

A New Café' Racer

Just when everyone thought that the two-stroke road bikes had fallen by the wayside, an independent manufacturer has rekindled the genre from the lifeless! The two stroke café racer style Langen is the UK independent manufacturer, Langen Motorcycles, brainchild of its CEO, Christofer Ratcliffe.

Taking more than a year of development, testing and numerous late nights, he and his team have just unveiled the prototype motorcycle.

The fittingly named 'Langen Two Stroke' is power-driven by a 250cc two-stroke engine that adheres to current emission laws.



By combining innovative engine technology with lightweight construction and high-end performance components they've created what may be considered to be the quintessential off-the-shelf cafe racer.

Christofer Ratcliffe's Mother was the first female dispatch rider in Manchester at the age of 17 riding a Honda CD200. His Father worked at Cotton Motorcycles fabricating frames and was riding from the early 80s. At the age of 17, Christofer's first road bike, a Honda CB100N, arrived on a trailer ready to be rejuvenated back to life. So this early indoctrination to motorcycles meant that whilst growing up, most weekends were filled with bikes whether it was riding pillion, time in the garage or race weekends. Resulting in being hooked for life. Christofer studied Automotive Design and Engineering at Huddersfield University. Because Motorcycle jobs were quite hard to find, after some time as a Development Engineer at TVR and few years spent in the oil and gas industry. In 2010 he spotted a role as a design engineer at CCM Motorcycles that was advertised only 10 miles from where he lived, needless to say, he got right on his bike and was off to visit with Austin Clews with CV and a tank of enthusiasm, he was given a job.

Christofer, having always had an underlying desire to create something completely new and to write a new chapter in British Motorcycle history, he took the opportunity over a 10 year period, when he grew a grand team and launched a range of unique motorcycles with CCM. Having the responsibility and flexibility as Chief Design Engineer during that time he was able to soak up so much information about motorcycle design and the motorcycle industry. Christofer felt like it was a good time to hand over the reins and start a new company to develop a motorcycle completely different from anything else. So began Langen Motorcycles.

The First sketches started once Christofer had left CCM. Some of the design elements had been bubbling around his head for a few years and it was good to see them come to life.

Langen Motorcycles are trying to keep as much manufacturing as local as possible. Apart from the Vins Motors engine and Ohlins forks the design, engineering and build are all done in house, which is in Wigan, Greater Manchester, UK. There are a range of local partners for fabrication and machined components; Langen Motorcycles are currently building a composite workshop, which will enable them to produce all of their own carbon fibre components. The aim is to be as self-sufficient as possible so that they have everything under their own control, including quality control.

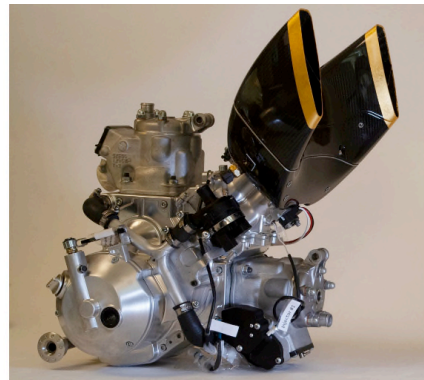
The most important feature when it comes to emissions is the injected lubrication system controlled by a secondary ECU, so no more premix fuel! In a world limited by strict emissions controls this is vital to allow a two-stroke engine to comply.

The engineers at Vins Motors have developed the patented an engine that complies with modern emissions standards. It does this by utilising things like carbon fibre reed valves, electronic exhaust valves and fuel injection.

The beauty of this fuel-injected engine is that the torque delivery is very strong and smooth from idle all the way up to 10,500 rpm, at which point it hits the PowerBand and the scenery goes by very quickly! The UK spec bike should produce over 75BHP and 45Nm of torque.

As for the rest of the bike's performance, the design philosophy, aside from being good-looking, it is all about simplification and the reduction of the weight of the motorcycle. The chassis and swing-arm are built from a lightweight; large diameter aluminium tubing with bonded machined connection points. All of the bodywork is constructed with carbon fibre, including the fuel tank. The prototype machine has weighed in at just 114kg, which the company are very pleased with. All of the components have been optimised for weight and CNC machined. The brakes are twin radial HEL callipers with 320mm discs born from the racetrack so the bike should stop as quickly as it goes. The front forks are Ohlins right way up to give it a classic look and to keep the weight down. The rear shocks are bespoke and have been made by Ktech using their expertise in Superbike race suspension.

The aesthetic is very much cafe racer and naked bike but the ergonomics are a lot more user friendly and are fully adjustable.



The initial design brief was a twin shock, 2 stroke road bike that was easy to ride, lightweight, comfortable with adjustable ergonomics with simplicity, top-end brakes and suspension components to compliment the geometry. The custom ECU map and fuel injection take care of the easy riding two-stroke across the rev range.

The V-twin engine configuration meant that the natural and most efficient place for the upper exhaust stinger was straight down the middle, this already lent itself towards building two smaller rear shocks into the design rather than one larger shock to one side of the bike, the twin-shock element was fun. The position and angle of the shocks give a subtle visual hardtail line from the headstock down to the rear axle – reminiscent of the 1920s and 30s triangulated frames. Ktech are experts in this area and produced some custom damping and progressive springs for the bike. Fitting the twin shocks in this way also gives a symmetrical twist forces on the swing-arm. Making the computational analysis nice and easy and gives a predictable feel when cornering on the bike.

The manufacturing techniques that Langen Motorcycles employ have a nice blend of modern and traditional build techniques. The chassis, for example, having tubes that are CNC bent with laser cut profiles are then perfected and hand welded to produce the intricate forms. CNC machining plays a big part in a lot of the components to achieve some of the complex shapes and dimensional tolerances. The carbon fibre fuel tank was a complex engineering challenge, which was then hand-laid. Rather than paint some of the detail on the bodywork it was decided to apply gold leaf gilding, which is an antiquated craft and needs someone skilled and dextrous to achieve the level of quality and patina that really sets the bike off.

The Langen Two Stroke is bespoke and designed in the Langen Motorcycles workshop. Where they couldn't manufacture all of the components, therefore they worked with the producers to specify and customise parts such as suspension, brakes, wheels and engine. Although they quickly realised that it was impossible to achieve exactly what they wanted with off the shelf components they did it the hard and most rewarding way.



Customers can personalise their Langen Two Stroke as pretty much anything goes. The beauty of maintaining a hand-built limited run, is that each bike can be customised for the individual owner. Colours of anodising, paint, gilding or even composite sheets can be changed. Different suspension components, carbon fibre wheels, upholstery changes, you name it. This is the part that Christofer is looking forward to the most as it is something that he has always got a kick out of. To see people take a stage and modifying it to suit their own performance,

ergonomic needs and aesthetic style is what keeps life interesting. They are looking forward to some challenges ahead!

The prototype was due to be launched at Salon Privé, the UK's most exclusive Concours d'Elégance classic motor show, at Blenheim Palace on the 22nd September 2020.

It's been tough this year as all of the traditional motorcycle and motorsport shows have been cancelled. Christofer is very thankful to be involved with this event alongside some awesome historic machines. They are working hard to organise some other private events for later in the year so people can see the bike in the flesh and really appreciate it, hear it, smell it and ride it!

All being well, the delivery of finished bikes from Summer 2021 at a rate of around 2 per week is envisaged.

Will the Langen Two Stroke be available to international customers?

Once they get into the build phase of the 100 UK bikes they will already be developing a version of the bike that will be in conformance for other countries. These bikes will need to include ABS and a few other features that they have managed to work around for UK registrations. The final countries haven't been decided yet until they see what the demand is like in each area. The interest is very high in Europe, US and Japan so far. They aim to build the type-approved bikes from 2022 and limit the numbers to 150 builds.

Along with everything Chris covered above each Langen Two Stroke comes with a 6-speed gearbox, a multidisc wet clutch, spoke tubeless rims and Dunlop TT100 GP radial rubber. The bikes lighting is all LED with a halo style headlight in the front. The 249.5cc 90-degree v-twin produces 75 bhp and has a top speed of 140+ mph (225+ kph). With a total weight of just 114kg that equates to an eye watering 660bhp per ton and it's 100% street legal.



Priced at £28,000 (approx US\$36,000) the very limited first edition of the Langen Motorcycles Two Stroke is available to reserve on their website now.

An interesting development and innovation
I hope you all enjoyed the read
Rob