College of Engineering, Adoor
Department of Mechanical Engineering
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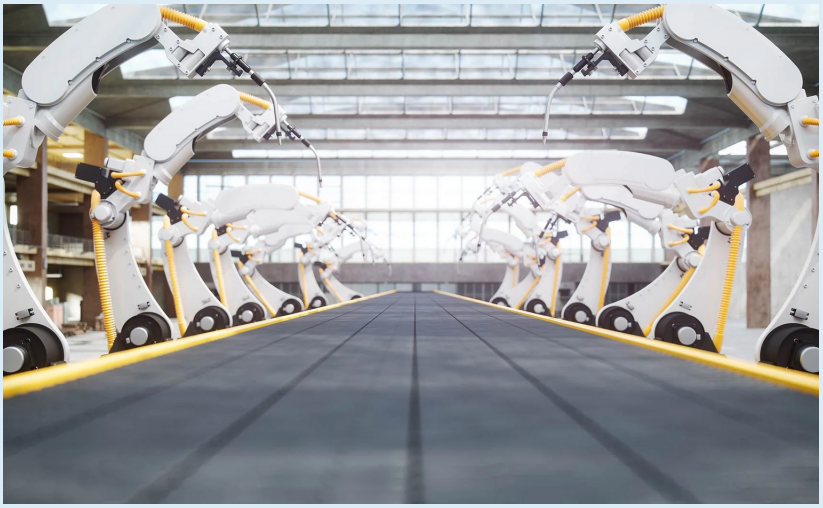
DESIGN AUTOMATION ROBOTICS ENERGY

Corona Virus ,Hard Times for the Mechanical Engineering Industry



The corona Virus outbreak and the lockdowns affected many of the industries around the world .The mechanical engineering industry increasingly felt the effects of the corona pandemic; orders were reduced or even cancelled. According to the VDMA(Mechanical Engineering Industry Association) flash survey, many companies made capacity adjustments.

In March 2020 , 84 % of the member companies surveyed by the VDMA reported adverse effects, and this figure risened to 89 % (mid-April). In addition, the main problems shifted more towards demand-side disruptions, i.e., a drop in orders or cancellations.

The epicenter of the disruptions were in Europe. More than 90 % of mechanical engineering companies reported supply-side and demand-side disruptions from Europe. On the demand side, there is a strong negative impact in USA (47 %). In China, on the other hand, the situation appeared to be stable

Despite the consequences of the corona crisis, many companies were able to keep up the supply chain and offered their services to the customers.

The virus outbreak led to cutting short of employees .Companies send their employees on short-time work and some even stopped production and staff were reduced even in parts of the core workforce.

However many of the industries especially automobile industries gained back their momentum. But there are many industries like aeronautical industries which still face the crisis.

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Vision

" Excel as a department creating mechanical engineers capable of leading industry, academia and society at large. "

Mission

- Impart high quality teaching-learning experience through the use of student-centered pedagogy.
- Create hands-on learning opportunities through student participation in the activities of professional societies, clubs and community service programs.
- Provide opportunities and facilities to get exposed to research-based projects.

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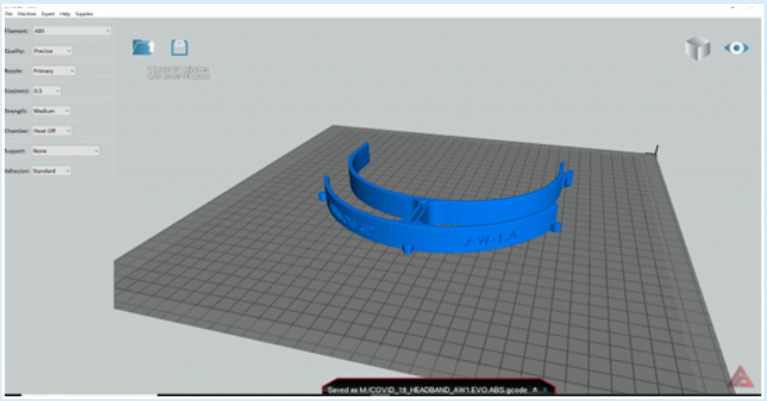
3D Printed face shields



Face shields have now become an important safety equipment during the wide-spread of Corona virus. So let us see how a 3D printed face shield is made

Materials

3D printing materials consisting of a 3D printer (MK3S) and polylactic acid filaments. General crafts materials, including Velcro strips , adhesive foam , and transparency film, and general office supplies, including a hole punch and scissors

Workflow

Creating a face shield has 4 phases: design, digital preparation, printing, and assembly.

In brief, we retrieved the file previously designed by engineer and made publicly available for free download. The file will be saved in standard tessellation language (STL) from Airwolf 3-D . Next, we digitally prepare (ie, convert) the STL to a G-code file using PrusaSlicer.. G-code is the language used by the computer to communicate with the printer. The G-code file contains specific information regarding the 1) printer setting (ie, nozzle diameter and position, height limit), 2) print setting (ie, 3D printed layer height, horizontal and vertical dimensions), and 3) filament setting (ie, type, color, diameter, density). This step is important because it controls the quality of the printed product and the printer's speed (production time). The G-code file should be saved on a secure digital (SD) card. We then transferred the G-code from the computer to the printer using the SD card.

The printer used is a fused deposited modeling printer with additive manufacturing technology and a nozzle (ie, an extruder). The process consists of polymer (ie, filament) that processes through a heated nozzle with rapid cooling. This step allows for deposition of individual layers, which creates the 3D structure. We place the filament into the extruder and turn on the printing function. Once the procedure was complete, we have the frame for the shield .

Finally, the shield is assembled using the crafts materials and office supplies. The Velcro is cut into 2- to 10-in.-long strips. Each strip received a 2-cm-long slit at each end. Each 10-in.Velcro strip is hooked on the lateral projections at each end of frame . This Velcro strip secures the frame to the head. Next, the adhesive foam was cut into a 12-in.-long strip. Then sticky side is attached to the inner circumference of the frame . The foam acts as a cushion and prevents abrasions to the user's forehead with extended wear. Using a hole punch, 3 holes are punched . Finally, each hole is fit snugly into 1 of the 3 rounded projections along the frame.

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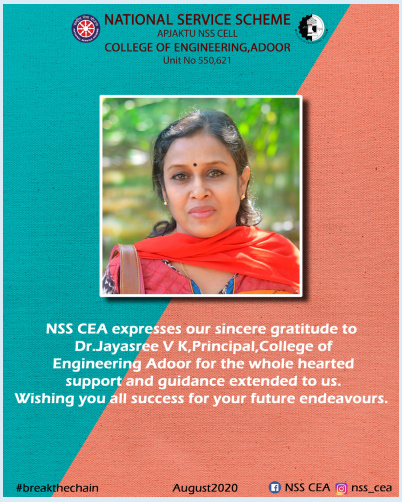
Dr K SunilKumar Took Charge As The New Principal



Former Head Of the Department for Mechanical Engineering, Dr K SunilKumar took charge as the new Principal of College of Engineering Adoor from August 2020. Previous principal Dr Jayasree VK got transferred to Model Engineering College ,Thrikkakara,Ernakulam.Also Dr Jose Thomas took charge as the new Head Of the Department , Mechanical Engineering.

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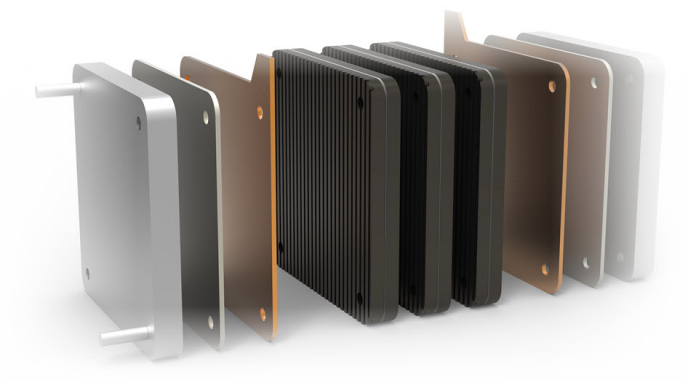
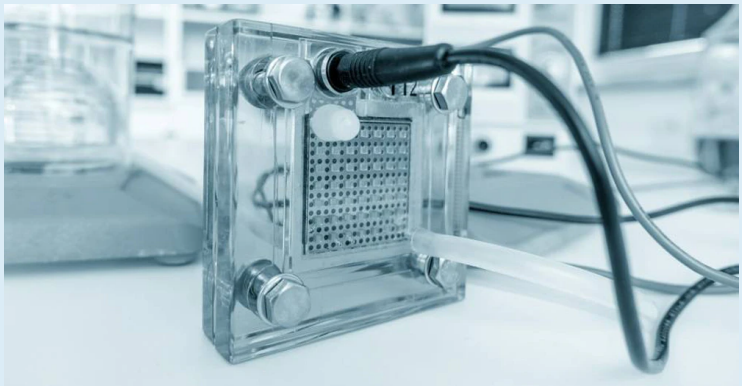
Engineers develop new fuel cells with twice the operating voltage as hydrogen fuel cells





Transportation section is one of the largest consumers of energy in the world and is critical to future energy and environmental resilience. Electrification of this sector will require high-power fuel cells (either stand alone or in conjunction with batteries) to facilitate the transition to electric vehicles, from cars and trucks to boats and airplanes. Liquid-fueled fuel cells are an attractive alternative to traditional hydrogen fuel cells because they eliminate the need to transport and store hydrogen. They can help to power unmanned underwater vehicles, drones and, eventually, electric aircraft etc.

Now, engineers at the McKelvey School of Engineering at Washington University in St.Louis have developed high-power direct borohydride fuel cells (DBFC).

The research team, led by Vijay Ramani, the Roma B and H Wifcoff. Distinguished University Professor, has pioneered a reactant: identifying an optimal range of flow rates, flow field architectures and residence times that enable highpower operation. This approach addresses key challenges in DBFCs, namely proper fuel and oxidant distribution and the mitigation of parasitic reactions. Importantly, the team has demonstrated a single-cell operating voltage of 1.4 or greater, double that obtained in conventional hydrogen fuel cells, with peak powers approaching 1 watt/cm . Doubling the voltage would allow for a smaller, lighter, more efficient fuel cell design which translates to significant gravimetric and volumetric advantages when assembling multiple cells into a stack for commercial use. Their approach is broadly applicable to other classes of liquid/ liquid fuel cells. “The reactant-transport engineering approach provides an elegant and facile way to significantly boost the performance of these fuel cells while still using existing components,” Ramani said. The key to improving any existing fuel cell technology is reducing or eliminating side reactions. The majority of effort to achieve this goal involve developing new catalysts that face significant hurdles in terms of adoption and field deployment.

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CEA MOTORSPORTS

CEA Motorsports comprises of 3 teams : TEAM DRUTHA, TEAM ASTRA and TEAM AAGNEYA

TEAM AAGNEYA

Aagneya is the Go-kart team of College of Engineering, Adoor formed in 2018. This team designed and manufactured a 125cc Go-kart and took it'sdebut in FKDC 2018, organised by the Fraternity of Mechanical and Automobile Engineers(FMAE). Team Aagneya competed among 58 teams from all over India and achieved an overall of 4th with 1st in acceleration and 3rd in endurance.

In 2019, the team participated in BBFKCT 2019(Bharath Formula Karting) and became one of the 20 teams qualified for finals. The team was unable to successfully finish the event due to some damage that occurred during transportation but achieved 6th position in the business presentation.

The team took part in a three-day competition FKDC 2019 organised by FMAE and showcased a decent performance in the static round by achieving 4th in design and 5th in the business presentation. The team got 8th rank in that competition. The team also secured 2nd position for the lightest kart and 4th in business presentation in the 2020 SKDC event.

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Achievements

Btech Results

The batch of 2016 -2020 have graduated B tech securing remarkable results . Mr Abhijith S was the department topper followed by Mr Akshay PR and Mr Tejas.The other department toppers were Miss Anila Xavier (CS),Miss Binitha Babu (EC) , Miss Bhavana S (EEE)