

Application Spotlight



Converting Waste Lignin into Bio-Based Products

Nova Biochem is a U.K.-based firm that develops sustainable alternatives to traditional petrochemicals using waste streams from paper pulping and agricultural manufacturing. They have been working towards turning pulping industry waste, called lignin, into bio-based chemicals to reduce CO₂ emissions from burning lignin and current manufacturing practices. The manufacturing process required high-pressure water to break down the lignin materials, which led Nova Biochem to contact Cat Pumps U.K. for its expertise in providing specialized pumping solutions.



What is Pulping?

The pulping process converts lignocellulosic materials into pulp, an intermediate paper-making material. During the process, a solid waste called lignin is removed through mechanical paper pulping. The contents consist mainly of bark and wood residues from debarking, washing and screening of chips, primary sludge and ash from energy production and biological sludge. Nova Biochem transforms lignin into bio-based chemicals using a water-based cleaning process. This process aids in converting waste lignin into bio-based chemicals and building blocks. Their process is based on hydrothermal chemistry and requires high-pressure water, allowing them to save 10 kg of CO₂ for every 1 kg of processed waste. This method reduces CO₂ emissions from lignin burning and lowers other emissions associated with current manufacturing practices.

Nova Biochem's enthusiasm about their technology's potential to create a cleaner, more sustainable future led them to choose Cat Pumps for a crucial role in their extensive project. Cat Pumps (U.K.) was a natural fit as a market leader in high-pressure pumping systems. Their high-quality pumps and wealth of technical knowledge in building custom pumping systems made them the ideal vendor. Nova Biochem awarded Cat Pumps (U.K.) an order for a custom high-pressure pump package, solidifying their collaboration in advancing a sustainable waste conversion solution.

Cat Pumps (U.K.) Nova Biochem customer says:

“We had fantastic support from Cat Pumps, they answered all our questions and we derived the best option given our time constraints. It was certainly a very good experience and we feel confident that if technical help is required we will get it.”

Application Specifications

Model No. E24519

Cat Pumps Model	781
Pump Pressure	3916 psi / 270 bar
Pump Flow	3.96 gpm / 15 lpm
Fluid	Water
Temperature	Ambient
Motor	11 kW 1000 rpm 400/3/50 IP55 TEFC B35



World Leader in Triplex Reciprocating High-Pressure Pumps and Related Products

MARKETS	APPLICATIONS		
Industrial Cleaning	Pressure Cleaning	Water Blasting	Conveyor/Belt Cleaning
	Sewer Jetting	Paint Preparation	Tank Cleaning
	Carpet Cleaning	Screen Cleaning	Concrete/Asphalt Cleaning
	Hood Vent Cleaning	Surface Cleaning	Conveyor Belt Cleaning
Process Industries	SWRO	Biodiesel	Reverse Osmosis
	Live Wire Insulator Washing	Water / Foam Injection	Liquid CO ₂
	Homogenizing	Lumber Conditioning	Lipid Extraction
Power Generation	Gas Turbine Fogging	Condenser Tube Cleaning	Live Wire Insulation Washing
Manufacturing	Machine Tool Coolant	Central Cleaning System	Water Hydraulics
	Humidity Control	DI Water Wash	Water Deburring
	Electrical Discharge Machines	Hydrostatic Testing	Dust Suppression
Government/Military and Fire	Hydro Excavating	Military Vehicle Wash	UHP Firefighting Equipment
	Street Sweeper	Jetting	SWRO
Vehicle Wash	Car Wash	Mass Transit Wash	Auto Detailing
	Truck Wash	Train Wash	Heavy Equipment Wash
Agriculture	Agriculture Cooling	Odor Control	Green House Misting
Food Process	Sanitizing	Extrusion – Butter	Homogenization
	Poultry Evisceration	Frozen Food Cutting	Fish and Seafood Processing
Mining	Heavy Equipment Wash	Dust Suppression	Seal Gland Flushing
Misting	Temperature Control	Humidification	Fire Misting
	Visual Effects	Odor Control	Mist-Scaping
Oil and Gas	Waste Water Re-Injection	Enhanced Oil Recovery	Biodiesel
	BOP Accumulator Charging	Gas Turbine Fogging	Chemical Injection
	Triethylene Dehydration	Oil/Gas Transfer	Water Blasting

PUMPS



- Flow: 0.13 to 240 gpm (0.49 to 908 lpm)
- Pressure: 100 to 10,000 psi (7 to 689 bar)
- Materials: Brass, Nickel Aluminum Bronze, 304 and 316 Stainless Steel, Duplex Stainless Steel
- Drives: Electric, Engine, Hydraulic, Pneumatic

CUSTOM POWER UNITS



By selecting Cat Pumps for your next pumping system, the time and expense of designing, multiple source buying, fabrication and testing is eliminated.

With thousands of installations running around the world, Cat Pumps is the supplier of choice for custom pumping systems.

ACCESSORIES



Cat Pumps offers a wide range of system accessories that meet the same quality standards as its pumps.

Demand genuine Cat Pumps accessories.



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