scuffing and wear while enabling frame twist. Cat haulers also use more castings, frame components, and welds, making it vulnerable to structural failure.

Conversely, Hitachi engineers chose a broadly radiating frame to distribute the stress of a full load over the frame's entire length and width. Welds are oriented longitudinally, eliminating stress cracks. Frame intersections are curved to create a more resilient backbone. And reinforced inner, center, and outer web plates accommodate a larger payload.

Hitachi truck frame rails are connected laterally by a high-arching cross member. This structure is positioned behind the engine and serves as a mounting point for the cab and upper deck — and does so without restricting engine access. Compare this to the large-frame "horse-collar" design of competitive trucks.

Hitachi AC drive trucks use 80 and 90 Series tires for lower cost, longer life, and proven performance.

Hitachi AC diesel-electric trucks tote up to 351 US tons or 318 metric tons without strain, day after day.

AC

With standard or optional power, you'll be delivering 16-cylinder, turbocharged and aftercooled power to the drivetrain.

Frame is wider at the rear to better support loads.


1
Ht
HITACHI
Mining
AC

THE NEOCON STRUT. A MIRACLE SHOCK ABSORBER.

Hitachi AC diesel-electric trucks feature the next generation of Accu-Trac suspension. Accu-Trac is designed with an independent trailing arm for each front wheel, supported by Neocon-filled struts. The trailing arm allows energy to travel straight up, where it is absorbed by the strut, minimizing stress and fatigue on the frame. The rear struts are mounted in a more vertical position to allow better axial loading.

Neocon-filled struts take on the hard stuff

Neocon-filled struts consist of two subsystems:

1) an energy-absorbing system to isolate shocks
2) an energy-releasing system for stabilization.

The absorbing system uses helium gas and Neocon-E™ fluid to absorb energy in direct proportion to the force it receives. Neocon-E is very stable at high temperatures and has a low freezing point. It's also chemically inert, reusable, and environmentally friendly.

Neocon-filled struts deliver superior stability, control, and isolation over struts filled with hydrogen/oil or silicone. Improved isolation means reduced impact loading on the structural members of the machine and greater operator comfort.

While our suspension and steering system is tough, maintenance is simple. Front suspension cylinders can be serviced quickly without removing them from the truck. Steering geometry can be kept within specs with one adjustment. And steering components are designed with fewer lubrication points for easy maintenance.

Accu-Trac suspension absorbs all the abuse a haul road can deliver while putting the brakes on suspension-induced frame twisting.

Accu-Trac can improve tire life by up to 40 percent over suspended kingpin designs.

The Hitachi four-pin planetary gear has been reduced in size and is lighter than previous designs. The unit runs at lower temperatures to extend lubricant life and, ultimately, the longevity of the gear itself.

CLIMBING TO THE NEXT LEVEL. ADVANCED BODY AND CAB.

Body mechanics

The body is manufactured from high-tensile, abrasion-resistant alloy steel. The rubber-cushioned body features a sloped floor for easy cleaning and reduced contamination of the air filter. A heated tipper floor helps shed material, while an extended canopy protects the operator from the elements.

Between a rock and a soft place

The Command Cab III takes operator comfort to the next level. Double-wall 11-gauge inner and outer steel panels produce a more structurally sound operator's station. Foam-rubber lining absorbs sound and helps maintain interior temperature while keeping road noise outside where it belongs.

A wraparound dashboard positions controls within easy reach. A full complement of easy-to-read gauges, the Contronic II monitoring system, six-way adjustable air seat, tilt/telescopic steering wheel, filtered ventilation, door locks, and a full-size trainer seat all contribute to operator safety and comfort.

Hydrostatic power steering

A closed-center hydrostatic power-steering system provides unparalleled control. Accumulators supplement steering power in accordance with J/ISO 5010 regulations. Steering components have been designed for easier maintenance and fewer lubrication points.

Electronic watchdog

The Contronic II system minimizes downtime by monitoring and diagnosing all onboard systems, including the Siemens AC drive system and engine. The Haultronic II load-weighing system, fully integrated with Contronic II, improves productivity by reporting cycle time, distance, and cycle count. Data links offer complete integration, while one multi-language LCD clearly details machine functions.

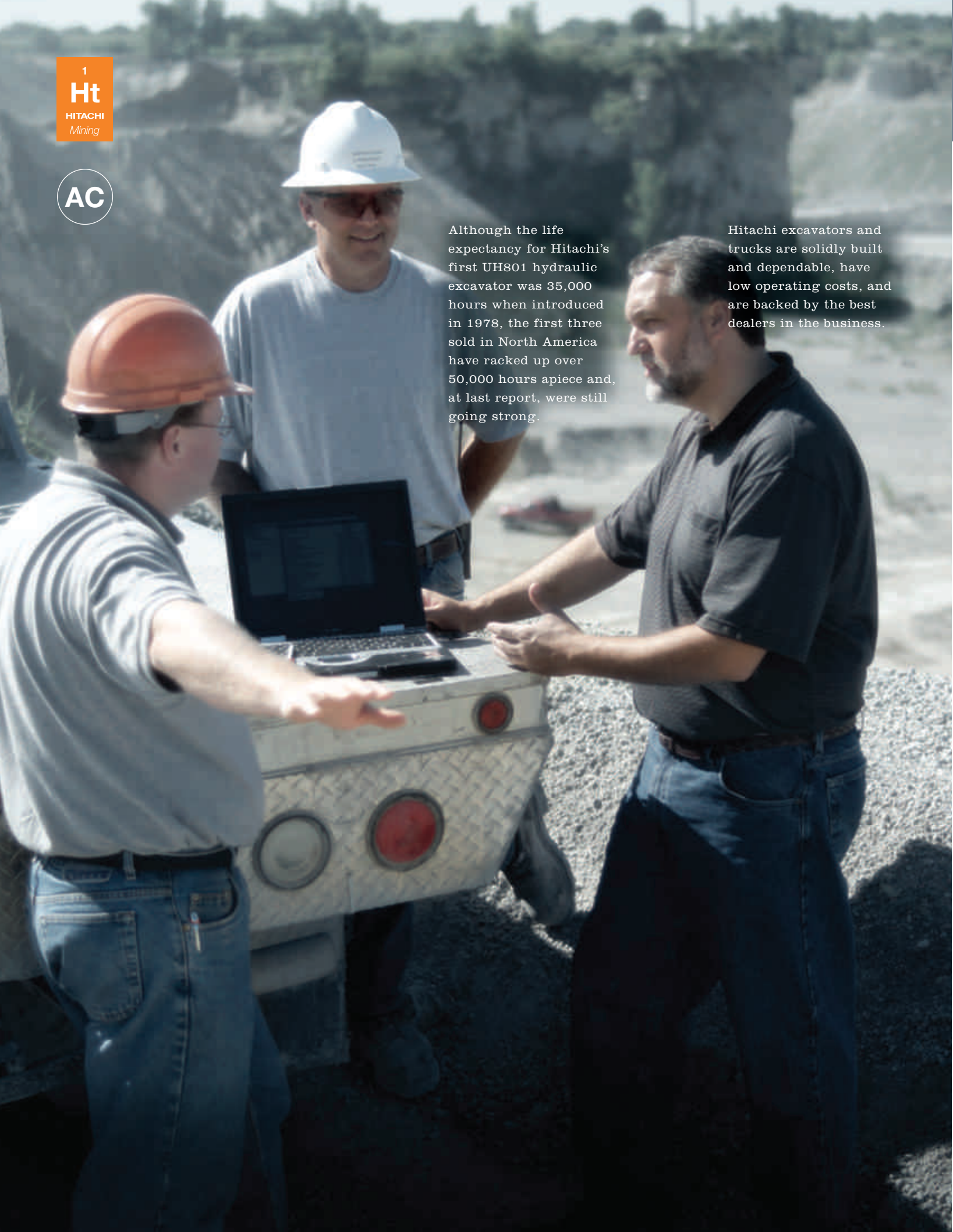
Better hydraulics

The hydraulic system uses two, three-stage, double-acting cylinders. Hydraulically cushioned hoist cylinders slow body descent to a crawl over the last several inches of travel, minimizing wear and tear on components.

A separate reservoir and tandem-gear pump connects to a four-piston, electronic pilot-controlled hoist valve. An electronic hydraulic controller is mounted to the operator's seat.

Closely spaced horizontal stiffeners minimize stress and maximize the stability of the body.

The large EH5000 has an amazingly tight turning circle for its size — just 93 feet 4 inches.



Although the life expectancy for Hitachi's first UH801 hydraulic excavator was 35,000 hours when introduced in 1978, the first three sold in North America have racked up over 50,000 hours apiece and, at last report, were still going strong.

Hitachi excavators and trucks are solidly built and dependable, have low operating costs, and are backed by the best dealers in the business.

EXPERIENCE WHERE IT MATTERS MOST. IN THE PIT.

Hitachi introduced the first 180-ton UH801 hydraulic excavator in 1978. Up until that time, hydraulic excavators showed great promise on paper, but failed to deliver in the field. Hitachi excavators, however, performed reliably and at low operating costs. In short order, the UH801 became the top seller in its class. The UH801 was replaced by the EX1800 in 1987, which in turn, was replaced by the EX1900 in 2002.

The rigid-frame truck legacy

In 2000, Hitachi acquired Euclid, the legendary truck manufacturer. In the 1930s, Euclid's very first self-powered off-highway trucks were used in the Mesabi Iron Range and at Boulder (now Hoover) Dam in Arizona. They proved to be so rugged and indestructible, yet easy to maintain, that "Eucs" became the standard of the industry.

Solid dealer support

Hitachi dealers are among the best in the world. They are committed to providing you with the best machine for your job, then making sure that machine lives up to your expectations. Hitachi dealers can provide comprehensive, competitively priced service for your Hitachi excavators or trucks, either as part of a guaranteed availability package or on an as-needed basis. They're your source for expert advice on improving production and reducing operating costs, as well as training for operator and mine mechanics.

10,000 parts

All Hitachi dealers stock wear parts and maintenance items, as well as critical components — those parts that can cause a machine to go down and can be replaced in two hours or less. Through the John Deere distribution system, Hitachi dealers can quickly access tens of thousands of strategically located parts depots.

Hitachi also offers remanufactured components for a fraction of the cost of brand new. Each is remanufactured to OEM specs with certified parts and is tested for leaks and performance. Mining components are backed by a one-year/unlimited-hour warranty for parts and labor, when dealer installed.

OUR NAME LOOKS GOOD ON ORANGE.

It's our color. It's our brand. New product support initiatives and strengthening our dealer network is more proof that we are as passionate as ever about this industry. We are dedicated to building the best equipment in the world and keeping them painted Hitachi Orange.

HITACHI

www.hitachimining.com

Specifications and design subject to change without notice.

DKAACTRHT Litho in U.S.A. (05-03)