BOLT

2024-2025 Sponsorship Packet

What is BOLT?

Electric Motorcycle innovation

Design fabrication validation

60 Students across multiple majors!

BOLT is a motivated group of students who strive to evolve electric vehicle technology by designing, manufacturing, and racing high-performance electric motorcycles. This group of 60 Virginia Tech undergraduate students from several academic majors biennially builds an electric motorcycle to compete in the AHRMA varsity challenge. Our team is unique as we are not constrained by prohibitory requirements. The competitive goals of this team begin and end at completing the 11km race as fast as possible. This allows us the freedom to undertake radical design challenges such as a custom frame and battery pack that is completely designed and manufactured in-house and complete a design that has 200 horsepower and can reach speeds of over 200 miles per hour.

Bolt Vs Specifications

Speed: 180 MPH

Weight: 460 lbs

Power: 146 kW

Torque: 461 Nm

History

International: 3rd
North American: 1st

BOLT I
2011-2012

BOLT II
2013-2016

AHRMA: 1st

AHRMA: 2nd

BOLT III
2017-2019

Did not race due to COVID

BOLT IV
2020-2022

Racing September 2024

BOLT V
2022-2024

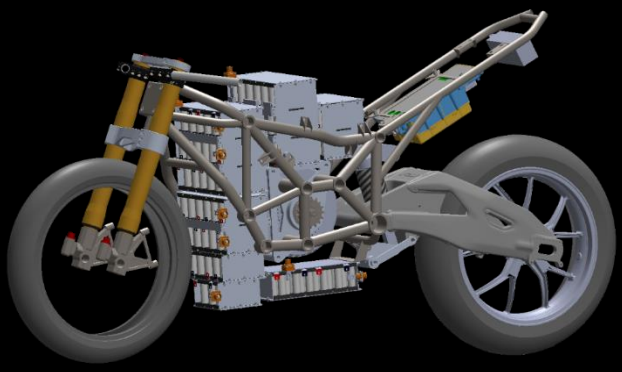
First Ever Dirt Bike

BOLT VI & D1
2024-

Next Generation Race Bike

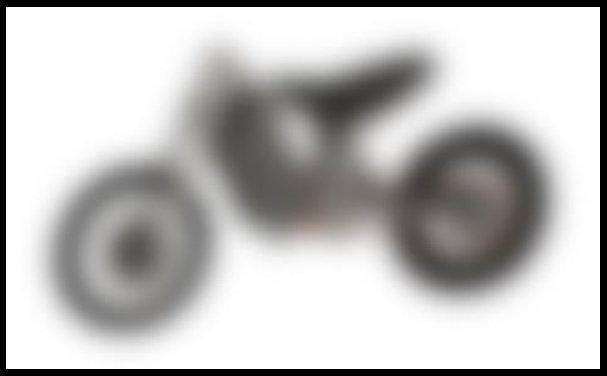
Major Projects

BOLT VI - THE NEXT STEP IN ELECTRIC MOTORSPORTS



The BOLT team will begin development of the sixth generation BOLT Motorcycle, BOLT VI during this upcoming year. Last year, the team finished BOLT VS, but this year we see an opportunity to significantly improve performance. We will be building upon the success of the VS powertrain by repackaging it into a new frame. We expect to save significant weight and improve the riding dynamics of the bike.

BOLT D1 - OUR FIRST STEP IN ELECTRIC OFF-ROAD MOTORSPORTS

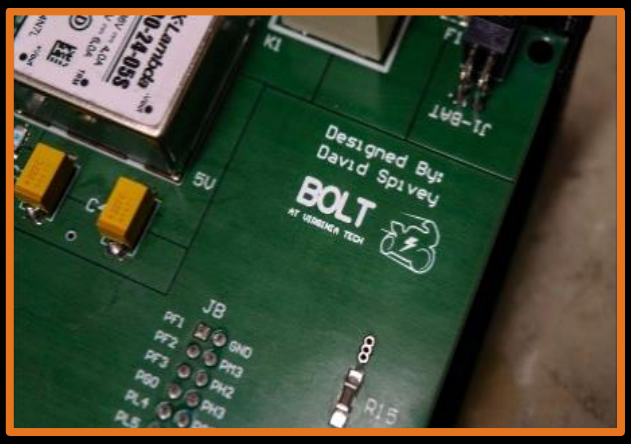


The team is currently in the planning stages of the first generation of an electric dirt bike. We will be competing in a 24-hour endurance race against gas and electric motorcycles. To accomplish this, we will develop a custom frame, powertrain, control systems, suspension system, brake system, and more. We will incorporate a hot-swappable battery pack, a first for BOLT.

Our Subteams

Chassis

Responsible for designing and manufacturing a custom frame, attaching and maintaining brakes, designing custom mounts for all components, and improving handling for the bikes.

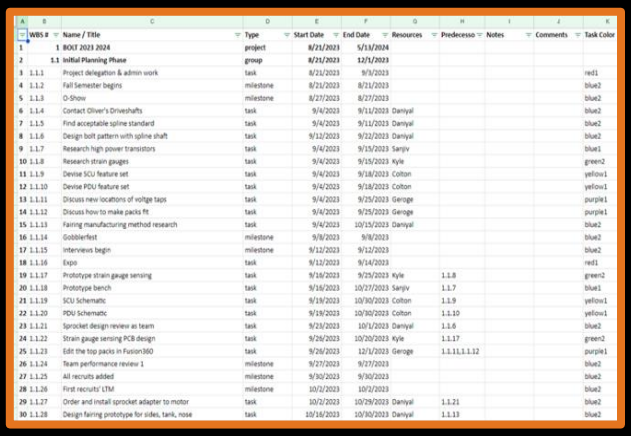


Controls

Responsible for designing and programming a custom rider interface, creating custom-designed PCBs, data acquisition, and live communication of data to the pit.

Powertrain

Responsible for the drive system, researching, designing, and fabricating a custom battery pack, and data validation.



WBS #	Name / Title	Type	Start Date	End Date	Resources	Predecesso	Notes	Comments	Task Color
1	BOLT 2023 2024	project	8/21/2023	5/13/2024					
1.1	Initial Planning Phase	group	8/21/2023	12/1/2023					
1.1.1	Project delegation & admin work	task	8/21/2023	9/3/2023					red1
1.1.2	Fall Semester begins	milestone	8/21/2023	8/21/2023					blue2
1.1.3	O-Show	milestone	8/27/2023	8/27/2023					blue2
1.1.4	Contact Oliver's Driveshafts	task	9/4/2023	9/11/2023	Daniyal				blue2
1.1.5	Find acceptable spline standard	task	9/4/2023	9/11/2023	Daniyal				blue2
1.1.6	Design bolt pattern with spline shaft	task	9/12/2023	9/22/2023	Daniyal				blue2
1.1.7	Research high power transistors	task	9/4/2023	9/15/2023	Sanjiv				blue1
1.1.8	Research strain gauges	task	9/4/2023	9/15/2023	Kyle				green2
1.1.9	Devise SCU feature set	task	9/4/2023	9/18/2023	Colton				yellow1
1.1.10	Devise PDU feature set	task	9/4/2023	9/18/2023	Colton				yellow1
1.1.11	Discuss new locations of voltge taps	task	9/4/2023	9/25/2023	Geroge				purple1
1.1.12	Discuss how to make packs fit	task	9/4/2023	9/25/2023	Geroge				purple1
1.1.13	Fairing manufacturing method research	task	9/4/2023	10/15/2023	Daniyal				blue2
1.1.14	Gobblerfest	milestone	9/8/2023	9/8/2023					blue2
1.1.15	Interviews begin	milestone	9/12/2023	9/12/2023					blue2
1.1.16	Expo	task	9/12/2023	9/14/2023					red1
1.1.17	Prototype strain gauge sensing	task	9/16/2023	9/25/2023	Kyle	1.1.8			green2
1.1.18	Prototype bench	task	9/16/2023	10/27/2023	Sanjiv	1.1.7			blue1
1.1.19	SCU Schematic	task	9/19/2023	10/30/2023	Colton	1.1.9			yellow1
1.1.20	PDU Schematic	task	9/19/2023	10/30/2023	Colton	1.1.10			yellow1
1.1.21	Sprocket design review as team	task	9/23/2023	10/1/2023	Daniyal	1.1.6			blue2
1.1.22	Strain gauge sensing PCB design	task	9/26/2023	10/20/2023	Kyle	1.1.17			green2
1.1.23	Edit the top packs in Fusion360	task	9/26/2023	12/1/2023	Geroge	1.1.11,1.1.12			purple1
1.1.24	Team performance review 1	milestone	9/27/2023	9/27/2023					blue2
1.1.25	All recruits added	milestone	9/30/2023	9/30/2023					blue2
1.1.26	First recruits' LTM	milestone	10/2/2023	10/2/2023					blue2
1.1.27	Order and install sprocket adapter to motor	task	10/2/2023	10/29/2023	Daniyal	1.1.21			blue2
1.1.28	Design fairing prototype for sides, tank, nose	task	10/16/2023	10/30/2023	Daniyal	1.1.13			blue2

Business

Responsible for communicating with sponsors, along with creating and maintaining budgets and other administrative duties.

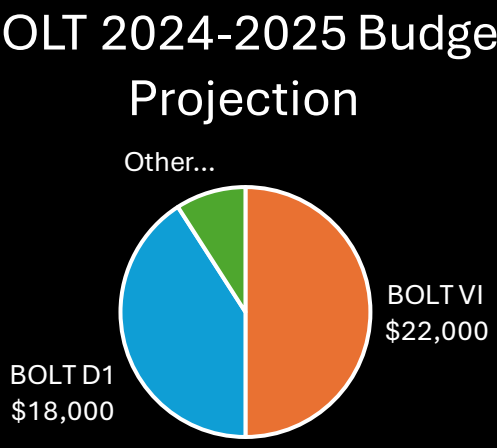
SPONSORSHIP

With our sponsors' generous support, we can push the limits of electric motorcycles. BOLT provides numerous benefits to our sponsors, including:

Interns – Our team has dozens of skilled engineers with hands on experience that cannot be gained in a classroom. We would be happy to have you recruit from our team and can arrange for you to recruit from the other teams in the lab as well.

Future – Many of our alumni have gone to work for large companies such as GE Vernova, Lockheed Martin, Altec... and have pushed for manufacturing contracts with BOLT sponsors.

Marketing – Your logo and/or company name will be on our custom bike fairings and on our website



*We are a 501(c)(3) tax deductible organization

Service: Nurture the next generation of emerging engineers to grow and develop practical and professional skills.

Additionally, our sponsors are always welcome to stop by and see our progress in the Ware Lab. Our team leads would be more than happy to arrange a tour. Any support you can provide, either monetary or in-kind, would be greatly appreciated.

A Message from Team Leadership

Thank you for considering our sponsorship proposal! This team provides one of the most rewarding educational experiences on campus. Although Virginia Tech and the Joseph Fulton Ware Jr. Advanced Engineering Laboratory provides us with a workspace, the entirety of our budget comes from sponsors and individual donors. Without generous contributions, like yours, our team would not be able to exist. Our team is excited about our next steps to learn, innovate, and develop high-performance electric motorcycles. We hope we can partner with your company or organization this year. For monetary donations please see the donation page on our website. For any inquiries or in-kind donations please reach out to one of our Team Leads.

Sincerely,

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