From turbo revolution to HybriPower. And beyond.

Volvo Construction Equipment has been in business longer than the diesel engine. But our guiding principles — quality, safety and environmental care — haven’t changed since the day we started out. And while it’s safe to say that reducing fuel consumption and emissions is our industry’s toughest challenge today, we’ve been pioneering environment-friendly progress for decades.

That’s why it’s only natural that Volvo Construction Equipment is among the first to introduce an even more efficient way to use diesel fuel and to reduce emissions: HybriPower.

Our premier product with this groundbreaking technology is the brand new Volvo L220F Hybrid wheel loader: it’s a machine that will soon be on the market.

Pioneering engineering

The Volvo L220F Hybrid is the latest logical and essential step in a series of developments that began in 1954 when we introduced the world’s first turbo diesel engines for trucks. A major milestone, it was an intelligent way of drastically increasing engine efficiency and lowering emissions.

Since then, we’ve taken the diesel engine to the next level — and then on to the next — consistently remaining at the forefront of efficient ‘green’ technology. For example, by 1974 we’d introduced low-emission engines in our wheel loaders. In 1993, we set a new industry standard with the revolutionary Volvo D12 engine with direct injection. And for the last 15 years, the collective strength of the Volvo Group has been focused on developing Volvo Hybrid solutions. And on other pioneering eco-friendly initiatives.

Suffice it to say: we intend to stay ahead.

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Parallel hybrid – a reliable solution

On this machine, the path we’ve chosen to bring efficient and reliable hybrid technology to our customers is through parallel hybrid technology. That means that our robust state-of-the-art D12D engine is supported by an electric motor for driving backward and forward. The idea is to add power when it’s needed most – such as at the moment of start-up and at breakout – and to regenerate power during normal operations. And also to minimize idling, which normally accounts for up to 40% of a wheel loader’s running time. So the diesel engine can operate at lower revs, which saves fuel, and it turns off automatically when it’s not needed. The electric motor, on the other hand, gets its power from the batteries. And during normal operation, it works as an electrical generator to recharge those batteries.

Volvo power

The Volvo Hybrid solutions were developed collectively by the Volvo Group. So our customers have access to a thoroughly vetted, high-quality hybrid product that can make a real difference for the environment. Not soon. Not tomorrow. Right now.

There’s more in there

In typical operations, the Volvo L220F Hybrid offers 10% lower fuel consumption than the admittedly fuel-efficient all-diesel Volvo L220F. Plus, thanks to the extra output delivered by HybiPower, productivity is higher too. These two facts together mean a lot for your construction equipment operations. And don’t forget: The Volvo L220F Hybrid represents just the first generation of HybiPower in construction equipment. There’s a whole lot more on the way…

Relax, it’s still a Volvo.

The only kind of technical innovation we’re interested in is the kind that results in safe, cost efficient and problem-free operation that helps you do a better job. Day after day. Year after year. So you can rest assured that with the Volvo L220F Hybrid, you’re still getting a Volvo wheel loader. And you can still count on everything that means for operator safety, product quality and uptime. The only difference? Now you’ll get more out of every drop of diesel you use. While you take better care of the environment. Because just like every Volvo, the Volvo L220F Hybrid has more care built right in.

TRUST

noun: — complete confidence in a person, organization, plan, etc. — to rely on.
The first generation of HybriPower is a parallel hybrid system. Simply put, that means that diesel power and electric torque cooperate to make the most of your fuel. This alone lets the Volvo L220F Hybrid offer 10% lower fuel consumption in typical operations than its all-diesel brother, the fuel efficient Volvo L220F.

HybriPower – built with green intelligence

Hybrid technology isn’t the whole reduced-emissions story. You see, we’ve combined HybriPower with other innovative technology, so there’s even more to gain. Take our V-ACT engine technology, for example, or the use of bio-diesel and state-of-the-art Volvo hydraulics with built-in intelligence. Together with other smart features like our patented TP-linkage and what’s probably the best operator environment around, these things all do their part to deliver efficient operations and lower emissions.

Every single individual measure adds to a holistic total solution that lets you run your operation with lower costs for fuel and less impact on the environment.

It takes more than HybriPower to create harmony.

There’s no doubt that introducing hybrid technology in construction equipment is an efficient way to reduce fuel consumption and lower emissions. But to do it without sacrificing productivity, uptime or safety in operations takes a manufacturer with market-leading experience. It takes Volvo. Plus, in the Volvo L220F Hybrid, reducing emissions is just as much about the rest of the wheel loader as it is about HybriPower.
This is HybriPower.

More power, lower revs, less idling and less fuel – that’s what HybriPower is all about. By combining diesel power with electric torque, we let the electric motor support the diesel engine at start-up and acceleration and during breakout. Which saves fuel – up to 10% – and increases productivity at the same time.

How it works.

Start and take off
The electric motor/generator rapidly starts the diesel engine. If needed, the electric motor gives the diesel engine a boost, enabling faster take-off at lower revs.

Breakout
The electric motor supports the diesel with a boost in power and torque, enabling high breakout force at lower diesel engine revs.

Idling
To reduce fuel consumption and emissions, the diesel engine is automatically turned off to minimize idling with maintained productivity. The batteries run the electrical systems such as the lights and climate control system for up to one hour.

Charging
The batteries are charged by the electric motor/generator during normal operation. Without suppressing productivity.

Torque when you need it most
The electric motor generates high torque, right from start and provides a boost of torque to the diesel engine.

Increased torque

Maximum torque

Electric motor and diesel engine

Power electronic device for electric motor

Batteries – charged during normal operation without suppressing productivity

Climate control system with electric compressor and fan

Electric system components – HybriPower control unit, power electronics and auxiliary devices

Automatic Power Shift transmission

Volvo D12D engine with V-ACT technology

Electric motor/generator with 700 Nm peak torque and 50 kW peak power

Electro Drive engine with ISG technology

Power electronic device for electric motor
An inside look at the Volvo L220F Hybrid.

Our first ever hybrid wheel loader is a Volvo through and through. In addition to breakthrough hybrid technology, the Volvo L220F Hybrid is loaded with the kind of useful innovations that customers have come to expect from Volvo. Innovations that make your life easier and safer—and help take more and better care of the environment.

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<td>Volvo Steering – smooth and precise</td>
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<td>Volvo axles – long service life, high stability and less maintenance</td>
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<th>Environmental Care</th>
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<td>Volvo Care Cab – top-notch productivity and safety in operation</td>
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**Specifications Volvo L220F Hybrid**

<table>
<thead>
<tr>
<th>Engine Volvo D12D LB E3</th>
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<tbody>
<tr>
<td>Max power at, r/s (r/min) 26,3 (1600)</td>
</tr>
<tr>
<td>SAE J1995 gross, hp (kW) 350 (261)</td>
</tr>
<tr>
<td>ISO 9249, SAE J1349 net, hp (kW) 347 (259)</td>
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<tr>
<td>Electric motor, peak torque, ft lbs (Nm) 516 (700), peak power, hp (kW) 67 (50)</td>
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<tr>
<td>Breaker force, lbf (kN) 50,470* (224,5*)</td>
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<tr>
<td>Static tipping load at full turn, lbs (kg) 45,750* (20,750*)</td>
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<tr>
<td>Bucket capacity, yd3 (m3) 5.9–18.3 (4.5–14.0)</td>
</tr>
<tr>
<td>Log grapples, ft2 (m2) 18.3–43.1 (1.7–4.0)</td>
</tr>
<tr>
<td>Tires 29.5 R25, 875/65 R29</td>
</tr>
<tr>
<td>Operating weight, lbs (t) 66,140-77,160 (31,0–35,0)</td>
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*Bucket: 7.1 yd3 (5.4 m3) straight edge with bolt-on edges, tires: 29.5 R25 L4, standard boom.
Volvo Construction Equipment is different. Our machines are designed, built and supported in a different way. That difference comes from an engineering heritage of over 175 years. A heritage of thinking first about the people who actually use the machines. About how to help them be safer, more comfortable, more productive. About the environment we all share. The result of that thinking is a growing range of machines and a global support network dedicated to helping you do more. People around the world are proud to use Volvo. And we’re proud of what makes Volvo different – **More care. Built in.**

Not all products are available in all markets. Under our policy of continuous improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.