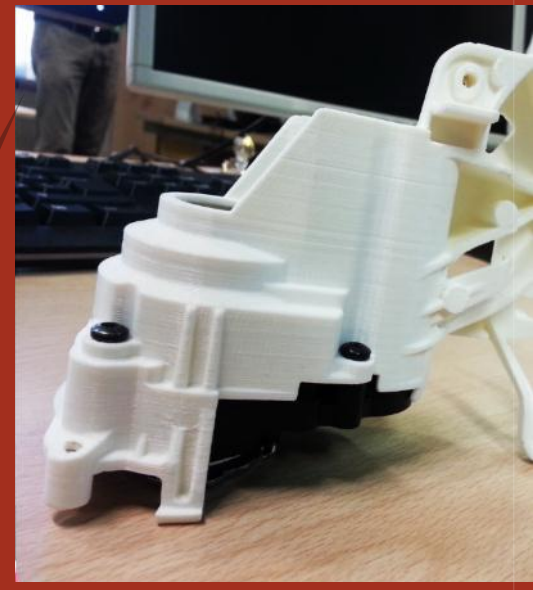
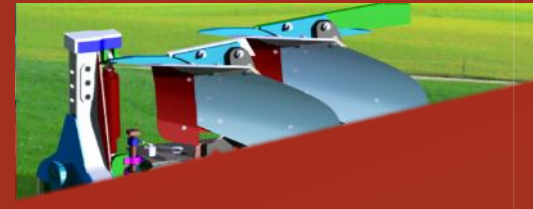
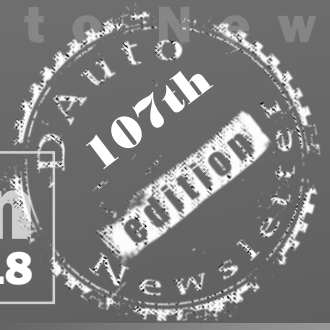
JULY

2018

DAuto Newsletter







Edition 2018

"Design engineers turn designs into reality. Without them, a great idea but nothing more than,... well, a great idea."

June 2018 refresh

- ✓ *Porsche 911 Speedster Concept*
- ✓ *This Supercomputer Can Calculate in 1 Second What Would Take You 6 Billion Years*
- ✓ *Stantec To Lead Environmental Assessment For Offshore Maryland Wind Farm*
- ✓ *Denver International Airport Passenger Bridge Celebrates 25th Anniversary*
- ✓ *NASA Challenge Team Advances to the Top 10*
- ✓ *Volvo reveals US-built S60 sedan*
- ✓ *Wireless 'RoboFly' Looks Like an Insect, Gets Its Power from Lasers*
- ✓ *Former NASA Engineers Building Real-Life Underwater Transformer*
- ✓ *Hyundai Grandmaster Concept previews full-size SUV*

Edition
July 2018

Goodwood 2018: the Michelin Supercar Paddock

At Michelin's stand visitors of the Goodwood Festival of Speed will be have the chance to see an impressive line-up of exotic supercars.

Brabham BT62

Brabham's debut hypercar – the all-new BT62 is a track-only, rear-wheel-drive two-seater powered by a mid-mounted, naturally-aspirated 5.4-litre V8 that churns out 700bhp, while carbon-fibre body panels make for a 972kg kerbweight and a power-to-weight ratio of 720bhp per tonne – 60bhp more than its McLaren Senna rival.

Apollo IE

The Apollo Intensa Emozione (intense emotion in Italian)has a primary goal of delivering exactly that without compromise. The track-only supercar features a 6.3-liter V12 engine that delivers 769bhp, a total weight of 1,250kg and a 1,350kg downforce at 186mph.

Boreas

The bold Boreas hypercar was presented as a prototype on the Michelin Main Stand at Goodwood Festival of Speed last year. Maker DSD Design & Motorsport has fitted the car with a hybrid setup that enables it to reach a top speed of 263mph and a 0 to 0.62mph tome of just 2.8 seconds.

Ferrari Portofino

Unveiled in 2017, the Ferrari Portofino combines a two-box fastback silhouette and a dynamic design with exciting performances: 0-62mph in just 3.5 seconds and from 0-124mph in 10.8 seconds.

Edition
July 2018

Goodwood 2018: the Michelin Supercar Paddock

W Motors Fenyr Supersport

The successor to the Lykan Hypersport, W Motors' new Fenyr Supersport claims a 0-62mph time of 2.7 seconds and a 245mph top speed. A limited amount of cars will be made with a list price of £1.4million.

Porsche 911 Reimagined by Singer Vehicle Design – Dynamics and Light weighting Study

The latest offering from Porsche 911 specialists Singer, the 'Dynamics and Light weighting Study' will have its global premiere and dynamic debut at the Goodwood Festival of Speed. Developed in conjunction with Williams Advanced Engineering and a host of other specialist suppliers (including Michelin, who designed bespoke tires), the DLS is the most extreme version of Singer's highly modified and restored 911s, with the 964's original 243bhp 3.6-litre flat-six engine tweaked to a 4-litre unit with four-valve heads and 493bhp. Inspired by the original lightweight 911R, the DLS is intended to be the ultimate air-cooled 911.

Lotus Evora GT430

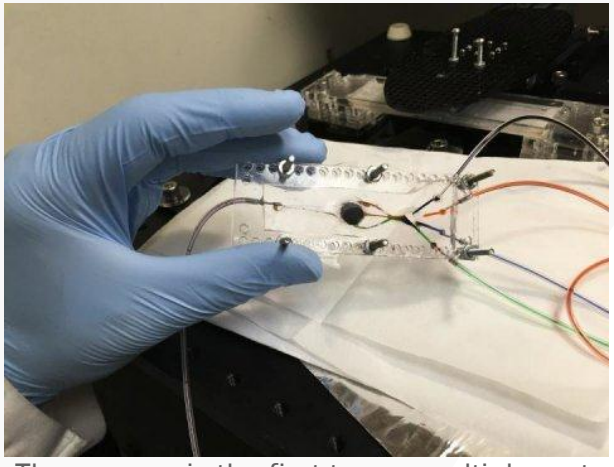
The fastest road-legal model Lotus has ever made, the Evora GT430 will contribute to celebrate the marque's 70th anniversary.

Koenigsegg Agera RSN

This ultra personalized, one-off hyper car from Koenigsegg, is one of the fastest road legal cars in the world, since it is equipped with the same power plant as the One:1 – featuring a 1 Mega Watt / 1.360 hp engine.

Edition
July 2018

New 3D printer can create complex biological tissues



The process is the first to use multiple materials for automated stereo lithographic bio printing -- an advance over conventional stereo lithographic bio printing, which only uses one type of material. While the demonstration device used four types of bio-inks, the study's authors write that the process could accommodate as many inks as needed.

The researchers first used the process to make simple shapes, such as pyramids. Then, they made complex 3D structures that mimicked parts of muscle tissue and muscle-skeleton connective tissues. They also printed shapes mimicking tumors with networks of blood vessels, which could be used as biological models to study cancers. They tested the printed structures by implanting them in rats. The structures were not rejected.

Scientists have developed a specially adapted 3D printer to build therapeutic biomaterials from multiple materials. The advance could be a step toward on-demand printing of complex artificial tissues for use in transplants and other surgeries.

A UCLA Samueli-led team has developed a specially adapted 3D printer to build therapeutic biomaterials from multiple materials. The advance could be a step toward on-demand printing of complex artificial tissues for use in transplants and other surgeries.

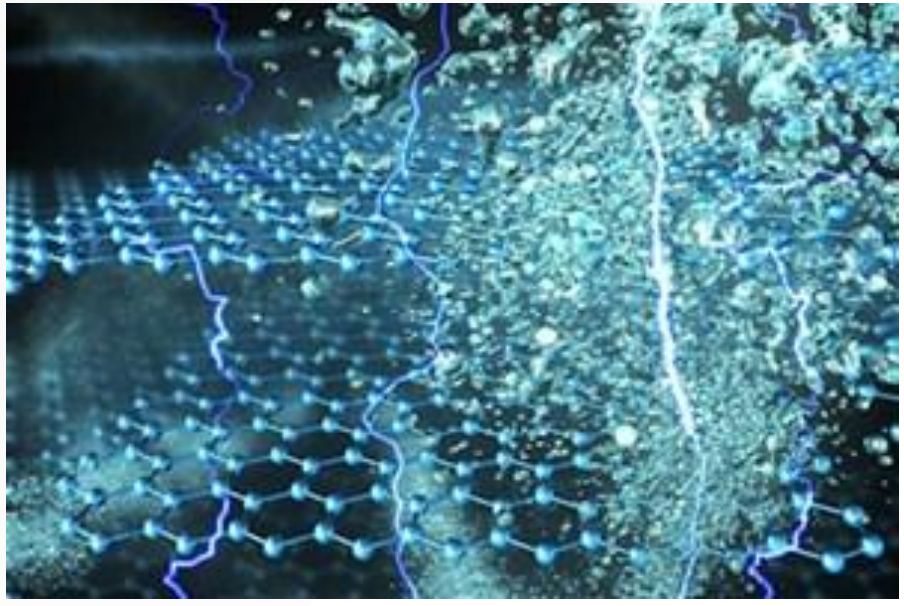
"Tissues are wonderfully complex structures, so to engineer artificial versions of them that function properly, we have to recreate their complexity," said Ali Khademhosseini, who led the study and is UCLA's Levi James Knight, Jr., Professor of Engineering at the UCLA Samueli School of Engineering. "Our new approach offers a way to build complex biocompatible structures made from different materials."
The study was published in Advanced Materials.

The technique uses a light-based process called stereo lithography, and it takes advantage of a customized 3D printer designed by Khademhosseini that has two key components. The first is a custom-built microfluidic chip -- a small, flat platform similar in size to a computer chip -- with multiple inlets that each "prints" a different material. The other component is a digital micro mirror, an array of more than a million tiny mirrors that each moves independently.

The researchers used different types of hydrogels -- materials that, after passing through the printer, form scaffolds for tissue to grow into. The micro mirrors direct light onto the printing surface, and the illuminated areas indicate the outline of the 3D object that's being printed. The light also triggers molecular bonds to form in the materials, which causes the gels to firm into solid material. As the 3D object is printed, the mirror array changes the light pattern to indicate the shape of each new layer.

Edition
July 2018

Graphene smart membranes can control water



Researchers at The University of Manchester's National Graphene Institute (NGI) have successfully controlled water flow by sending an electrical current through graphene oxide membranes. The membranes can even be used to completely block water from passing through when required. This research is claimed to open an avenue for developing smart membrane technologies and could revolutionise the field of artificial biological systems, tissue engineering and filtration.

The team, led by Professor Rahul Nair, embedded conductive filaments within the electrically insulating graphene oxide membrane. An electric current passed through these nano-filaments created a large electric field which ionises the water molecules and thus controls the water transport through the graphene capillaries in the membrane.

Prof Nair said: "Developing smart membranes that allow precise and reversible control of molecular permeation using external stimuli would be of intense interest for many areas of science; from physics and chemistry, to life-sciences. "

According to the researchers, this achievement is a step change because of its similarity to several biological processes where the main stimuli are electrical signals. Controlled water transport is key for renal water conservation, regulation of body temperature and digestion. Therefore, it can be used to develop artificial biological systems and advanced nanofluidic devices for various applications.

Previously, the research group has demonstrated that graphene oxide membranes can be used as a sieve to remove salt from seawater for desalination alternatives. Last year they also showed that the membranes could remove the colour pigment from whisky without affecting its other properties.

Dr Kai-Ge Zhou, lead researched on the project said: "The reported graphene smart membrane technology is not just limited to controlling the water flow. The same membrane can be used as a smart adsorbent or sponge. Water adsorbed on the membrane can be preserved in the membrane even in desert conditions if a current is applied. We could release this water on demand by switching the current off."

The University of Manchester is preparing to open the £60m Graphene Engineering Innovation Centre (GEIC) to complement the NGI. The GEIC will provide scale-up of the membranes and pilot-scale testing capability.

Edition
July 2018

Rolls-Royce is developing a flying taxi propulsion system

Ahead of the Farnborough Airshow this week, Rolls-Royce has announced it has designed a propulsion system for a flying taxi which it says could take to the skies in the early 2020s.

The British firm said it had drawn up plans for an ‘electric vertical take-off and landing’ (EVTOL) vehicle, which could carry four to five people and could travel at speeds of up to 250 mph for approximately 500 miles.

“Rolls-Royce is actively exploring a range of possible markets and applications for electric and hybrid electric flight,” said Rob Watson, head of the company's electrical team. “We are well placed to play a leading role in the emerging world of personal air mobility and will also look to work in collaboration with a range of partners.”

Rolls-Royce is the latest company to announce a flying car project, this list includes Airbus, US ride-sharing firm Uber and a range of start-ups including Kitty Hawk which is backed by Google co-founder Larry Page and DeLorean Aerospace run by John DeLorean’s nephew, Paul.

The initial concept for Rolls-Royce’s EVTOL system uses gas turbine technology to generate electricity to power six electric propulsors, specially designed to have a low noise profile and its wings would be able to rotate 90 degrees, enabling the vehicle to take off or land vertically.

The company, which will disclose more details at Farnborough, said it was looking for an airframe maker and a partner to provide aspects of the electrical system.

Edition
July 2018

Electronic skin brings a sense of touch to prosthetics

In a pain-detection task the team determined that the test subject and the prosthesis were able to experience a natural, reflexive reaction to both pain while touching a pointed object and non-pain when touching a round object.

The e-dermis is not sensitive to temperature — for this study, the team focused on detecting object curvature (for touch and shape perception) and sharpness (for pain perception). Osborn says the technology could be used to make robotic systems more human, and it could also be used to expand or extend to astronaut gloves and space suits.

The researchers plan to further develop the technology and work to better understand how to provide meaningful sensory information to amputees in the hopes of making the system ready for widespread patient use.

A team of engineers at Johns Hopkins University has created the ‘e-dermis’, an electronic skin that can be layered on top of prosthetic hands, and allows a real sense of touch through the fingertips.

Made of fabric and rubber laced with sensors to mimic nerve endings, e-dermis recreates a sense of touch as well as pain by sensing stimuli and relaying the impulses back to the peripheral nerves.

“It's inspired by what is happening in human biology, with receptors for both touch and pain,” said Luke Osborn, a graduate student in biomedical engineering. “A prosthetic hand that is already on the market [can be fitted] with an e-dermis that can tell the wearer whether he or she is picking up something that is round or whether it has sharp points.”

The work shows it’s possible to restore a range of natural, touch-based feelings to amputees who use prosthetic limbs. The ability to detect pain could be useful, for instance, not only in prosthetic hands but also in lower limb prostheses, alerting the user to potential damage to the device.
“Pain is, of course, unpleasant, but it’s also an essential, protective sense of touch that is lacking in the prostheses that are currently available to amputees,” Osborn said. “Advances in prosthesis designs and control mechanisms can aid an amputee’s ability to regain lost function, but they often lack meaningful, tactile feedback or perception.”

The e-dermis conveys information to the amputee by electrically stimulating peripheral nerves in the arm in a non-invasive way. Inspired by human biology, the e-dermis enables its user to sense a continuous spectrum of tactile perceptions, from light touch to noxious or painful stimulus.

The team created a ‘neuromorphic model’ mimicking the touch and pain receptors of the human nervous system, allowing the e-dermis to electronically encode sensations just as the receptors in the skin would. Tracking brain activity via electroencephalography, or EEG, the team determined that the test subject was able to perceive these sensations in his phantom hand.

Edition
July 2018

500-year-old Leaning Tower of Pisa mystery unveiled by engineers

Results from the study have been presented to international workshops and will be formally announced at the 16th European Conference in Earthquake Engineering taking place in Thessaloniki.

Why has the Leaning Tower of Pisa survived the strong earthquakes that have hit the region since the middle ages? This is a long-standing question a research group of 16 engineers has investigated, including a leading expert in earthquake engineering and soil-structure interaction from the University of Bristol.

Professor George Mylonakis, from Bristol's Department of Civil Engineering, was invited to join a 16-member research team, led by Professor Camillo Nuti at Roma Tre University, to explore this Leaning Tower of Pisa mystery that has puzzled engineers for many years.

Despite leaning precariously at a five-degree angle, leading to an offset at the top of over five metres, the 58-metre tall Tower has managed to survive, undamaged, at least four strong earthquakes that have hit the region since 1280.

Given the vulnerability of the structure, which barely manages to stand vertically, it was expected to sustain serious damage or even collapse because of moderate seismic activity. Surprisingly this hasn't happened and until now this has mystified engineers for a long time. After studying available seismological, geotechnical and structural information, the research team concluded that the survival of the Tower can be attributed to a phenomenon known as dynamic soil-structure interaction (DSSI).

The considerable height and stiffness of the Tower combined with the softness of the foundation soil, causes the vibrational characteristics of the structure to be modified substantially, in such a way that the Tower does not resonate with earthquake ground motion. This has been the key to its survival. The unique combination of these characteristics gives the Tower of Pisa the world record in DSSI effects.

Professor Mylonakis, Chair in Geotechnics and Soil-Structure Interaction, and Head of Earthquake and Geotechnical Engineering Research Group in the Department of Civil Engineering at the University of Bristol, said: "Ironically, the very same soil that caused the leaning instability and brought the Tower to the verge of collapse, can be credited for helping it survive these seismic events."

Edition
July 2018

Technical Expertise & Collaboration Deliver Prestigious Industry Award For Newport Bridge Project

Chris Droogan, Managing Director, Cleveland Bridge UK said: “This award is a fitting testimony to our capabilities, and endorses our strategy to promote and deliver early and close collaboration with project partners to guarantee effective and efficient delivery.

“It also recognises the expertise and talent of our highly experienced workforce who can be very proud of the part they have played in the production and successful installation of this complex project leading to receiving this prestigious award.”

Cleveland Bridge UK Ltd has been praised for its technical expertise and ability to deliver complex structural projects to challenging constraints and timelines after it was presented with a highly-prestigious industry award for the construction of the Newport Bridge.

The North East-based company won the Project of the Year (subcontract between £2m-£4m) in the CN Specialist Awards, which were presented at a special ceremony at the Grosvenor House Hotel in London.

Part of a significant overhead line electrification (OLE) programme, the 228-tonne, 50m skewed, weathering-grade steel road bridge crosses the Great Western Main Line in South Wales.

Required to accommodate the increased height required for new OLE systems, the geometrically-challenging structure was fabricated at Cleveland Bridge’s Darlington facility, and following a complete trial assembly, the steelwork was loaded onto trailers and transported to Newport, where it was assembled prior to installation in a trackside temporary works compound.

Judges highlighted the Newport Bridge as ‘an exemplar project, which couldn’t have been solved without getting the Cleveland Bridge team on board early’.

The project had significant time constraints for the removal of the old bridge and installation of the new structure, which was delivered through close and early collaboration between Cleveland Bridge, its customer ABC Electrification and Network Rail.

Cleveland Bridge was also highly-commended in two other categories at the awards ceremony, including Project of the Year by a Specialist Contractor (subcontract over £6m) for its work on London Bridge Station, which was a contract for Costain on behalf of Network Rail to supply steelwork for rail decks and concourse bridge decks.

One of the company’s apprentices, 21-year-old Liam Simpson, was also shortlisted in the Apprentice of the Year category.

Edition
July 2018

Maserati unveils the 550hp Levante GTS

the Levante Trofeo and the Levante GTS at the Goodwood Festival of Speed

The MTC+ infotainment system on all three models has been enhanced with updated display graphics and improved climate control system ergonomics. In their sumptuous interiors, Maserati introduces for the first time the full-grain Pieno Fiore leather, which is incomparable to any other material in the automotive industry for its natural, soft feel and the unique character it attains throughout the years.

At the 25th Goodwood Festival of Speed Maserati has unveiled the Levante GTS, a high-performance edition that borrows technical features and styling cues from the top-of-the-line Trofeo.

The Levante GTS has adopted a sporty styling theme similar to the Trofeo model, focused on the lower front fascia and the rear bumper.

The interior is finished as standard with Full Premium leather (or full-grain Pieno Fiore natural leather as an option), sport pedals and Harman Kardon Audio system with 14 speakers.

The Levante GTS Twin Turbo V8 maintains the V90 architecture of the 3.8-litre unit fitted in the flagship Quattroporte GTS but has been re-engineered to work with the Q4 Intelligent All-Wheel Drive System and retuned to deliver 550hp (404 kW) at 6,250 rpm and 730 Nm peak torque between 2,500 and 5,000 rpm. Like all Maserati petrol engines, this V8 is assembled by Ferrari in Maranello.

Thanks to its weight/power ratio of 3.9 kg/hp the Levante GTS takes only 4.2 seconds to reach 100 km/h, and reaches a top speed of 292 km/h.

Subtle upgrades and new content for both Maserati saloons and the Levante

Alongside the announcement of the V8, the Levante range now showcases new contents, such as the optional Adaptive Full LED Matrix headlights and now standard Integrated Vehicle Control (IVC), which is already available on the Ghibli and Quattroporte saloons. Rather than simply correcting vehicle instability, the IVC function helps prevent it, providing enhanced active safety, improved driving dynamics and an even more exciting performance.

All Ghibli, Quattroporte and Levante versions have adopted the redesigned gearshift lever previously introduced in the Levante Trofeo, featuring a more intuitive shift pattern, shorter travel and improved operation. The driver now has the option to use the eight-speed ZF gearbox in automatic or manual mode simply by shifting the lever from right to left, while a new ‘P’ button effortlessly sets the transmission into park mode.

Edition
July 2018

Maserati unveils the 550hp Levante GTS

The MC12 Versione Corse will also take pride of place in the Festival of Speed Silver Jubilee display. The GranTurismo MC, GranCabrio Sport and MY19 Levante will also thrill the crowds during the Michelin Supercar Run during the event.

Besides the World Premiere of the new Levante GTS, the European debut of the Levante Trofeo and the official launch of its MY19 range, Maserati, in collaboration with renowned partners, offers an unforgettable experience of Italian style, comfort and high performance to its Goodwood guests. Moreover, at the Maserati stand Bulgari displays the Octo Retro Maserati GranLusso & GranSport watches, which feature a unique dial with retrograde minute hand and jumping hour display, genuinely resembling the instrument cluster of a modern-day Maserati.

Pieno Fiore is standard in the Levante Trofeo and available as an option in all Levante, Ghibli and Quattroporte versions in three colours – black, red and tan with specific stitching on the seats and double stitching on the door panels. Maserati also offers two brand new high-gloss interior trims for the Ghibli and Quattroporte and three for the Levante.

Exterior colour ranges have also been refreshed for MY19, there is a choice of ten colours for the Quattroporte and eleven for both of the Ghibli and Levante models. Two new tri-coat colours are now available, developed to enhance the design of each, Rosso Potente and Blu Nobile.

In the wide collection of alloy wheels designed specifically for every single Maserati model, there are five brand new designs in the MY19 catalogue in 20 and 21-inch sizes, two for each of the Levante and Quattroporte models and one for the Ghibli. The 22-inch Orione forged aluminium wheel – the largest ever created by Maserati – is exclusively available for the new top-of-the-line Levante GTS and Trofeo.

As for the recently introduced Nerissimo package, it has been updated for MY19. It is now available in a wider range of new model-specific colours, combining black elements with dark LED headlights, tail lights and exhaust tips, black chrome detail finishing and new wheels with dark finish.

Maserati stand and activities at Goodwood FOS 2018

Maserati, as Automotive Partner of the Festival of Speed, makes its mark this year in several locations around the Goodwood Estate and has invited both customers and journalists to attend the thrilling event. Selected Maserati models will take on the 1.16-mile Goodwood Hillclimb, offering the experience of supercar runs to journalists, social influencers and brand partners.

The brand new Levante GTS and the Levante Trofeo, which makes its European debut at Goodwood, welcome visitors to the Maserati stand, where the GranLusso and GranSport trims take centre stage. The iconic Maserati MC12 in its racing blue livery is also on display. The thunderous V12 engine of the MC12 GT1 Centenario will come to life on the hill, taking part in the iconic Goodwood hillclimb on Friday, Saturday and Sunday.

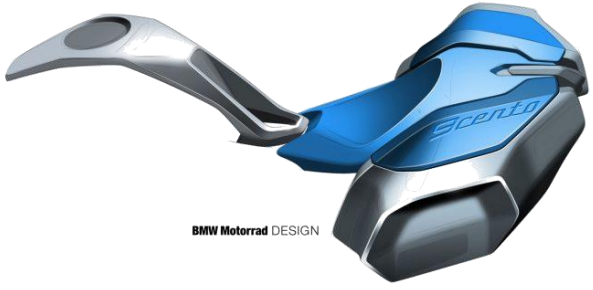
Edition
June 2018

BMW Motorrad Concept 9cento

The hovering side panel in Pure Metal Silver is typical of the Adventure Sport segment and is highly recognizable.

On all aluminum parts such as the central tank cover, the rear carrier and the footrest holder, the milling is directed towards the front wheel. This finely grooved surface structure is only apparent on close inspection and has the effect of a topographical elevation relief.

The suspension is designed to be ideal for touring. A long spring travel ensures ride comfort and gives the bike a sense of light-footedness.
The windshield and fairing ensure wind and weather protection. The ergonomic controls and relatively low, upright seating position are two additional key factors that contribute to perfect riding fun over long distances.



At the year's Concorso d'Eleganza Villa d'Este, BMW has presented a concept bike that anticipates a possible design direction for a new Adventure Sport model.

The BMW Motorrad Concept 9cento (pronounced 'nove cento' – nine hundred in Italian) is a touring bike aims at combining emotion and performance with an adventurous spirit, agility and riding fun, while keeping an aesthetic balance, as explained by Edgar Heinrich, Head of Design BMW Motorrad: "It doesn't always have to be about 'bolder, bigger, brighter' nowadays: this concept bike focuses on achieving a sense of balance."

"We've created a bike that combines the appropriate power with reliable sports touring properties and above all lots of riding fun, so it's an attractive overall package. It brings together the best of the sports, adventure and touring segments to produce an exciting concept – in a class which has not seen this kind of model from BMW before."

"The BMW Motorrad Concept 9cento is our interpretation of a modern all-rounder for the new mid-range segment."

"Functional properties such as touring capability, storage space and wind/weather protection are relevant to most motorcyclists but they're rarely included in the design of a concept vehicle. In this year's concept bike we're demonstrating that all these rational aspects can be coupled with a dynamic design to create something really exciting and highly emotional."

The basic sporty configuration with lots of volume near the front wheel and a short high rear promises riding fun and agile handling.

The styling of the fairing, fuel tank and frame further highlights the focus on the direction of travel.

Here, the three-dimensional modeling of the fuel tank area especially comes into its own as a result of the paint finish with reflective chrome effect.

Edition
June 2018

BMW Motorrad Concept 9cento

The frame triangle of the BMW Motorrad Concept 9cento is reinforced with CFRP fleece: it not only reduces the bike's overall weight but also links the three-dimensional design of the front trim to the aluminum rear carrier.

The latter is milled and likewise geared consistently to weight reduction, consisting solely of the required support structure. The visible opening between the frame triangle and seat further highlights the lightweight construction principle.

The case system

One particular highlight of the BMW Motorrad Concept 9cento is the innovative storage space concept comprising a clip-on case element.

The double case not only offers storage space, it also extends the seating area for the passenger. It is hooked into the rear carrier from above if required, and there is a powerful electromagnet that attaches the element securely to the lower section of the rear carrier. This system makes it possible to have two functional versions of the same bike.

Without a case, the BMW Motorrad Concept 9cento has maximum agility and perfectly meets the rider's needs in terms of riding fun; with the cases, the concept bike is transformed into a touring motorcycle that is also well equipped to carry two people. The case system is harmoniously integrated in the concept bike's styling, reflecting the high-quality, holistic approach of BMW Motorrad design.

Lighting design

The narrow front silhouette likewise promises manoeuvrability and agility. Here, the distinctive front section of the BMW Motorrad Concept 9cento deliberately echoes features drawn from the Adventure Sport segment, interpreting them in its own characteristic way.

The headlight is modern in style, featuring two symmetrical lamp elements. Each of the two elements has an iconic LED daytime riding light in the lower section with a flat, dynamic U shape, while two compact LED lenses on each side provide the low and high beam. This creates a hallmark lighting design that makes the concept bike instantly recognizable as a BMW motorcycle – both during the day and at night.

The rear lights are just as distinctive in design as the front lights: the two LED elements are integrated underneath the seat and feature the familiar BMW Motorrad design motif of the two C shapes facing each other in a technical look.

Edition
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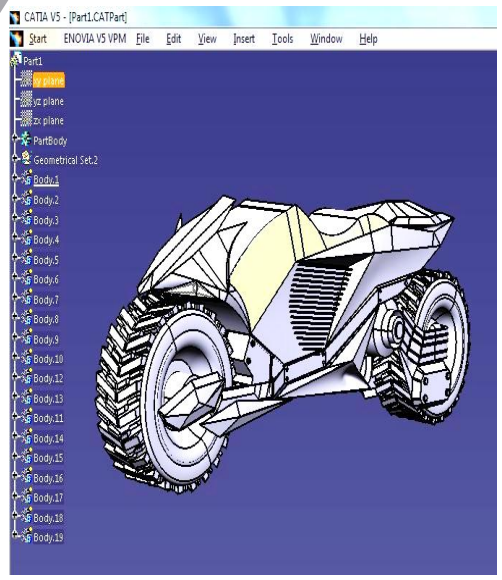
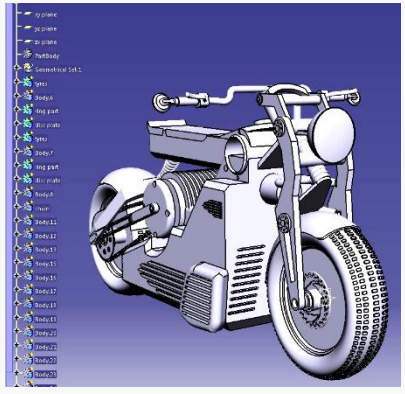
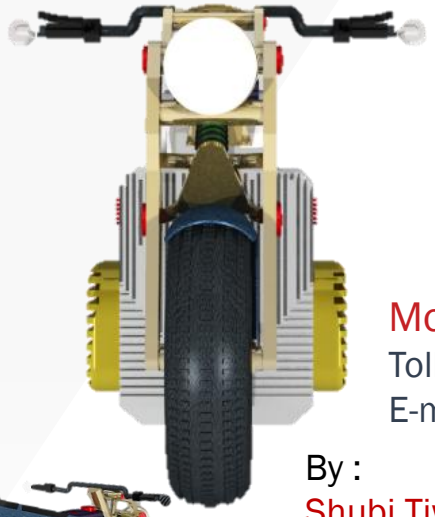
Student's Corner



By :
Naveen Kawadey
L.N.C.T. Bhopal
Design Tool : CATIA V5.





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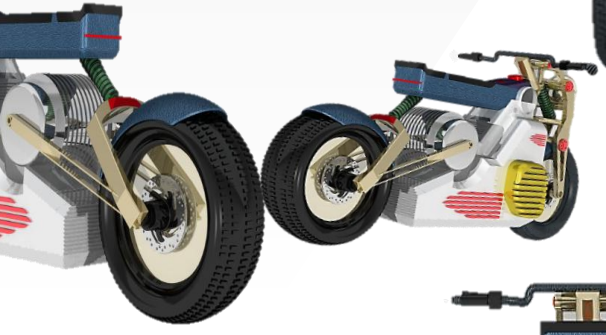
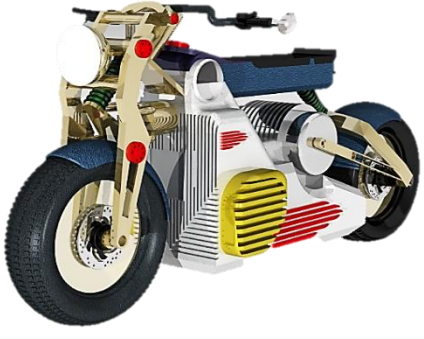
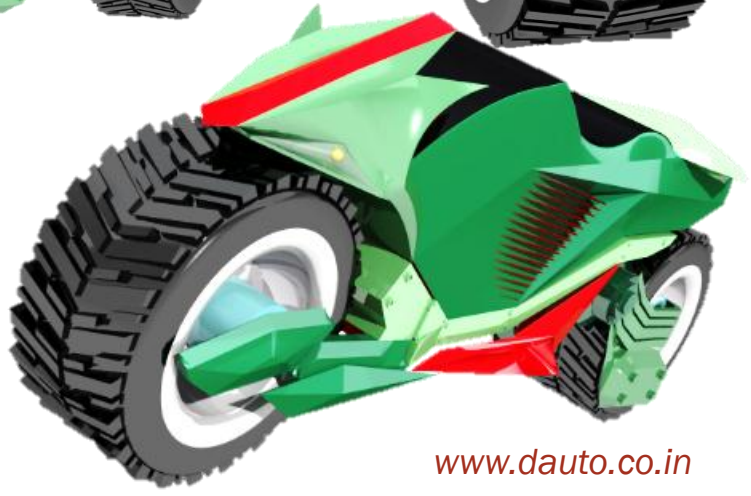


By :
Shubi Tiwari
L.P.U. Punjab
Design Tool : CATIA V5.





Edition
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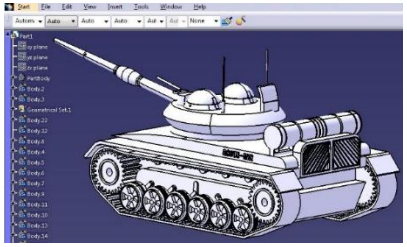
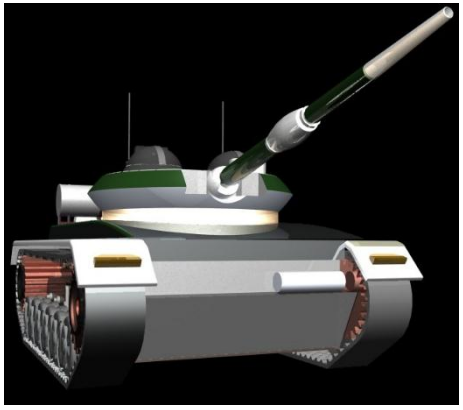
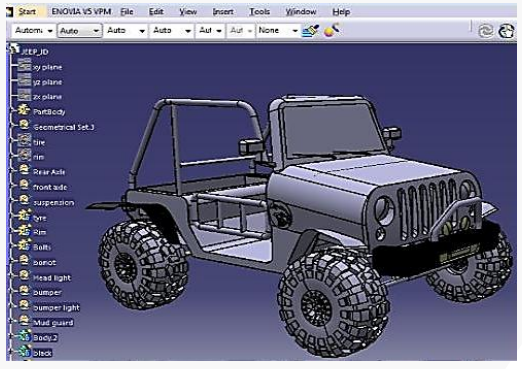
Student's Corner

DAuto Training Yield







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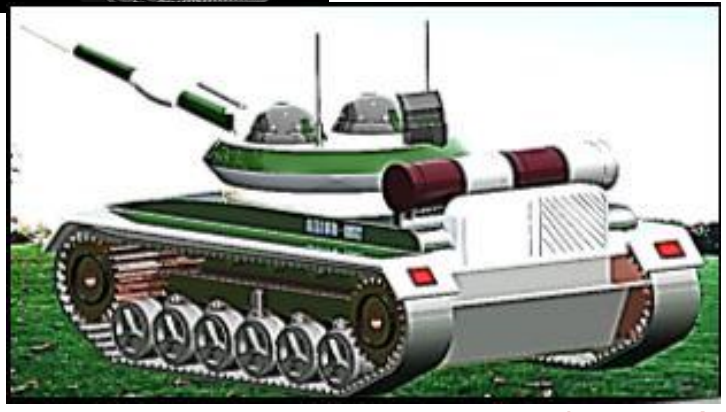

“Never be satisfied with inaction. Question and redefine your purpose to attain progress”

Jeffrey K. Liker, The Toyota Way

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