



HEBRON MOTORSPORTS 2021 REPORT

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Thousands of the world's best young engineers were at Silverstone on 22-25 July to experience the innovation, engagement, fun and race atmosphere of over 3,000 inspired and talented students from across the globe. The main goal remains to bring automotive students and automotive companies together via a very interesting subject...a racecar! The idea is to conceive, design, fabricate and compete with it against all of the world's top institutions

Hebron Motorsports is extremely grateful to this management for willing to make an investment of £595 in her students.

THE EXPERIENCE

Post payment confirmation

After the management made payment for our place to compete, the team immediately narrowed down her focus on the task at hand. This was despite it being a few weeks to commencement of exam. We set out to do our best, by the grace of God. We evaluated the time at hand and we knew it was a very tight time period to submit all design, cost and business documents. We then wrote a letter to the Dean, Student affairs requesting for accommodation in school for a week after the vacation. He allocated us 2 rooms, while Hebron Startup Lab allocated us a space to work. Right after our last paper, 7 of us still remaining in the team began to work day and night to meet up with our lifeline. At the same time, the team members were also seeking job opportunities as we were also supposed to have commenced our mandatory internships. It was truly hectic, but our **Possibility Mentality** kept us all through.

At the end of our accommodation period, we all went home to start our internships immediately.

Presentations

Our first presentation- **Business** held on the *18th of June*. Two of the members journeyed to school to handle this.

For our last presentation-**Design**, the team consisting mainly of mechanical engineering students currently on their industrial training took excuses from our various places of work and put transportation plans in place to make the journey down to school. This was on the *23rd of July*



*A member of the team
at school in the virtual Design Presentation





Challenges faced

- ☛ Several of our strong hands pulled out of the team due to weary faith, doubt of the school's involvement in the project. Moreover, tests and exams were fast approaching!
- ☛ Lack of proper software to carryout full design analysis
- ☛ Very little faculty support, with the exception of Dr. Mayowa Agboola and Prof. Ohunakin
- ☛ Tight time frame between registration payment and the team's first document lifeline
- ☛ Inability to reach out for help from other departments like business and accounting

Solutions Proposed

- ☛ We have brought on board students from all relevant fields. This was made possible because they had seen a little track record of work done.
- ☛ We have acquired relevant software based on research and also judges feedback to improve our designs. These software altogether are a bit over **\$40,000 (₦15,000,000)** commercially. A breakdown is shown below:

Software (quantity)	Unit price	Total price
MSC ADAMS	-	\$7,000
Solidworks (50)	\$150	\$7,500
Mathworks	\$1,930	\$1,930
Altium (5)	\$3,850	\$19,250
Ansys	-	\$20,000
Ricardo		

- ☛ The team would like for payments to be made farther away from their lifelines as this creates a better mental picture of the school's involvement to team members. Our team members who are on IT currently are strategically placed in companies that have the technical know-how. One is with Mercedes Benz Nigeria, another is working within the local motorsports industry where other major sponsors like Power horse, Motul Oil are very active. We have another with Innoson Vehicle.





Timeline

Where we are coming from.

- The team officially started in 2014 with the aim of designing and building a formula style race car.
- We entered the Formula Student competition in 2014 and was selected to compete at the Silverstone circuit in the UK for the 2015 competition.
- Although due to unforeseen reasons we were unable to compete at the 2015 Formula Student competition, 3 students from the 12-man team were sponsored by the University to United Kingdom to gather data and do real-time feasibility report on the project.



**Members of the Hebron Motorsport team at the Mercedes AMG High Performance Powertrains exhibition in 2015.*

- In three weeks after the return of the 5-day trip, the team decided to create a prototype chassis from the design created and submitted a report to that effect.



Mock chassis lying fallow at Mech building

**Members of the Hebron Motorsport with mock chassis*



Where we are

The team was able to decide on the following steps after a thorough discussion was held with the judges of the event. The judges were quite impressed with our effort for a new team and gave us important advice to ensure we compete with our full car in 2022.

- Revisiting our project management practice, we are
 - Restructuring the 7-man team to include members from all relevant areas of study to effectively meet the demands for next year Formula Student season
- We are currently set to optimize all designs after our work has been thoroughly scrutinized by engineers in the peak of the automobile world as we prepare for the **2022 Formula student design season**.
- We have successfully reached out to international design and analysis software providers and have received sponsorship in form of software licenses. Solidworks® for modeling, Ansys® for the computational fluid dynamic analysis and Matlab® amongst others.

They have done this in return for their logo display on our proposed vehicle.

The total monetary value is about \$7,500 (₦7,500,000). Although, we would like assistance from school in getting other reputable sponsors.





Where we are going

- To compete at the Formula Student 2022 with our student-manufactured car at the Silverstone circuit in the United Kingdom.
- We are looking to push the bar of purpose designed and manufactured products here in Nigeria as many locally made products have no design intent to them.
- We see this as the future of the mechanical student research cluster within the University, as different components will be selected each year to be redesigned and/or improved on.
- Much more than that, because we are a team from the platform of the **Vision 10.2022**, we hope that this cause we are tenaciously pursuing will spark an awakening in the Student body, particularly the engineering division which will cause them to pursue the seemingly impossible.

Conclusion

After all, has been said, the breakdown of our result is as follows:

We placed overall **41st** out of **65** teams, and **2nd** out of the **3** Nigerian teams present. The **1st** Nigerian team was **36th** overall and has been competing for **9** years now. While the other Nigerian team placed **54th**. With the information we now have, we believe we can comfortably place **Top 5** next year.

We are forever grateful to God and the management headed by the **Vice Chancellor-Professor Humphrey Adebayo** for the chance to taste an International engineering competition after the past 7 years has been filled with battles, near attempts and some years of comatose. We express thanks also to **Dr. Agboola, Prof Ohunakin, Engr Kunke Babaremu** and our Dean, Students Affairs, **Prof Conrad Omonhinmin** who came through for the team on some quite short notices.

However, we have continued work to ensure that our car is ready come year 2022, and is presented at arguably the world's most historic car track...Silverstone, United Kingdom.

RECOMMENDATION

Based on observations and interactions the team would freeze its design analysis, calculations computer aided design (CAD) and simulations by November 2021, commence manufacturing immediately and by March, 2022 the car should be fully assembled, leaving the team with 3 months of proper car calibration and dynamic testing.





The Team

ASORO Osaruese

HENRY Emerald

JERRY Godwin

ORE-ARUWAJI Rogba

KAYODE-OYEDELE Victor

IKECHUKWU David

All 400 level Mechanical Engineering student

EZEKIEL Victor

500 level Mechanical Engineering

