

AMV FL70 HYBRID FRONT LOADER EXCAVATOR

CUSTOMER:	AMV AS - Andersen Mek Verksted
EMISSIONS CLASS:	Stage 5
POWER TAKE-OFF:	Twin Disc RC314
MAX POWER:	340 kW (456 hp) per ISO 9249
ELECTRIC MOTOR POWER OUTPUT:	250 kW (335 hp) 50 Hz
STANDARD BUCKET SIZE:	5.3 m ³
QUICK-COUPLING TYPE:	AMV1
PROTECTION CAGE:	FOPS approved frame level 2
LOCATION:	Norway



SITUATION



Twin Disc supported the development of the Hybrid FL70, designed to tackle the demanding conditions found in quarries, tunnels, and mining environments. Engineered for unloading rock masses and cleaning rock faces, the FL70H stands out for its ability to operate effectively in areas with restricted cross-sections and limited overhead clearance. It is powered by a Stage V emissions-compliant Deutz or Scania diesel engine rated at 340 kW, and a 250 kW electric motor connected via a large cable reel to 1000V power grids. This dual-mode capability, combined with quick-coupling features for easy tool changes, gives the FL70H the flexibility required for a wide range of rugged applications.

SUPPORT A CUSTOMER WITH CHALLENGING OPERATING CONDITIONS

CHALLENGE



Developing a high-performance machine that could function efficiently in spatially limited and technically complex environments poses design and engineering challenges. The machine needed to operate in underground and tunnel environments with tight clearances and deliver powerful, reliable performance using either diesel or electric power. Another challenge involved integrating a drivetrain capable of supporting reverse power flow—essential for enhanced control, especially in hybrid applications where power direction and distribution can shift dynamically. The solution had to be robust, energy-efficient, and fully adaptable to a high-stakes infrastructure setting.

DELIVER A ROBUST SOLUTION TO INCLUDE REVERSE POWER FLOW

SOLUTION



To address these requirements, Twin Disc supplied its advanced RC314P1 units, designed for the “back drive” capability. This unique feature allows the PTO’s output shaft to spin when the diesel engine is disengaged. For the application, we created an isolated lubrication circuit for the main bearing, allowing reverse power flow within the drivetrain system, significantly enhancing the machine’s control and versatility in hybrid operating conditions. The key benefit for the customer was a dramatic 60% reduction in downtime, which significantly improved overall serviceability and operational efficiency. The tailored drivetrain supports seamless transitions between diesel and electric power sources while maintaining optimal torque and responsiveness. It represents a significant technical achievement and highlights Twin Disc’s commitment to innovation and supporting next-generation, energy-efficient machinery with highly specialized drivetrain solutions.

TWIN DISC RC314 POWER TAKE-OFFS,
UNIQUELY DESIGNED WITH
“BACK DRIVE” CAPABILITY

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Twin Disc worked closely with our team to develop a solution that addressed our exact operating requirements, from constant lubrication needs to challenging backpressure conditions. The result has been a robust, maintenance-friendly clutch system that has given our FL70H excavator a new and more reliable life.

Ole Ingvar Skregelid
Project Manager

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RESULT

The FL70H, incorporating Twin Disc's technology, was successfully deployed on Norway's largest road construction project—the Skanska E10 project. Key results include:



- Delivery and deployment to a high-profile infrastructure site with complex engineering demands.
- Integration into a project spanning 82 kilometers of new and upgraded roads.
- Support for constructing 27 kilometers of rock tunnels across seven different sections.
- Contribution to building multiple bridges ranging from 20 to 200 meters in length.
- Enhanced project capabilities in areas requiring pedestrian and cycling infrastructure, rest areas, and improved public transport access.

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TWIN DISC POWER TAKE-OFFS



The RC Series delivers dependable, hydraulically actuated dry-clutch performance for demanding industrial applications. Engineered for straightforward serviceability and smooth system integration, these PTOs support both side-load and in-line configurations.

Key features:

- Hydraulic clutch actuation for precise and consistent engagement
- Self-adjusting clutch mechanism minimizes maintenance requirements
- Oil-lubricated tapered roller bearings ensure long service life
- No pilot bearing required, reducing complexity and wear points
- Advanced control options enable smooth startups on high-inertia loads
- Choice of molded, composite or sintered clutch plates to match application needs
- Fully compatible with side-load and in-line installations
- Supplied with a hydraulic valve and display options for enhanced operator control