

TECH TALENT PROGRAM

Build Real Hardware With Real Companies

Kickstart your engineering career—12 weeks, 5 places per challenge.

HANDS-ON INDUSTRY CHALLENGES WITH:

[ILLUTHERM](#) (Industrial Heating)

[WH Münzprüfer](#) (E-Mobility)

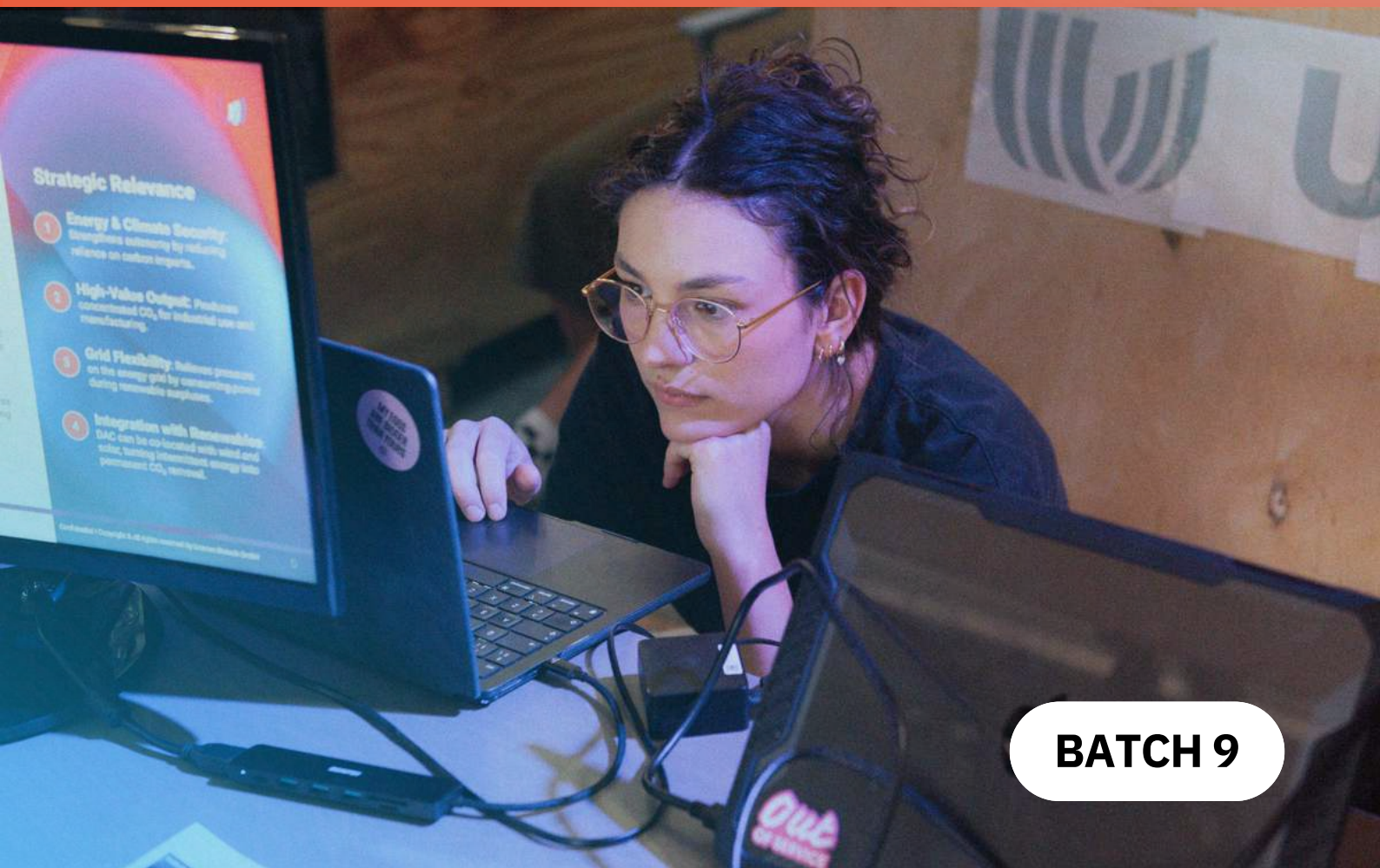
[AURORA](#) (HVAC / Vehicle Tech)

[ABSORA](#) (Advanced Material)

[CEREPAL.AI](#) (Robotics)



APPLY NOW!



BATCH 9

WHAT IS THE TECH TALENT PROGRAM?

MotionLab.Berlin's Tech Talent Program is a free 12-week program for bachelor's and master's students in Berlin and Brandenburg—studying anything from engineering, computer science, and physics to industrial design and business.

You join a hand-picked team of five and take on a real challenge from a tech company: real deadlines, real machines, and a working prototype at the end. From the last batch, students went straight into roles at their challenge companies.

**“THE BEST PART FOR ME WAS THAT NONE OF IT STAYED THEORETICAL.
WE BUILT HARDWARE FOR A REAL INDUSTRIAL USE CASE.”**

LINAS HÄSSLER — BATCH #8 (NOW AT ALCEMY)



* PROTOTYPING

Full access to MotionLab.Berlin's facilities and prototyping machinery, plus maker and coworking spaces. Learn 3D printing, electronics, laser cutting, and everything else MotionLab.Berlin has to offer.

* CHALLENGES

Take on a real engineering problem: from vacuum chamber engineering ([ILLUTHERM](#)) to semi-public e-bike charging ([WH Münzprüfer Berlin](#)), vehicle thermal management ([AURORA](#)), modular smart manufacturing ([ABSORA](#)), and quadruped robotics ([Cerepal](#)).

* WORKSHOPS

The skills employers notice: design thinking, agile product development, rapid prototyping, AI development—led by mentors and experts who build real products.

* YOUR WAY INTO THE INDUSTRY

Connect with founders, engineers, and the people who hire. Join the talent pool and alumni network—many participants go on to secure internships, complete theses, or take first roles at partner companies.



12-WEEK GROWTH JOURNEY

* 2-WEEK BOOTCAMP

Hands-on workshops in 3D printing, prototyping, and IoT to build core skills, meet your team and mentors, and shape your program roadmap.

* 10-WEEK PROJECT WORK

Join a team of five and take on a real challenge from [ILLUTHERM](#), [WH Münzprüfer Berlin](#), [AURORA](#), [ABSORA](#), and [Cerepal](#). Apply your tech skills, manage the project, and learn to deliver results under real-world conditions with a diverse team.

MILESTONES



3 August 2026

Applications open.



6 September 2026

Applications close.



21 September 2026

Announcement of participants.



28 September 2026

Batch 9 kicks off.



Mid-December 2026

Graduation Day—present your work and celebrate your success.

→ REAL-WORLD TESTING

You'll test your prototype under real-world conditions, just like in industry.

→ WEEKLY CHALLENGE MEETINGS

Insider know-how in weekly team sessions with your tech challenge coaches.

→ EXPERIENCED MENTORS—MANAGEMENT & TECH

Every team gets two dedicated mentors: a Tech Mentor who knows the engineering, and a Management Mentor who knows how industry works. Weekly check-ins, real feedback, no hand-holding.

→ FREE TICKETS TO FAIRS & EVENTS

Free access to MotionLab.Berlin events, plus selected industry fairs and conferences at no cost.

→ WORKSHOPS & KNOW-HOW

Everything from AI to communication, in workshops led by industry experts—plus a certificate at the end that shows you can deliver under real conditions.

→ GRADUATION DAY

Present your prototype to a real industry audience—the people asking questions are often the people hiring. Then join the alumni network.

WHO WE'RE LOOKING FOR...

We're looking for students who want to build — curious, hands-on, and ready to work in a team on something real. Apply for the upcoming batch of the Tech Talent Program if...



PRACTICAL Q&A

→ DOES IT COST ANYTHING?

No. The program is completely free.

→ IS THERE A SCHOLARSHIP OR PAYMENT?

No—there is no stipend or salary. This is a program, not employment.

→ CAN I EARN CREDITS?

Students at [HTW](#), [TU Berlin](#), and [CODE](#) can earn academic credits for participation. Check with your program coordinator.

→ HOW MANY PLACES ARE THERE?

Only 5 places per challenge. This is a selection process, not open enrolment—applying is already a step forward.

* YOU'RE A STUDENT

You're a bachelor's or master's student at a university in Berlin or Brandenburg (bachelor's students should be at least in their fourth semester). Especially relevant if you're finishing your master's and looking for your first role in industry—this is where you meet the companies hiring.

* YOUR FUTURE DEGREE IS...

...in Computer/Data Science, AI/Machine Learning, IoT, Physics, Engineering, Architecture, Industrial/Product Design, or Business Development.

* YOU'RE FULLY COMMITTED

The program runs ~10 hours per week over 12 weeks—bootcamp, workshops, and hands-on challenge work included. It's a real commitment, and it's worth it.

* NOT SURE THIS IS FOR YOU?

Think you might not be the perfect fit? Go ahead and apply anyway. We care more about attitude than perfect credentials.

WHY NOT JUST DO AN INTERNSHIP?

In an internship you support someone else's project. Here you own a real engineering problem with a team of five, present your results to the people who hire, and leave with a network, a certificate, and a prototype you built yourself.



WANT TO APPLY?
CHOOSE THE CHALLENGE
YOU WANT TO WORK ON AND
FILL OUT [THIS FORM](#) BY
6 SEPTEMBER 2026.

"I'D RECOMMEND IT TO PEOPLE WHO ARE
READY TO SHAPE THEIR OWN WAY OF
DOING THINGS—PEOPLE WHO AREN'T
AFRAID OF TRYING NEW THINGS, MEETING
NEW PEOPLE, AND DOING THINGS TOTALLY
OUTSIDE OF THEIR COMFORT ZONE."

AHMED OMAR
BATCH #7

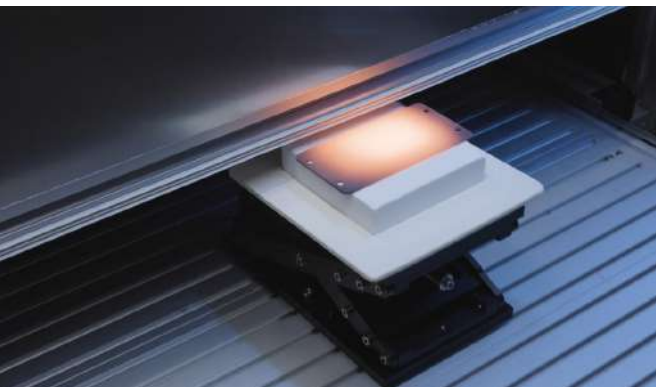


TECH CHALLENGE 1 – ILLUTHERM:

CONTROLLED-ATMOSPHERE CHAMBER FOR HIGH-SPEED MATERIALS HEATING

04

How do you design a sealed chamber that holds vacuum and protective gas—while materials are heated to near 1,000 °C at extreme speed?



ABOUT ILLUTHERM

ILLUTHERM has developed a high-power heating system based on blue LEDs that heats materials extremely fast—directly through a transparent lid. It's much faster than conventional furnaces and more cost-efficient than laser-based alternatives, and it enables processes that conventional furnaces cannot. With their first product going to market soon, they need a chamber system that extends what it can do—enabling heating under vacuum and protective gas for the first time.

THE ILLUTHERM TECH CHALLENGE:

- * **Engineer a sealed chamber that holds vacuum and protective gas while materials are heated to near 1,000 °C**—leak-tightness, thermal load and pressure change, all at once.
- * **Design a modular system**—the chamber must be exchangeable per application, manufacturable with laser cutting and CNC, and built within a real cost target.
- * **Build and instrument a test rig**—develop the hardware and software to measure pressure, temperature, and leak-tightness under real operating conditions.
- * **Test it on the actual device**—your prototype runs on ILLUTHERM's real lab system, not in simulation. Results either work or they don't.
- * **Talk to real customers and sharpen the requirements**—identify which industries and use cases the solution unlocks, and feed that back into your engineering decisions.

MAKE SURE TO APPLY IF YOU:

- * Study Mechanical Engineering, Mechatronics, Materials Science, Physics, Electrical Engineering, or Software Engineering—and have a hands-on interest in vacuum systems, sealing, thermal testing, or embedded software.
- * Are a prototyper at heart: you build, break, and build better—no over-engineering.
- * Are based in Berlin or Brandenburg.



“ THE NUMBER OF ITERATION CYCLES, MEANING THE SPEED AT WHICH YOU TEST AND ITERATE, IS THE TRUE METRIC FOR THE PERFORMANCE OF SCIENTISTS AND ENGINEERS. ”

DR. LUKAS PORZ
CO-FOUNDER & CEO,
ILLUTHERM

ILLUTHERM

TECH CHALLENGE 2 – WH MÜNZPRÜFER:

PROJECT CHARGELOCK

05

How can e-bikes and e-scooters be securely locked and charged—despite different batteries, voltages, and connectors?



ABOUT WH MÜNZPRÜFER

WH Münzprüfer Berlin GmbH is a Berlin-based family business in its third generation. We have been developing payment technology for over 100 years—and build everything in-house, down to the cables. ChargeLock is our next step: bringing that payment expertise to e-mobility, with a unit that secures, charges, and bills e-bikes and e-scooters in public spaces and residential buildings.

THE CHARGELOCK TECH CHALLENGE:

- * **Develop a charging concept that tames the chaos of e-bike standards—24 V to 52 V, countless proprietary connectors**—covering as many variants as possible while staying simple for the end user.
- * **Design the housing: weatherproof, permanently mountable outdoors, and resistant to vandalism**—good-looking enough to sell. Design is part of the product, not an afterthought.
- * **Build reliable theft protection:** a mechanical locking function that works every time. Integrate a proven lock component or develop your own approach.
- * **Integrate WH Münzprüfer's cashless payment module into hardware and software** to enable time-based billing.
- * **Build a working prototype and a design study** with renderings and a physical model. Documentation is a must.

MAKE SURE TO APPLY IF YOU:

- * Study Electrical Engineering, Embedded Systems, Mechanical Engineering, Product/Industrial Design, or a related field.
- * Want engineering and design thought together from the start.
- * Are based in Berlin or Brandenburg.



“ WE HAVE INTERESTED CUSTOMERS WAITING FOR THIS PRODUCT. YOUR PROTOTYPE WON'T END UP IN A DRAWER — YOUR DECISIONS ON CHARGING, LOCKING, AND HOUSING SHAPE WHAT WE BRING TO MARKET. THAT'S A LOT OF RESPONSIBILITY, AND A LOT OF FREEDOM. ”

DAVID MORY

PROJECT LEAD
WH MÜNZPRÜFER BERLIN

wh münzprüfer
berlin gmbh

TECH CHALLENGE 3 – AURORA:

AIR CONDITIONING WITH NATURAL REFRIGERANTS

06

How do you build an AC system for big construction and agricultural vehicles at +45°C –with climate-friendly refrigerants?

ABOUT AURORA

AURORA - a company of INDUS Holding AG - is a leading provider of HVAC solutions in on- & off-road vehicles. Our solutions combine advanced engineering, energy efficiency and sustainability.

Why Now: The F-Gas Regulation mandates the phasing out of refrigerants currently in use. Sustainable natural alternatives must be found to offer similar performance and safe use compared to the refrigerants currently in use.



THE AURORA TECH CHALLENGE:

- * **Layout of a sustainable natural refrigerant HVAC solution** using natural refrigerant R290 working up to +45°C ambient temperature with similar performance to current systems.
- * **Design a cabin HVAC solution including a safety concept** with a focus on low refrigerant volume, high efficiency, and high performance. The lowest possible costs are mandatory.
- * **Build the system around an electric compressor** ready for both electric- and diesel-driven agriculture and construction machines.
- * **Test it.** Functional testing of heating and cooling, with measurement data to back it up.
- * **Deliver a demonstrator on a frame**—built to be shown at trade fairs, not just to sit in a lab.

MAKE SURE TO APPLY IF YOU:

- * Study Mechanical Engineering, Thermodynamics/Energy Engineering, Mechatronics, Electrical Engineering, or Product Design—and want to work on real thermal systems.
- * Are interested in project management, design/CAD, CFD/FEM simulation, embedded software (compressor control), electrical systems or prototype testing. The team needs all six.
- * Are based in Berlin or Brandenburg.



“ JOIN OUR CHALLENGE IF YOU’D LIKE TO DEVELOP A NEW CONCEPT FOR A CABIN AIR CONDITIONING SYSTEM USING A SUSTAINABLE, NATURAL REFRIGERANT. AT AURORA, WE’RE PIONEERING OUR CUSTOMERS’ COMFORT—AND YOU CAN BE PART OF THE TEAM AND HELP SHAPE THE FUTURE OF CABIN AIR CONDITIONING. ”

DIEGO LEHMANN

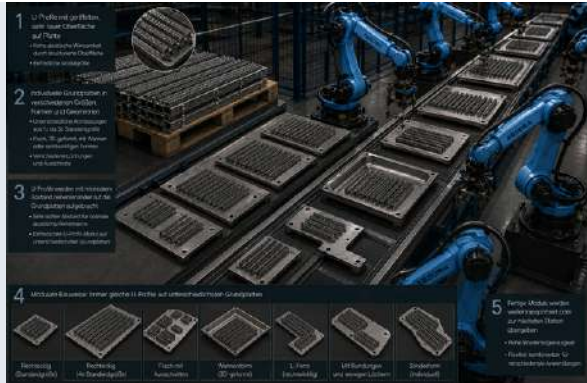
HEAD OF DEVELOPMENT
AURORA KONRAD G. SCHULZ GMBH & CO. KG
A COMPANY OF INDUS HOLDING AG

TECH CHALLENGE 4 – ABSORA:

MODULAR LIGHTWEIGHT MANUFACTURING SYSTEM

07

How do you build a production system that makes every product unique—at the cost of mass manufacturing?



ABOUT ABSORA

ABSORA is a Berlin-based company that has turned ordinary sheet metal into a high-performance material that simultaneously dampens airborne and structure-borne noise, while remaining extremely light and rigid. ABSORA sheet metal has already been used in heating systems, power plants, exhaust systems, noise barriers, inverters and ventilation units. The challenge: build the modular system and the software that lets any customer get a custom product at series production cost.

THE ABSORA TECH CHALLENGE:

- ✳ **Design a modular base plate system with variable U-profiles**—manufacturable on any laser or stamping machine, with no special tooling.
- ✳ **Engineer a click-join system that forms airtight cavities**—assembly works manually and with robots.
- ✳ **Handle individual customer requirements: cutouts, cable feedthroughs, bends**—vibration-proof, cost-efficient, removable.
- ✳ **Build AI-assisted software that generates optimal layouts from customer requirements**—material use maximised, manufacturing data output automatically.
- ✳ **Build a working prototype and demonstrate the full pipeline:** requirement in, component out.

MAKE SURE TO APPLY IF YOU:

- ✳ Study Mechanical Engineering, Lightweight Construction, Production Engineering, Computer Science, Robotics, or a related field—and want to bridge hardware and software in manufacturing.
- ✳ Are excited by the idea of building something that could change how individual industrial products are made at scale.
- ✳ Are based in Berlin or Brandenburg.



“ BATCH SIZE 1 AT SERIES PRODUCTION COST—MECHANICAL ENGINEERING, ROBOTICS, SOFTWARE, AND AI WORKING TOGETHER PERFECTLY. YOU'RE NOT JUST DEVELOPING A PLATE; YOU'RE CREATING A NEW WAY OF MANUFACTURING INDIVIDUAL INDUSTRIAL PRODUCTS. AND IF SOMEONE TRULY STANDS OUT, WE'D LOVE TO HIRE THEM DIRECTLY. ”

JOHANNES HÄRLE
FOUNDER & CTO
ABSORA



TECH CHALLENGE 5 – CEREPAL.AI:

LOW-COST QUADRUPEL ROBOT

08

How do you design and build a four-legged robot from scratch—durable, affordable, and smart enough to learn to walk?



ABOUT CEREPAL.AI

Cerepal.AI is a Berlin-based startup developing cross-embodiment physical intelligence and robotic systems to reduce human presence in hazardous environments. They build hardware and software together—creating low-cost robotic approaches that can scale into low-margin industries and address the labour shortages of demographic decline. This is robotics with a real-world mission.

THE CEREPAL TECH CHALLENGE:

- * **Build a four-legged quadrupel robot from scratch**—adapted from open-source designs to reduce manufacturing cost and increase durability.
- * **Design the PCB for power and control electronics**—custom hardware that makes the robot run.
- * **Integrate your robot into Cerepal's learning stack**—connecting hardware to the software that teaches it how to move.
- * **Teach your robot to walk** and even climb obstacles.

MAKE SURE TO APPLY IF YOU:

- * Study Mechanical Engineering, Electrical Engineering, Robotics, Autonomous Systems, or Computer Science with robotics coursework.
- * Want to build physical intelligence from the ground up—hardware and software together.
- * Are based in Berlin or Brandenburg.



“ THE ROBOTIC AND PHYSICAL INTELLIGENCE REVOLUTION IS UNDERWAY — NOW IS THE TIME TO GET INVOLVED. WE WANT TO GIVE STUDENTS THE OPPORTUNITY TO BUILD THE FUTURE WITH US. ”

FREDERIK WEGNER

FOUNDER
CEREPAL.AI

 **Cerepal**

ABOUT MOTIONLAB.BERLIN

MotionLab.Berlin is Europe's largest hardtech and deep tech hub. We connect students, startups, and companies with the machines, coaches, and community it takes to turn ideas into working prototypes—and prototypes into companies.

What makes us different

- Hands-on labs with 3D printing, laser cutting, CNC, and electronics.
- A community of startups, SMEs, corporates, artists, and makers.
- Coaches, mentors, industry experts, and international networks.

At MotionLab.Berlin, you don't just learn—you build, test, and grow. The Tech Talent Program is how students become part of it.



WHERE OUR ALUMNI WORK NOW











PROGRAM PARTNERS







TECH TALENT PROGRAM

Meet the People Behind the Challenges

Five challenges, one coaching team.

Engineers who have built real hardware, led real teams, and know exactly what it takes to turn a concept into a working prototype in 12 weeks.

Pooja Channaveerappa (Lead Coach)

Duncan Cornes (Tech Coach)

Will Fischer (Tech Coach)

Fred Tucker (Tech Coach)



APPLY NOW!



BATCH 9

HOW COACHING WORKS?

Every team is supported on two levels — one coach who guides the process and one who guides the engineering.

✓ **LEAD COACH**

EVERY TEAM, EVERY WEEK



POOJA CHANNAVEERAPPA

Pooja meets with every team on a weekly basis throughout the program. As an aerospace engineer and experienced innovation coach, she supports teams from a technical perspective on project management, structured problem-solving and design thinking — helping teams stay on track, work through ambiguity, and approach their challenge with the right methodology. She is the constant across all five challenges.

✓ **TECH COACH**

DEDICATED TO YOUR CHALLENGE

ONE EXPERT ENGINEER / CHALLENGE

Alongside Pooja, each team is assigned a dedicated Tech Coach who meets with them regularly to work through the actual engineering — technical decisions, design trade-offs, and hands-on problem solving specific to their challenge. Some challenges also have a second coach they can draw on for additional technical depth.

CHALLENGE COACHING ASSIGNMENTS

→ **ILLUTHERM**

Will Fischer

→ **WH MÜNZPRÜFER**

Fred Tucker

→ **AURORA**

Duncan Cornes + Will Fischer
Duncan leads, Will supports on thermodynamics & HV systems

→ **ABSORA**

Duncan Cornes

→ **CEREPAL.AI**

Duncan Cornes + Fred Tucker
Duncan leads on mechanical design, Fred supports on electronics & embedded software

HOW COACHING WORKS?

Throughout the program, all teams will also have the opportunity to engage with additional guest experts on specific topics relevant to their challenge — bringing fresh perspectives, specialist knowledge, and inspiration from across the deep tech ecosystem.

LEAD COACH:

POOJA CHANNAVEERAPPA

Aerospace Engineer & Hardware Innovator

6+ years Hardtech Coaching

Aerospace Engineer

OPEN SOURCE HARDWARE FOUNDER

HASSO PLATTNER INSTITUTE

DESIGN THINKING COACH



BACKGROUND

Aerospace engineer with a career spanning satellite systems, hydrogen propulsion, aerospace hydraulics, and open-source hardware. She has worked in R&D and design engineering roles at Orbital Machines, OM Hydrogen Propulsion, German Orbital Systems, and Airbus Group Innovations, and is co-founder of Pocket Reform, an open-source modular computing device now commercially sold under MNT Reform. Trained in Design Thinking at the Hasso Plattner Institute, she brings the rare combination of deep engineering fluency and structured facilitation methodology to every team she coaches.

CAREER

- Mission Operations & Technical Program Engineer at German Orbital Systems
- Hydraulic Design Engineer at Orbital Machines
- Design Engineer for Aerospace Hydraulics & Propulsion at OM Hydrogen Propulsion
- Design Engineer & Co-Founder at Pocket Reform
- Lead Coach for Tech Talent Program & Hardtech Innovation Accelerator of MotionLab.Berlin

CORE DISCIPLINES

- Aerospace hydraulics & propulsion system design
- Vibration & noise analysis (FEM/SEA)
- Open source hardware development
- Design thinking facilitation
- Agile product development & milestone management

NOTABLE ACHIEVEMENTS

- Co-founder of Pocket Reform, an open-source modular computer, commercially sold under MNT Reform
- Cryogenic hydrogen pump design & flow path analysis at Orbital Machines
- FEM/SEA noise and vibration simulation at Airbus Group Innovations
- Design Thinking Advanced Training from Hasso Plattner Institute
- 6+ years coaching hardware and deep tech teams from early stage to batch production

WHAT SHE BRINGS TO THIS CHALLENGE

- **Engineering Depth Across All Challenges** — Aerospace hydraulics, propulsion systems, vibration analysis, and hardware product development across Orbital Machines, OM Hydrogen Propulsion, Airbus, and German Orbital Systems. An engineer who also coaches, not the other way around.
- **Early-Stage Hardware Agility** — Worked across cryogenic systems, satellite missions and open source hardware from concept to production. Stays flexible and adaptive when the development path is unclear — applied equally to people and process.
- **Design Thinking & Facilitation** — Advanced training at the Hasso Plattner Institute, applied across startups, accelerators and innovation hubs over six years. Helps teams define problems, scope solutions and iterate under time pressure.
- **Program & Milestone Management** — Tracks progress across all five challenge teams, monitors milestone delivery and flags risks before they become blockers.
- **Founder's Mindset** — Co-founded and shipped Pocket Reform, a hardware product now commercially sold under MNT Reform. Coaches from direct experience of building something real under tight timelines and genuine technical uncertainty.

BUILT FOR THIS CHALLENGE

Pooja is the rare coach who can walk into any of the five Batch 9 challenge rooms and speak the engineering language of the team. Her career spans cryogenic pumps, satellite systems, vibration engineering and hardware product development — combined with six years of coaching experience in exactly this type of program. She brings technical credibility, structured facilitation and the founder's instinct for what actually matters in a 10-week sprint.

WHAT YOU'LL LEARN

- How to make confident engineering decisions under uncertainty
- How to apply human-centred design methods to real hardware problems
- How to structure and manage a complex project under a fixed deadline
- How to stay agile when requirements shift mid-sprint
- How to present technical work clearly to industry stakeholders

DUNCAN CORNES

Senior Mechanical & Systems Engineer

12 years across Aerospace

E-mobility & Climate Tech

CENG · IMECHE | MENG WARWICK | ROLLS-ROYCE GRADUATE | 3× FOUNDER | PATENT HOLDER



BACKGROUND

Chartered Mechanical Engineer with 12 years across aerospace, e-mobility and climate tech. Started at Rolls-Royce as a subsystem designer on the development of jet engines, before moving into startups: rocket fuel pumps, an EV battery taken to production in Rwanda, and three ventures of his own. Hands-on and cost-driven, equally at home in a corporate engineering environment and a fast-moving startup.

CAREER

- Sub-System Designer & Integrator · Rolls-Royce · 4+ yrs
- Senior ME — Rocket Fuel Pumps · Orbital Machines
- Senior ME — EV Battery · Ampersand
- Head Engineer · Blue Skies Minerals
- Founder · Mek-Tek · Resist · Compositive

CORE DISCIPLINES

- Fluid & thermal systems design
- Safety-critical mechanical engineering
- Pipe & harness layout
- Shock & vibration engineering
- DFMEA & failure mode analysis

NOTABLE ACHIEVEMENTS

- €1.7M saved — single installation design
- 30% BOM cost reduction, engine externals
- EV battery designed, built and deployed in Rwanda production
- Patent #10024761 — Rolls-Royce
- 100+ DFMEA sessions facilitated
- Author & Evaluator status on 7 Rolls-Royce engines

WHAT HE BRINGS TO THIS CHALLENGE

- **Modular Systems & Tolerance Management** - Designed 100+ precision sub-system components at Rolls-Royce. Expert in tolerance stack-up analysis and interface engineering—essential for ABSORA's modular joining system and airtight cavities
- **Cost-Driven Manufacturing** - Achieved >30% BOM cost reduction at Rolls-Royce without weight penalties. Bridges high-precision aerospace DFM with low-cost series customization.
- **Concept to production** - Experience across virtually all prototyping methods — and has taken several through to production.
- **Interface & Seal DFMEA** - Led ~100 DFMEA sessions for safety-critical systems. Guides teams to identify modular joint and sealing failure modes early in Week 3, not Week 9.
- **Acoustic Physics & Dampening** - Hands-on research into acoustic panel mechanics, specifically solving for sound absorption via friction and resonance damping.

BUILT FOR THIS CHALLENGE

Duncan brings exactly what the ABSORA challenge demands—a career built on designing modular, lightweight hardware with precise tolerances, airtight integrity, and low manufacturing costs. Combining aerospace-grade DFMEA discipline with hands-on startup manufacturing, he will help students catch failure modes early and turn modular concepts into scalable, buildable hardware.

WHAT YOU'LL LEARN

- How to design for manufacture from day one — not as an afterthought
- How to make engineering decisions under real cost and time pressure
- How to identify and test failure modes before they derail a project
- How to take a concept all the way through to something buildable
- How to manage a complex project with multiple moving parts and a fixed deadline

FRED TUCKER

IoT Engineer & Hardware Product Builder

20 years across Radio

Electronics and Industrial IoT

CTO, ASHRAM LABS | IOT SPECIALIST | PCB DESIGNER & MANUFACTURER | FULL-STACK HARDWARE ENGINEER



BACKGROUND

Engineer with 20 years of experience across large-scale radio and satellite communications and industrial IoT. For the last decade, he has been running his own company Ashram Labs, focused on building IoT products end to end across electronics, software and mechanical engineering. He has a PCB assembly line at MotionLab.Berlin and has shipped commercial hardware products currently on the market.

CAREER

- CTO & Founder · Ashram Labs · Berlin · 2019–present
- IoT Hardware Engineer · ArrowTec GmbH · Berlin
- IoT Engineer · Smart Soles · Hong Kong
- IoT Engineer · Next Big Thing AG · Berlin
- Radio & Satellite Systems Engineer · 10 years · UK & international

CORE DISCIPLINES

- PCB design & in-house manufacture
- Embedded C / C# for microcontrollers
- Multi-voltage power electronics
- Payment & IoT system integration
- Sheet metal & enclosure design

NOTABLE ACHIEVEMENTS

- Designed, built, and shipped SoluStar — insolubility index mixer for milk compliance testing, first 10 units manufactured at MotionLab.Berlin
- Designed electronics for AssistMe Smart Diaper System — deployed in care homes across multiple countries
- Designed and sold NB-IoT development kits — available commercially on Tindie
- 20 years of delivered hardware across radio, satellite, IoT, and medical devices
- PCB assembly line at MotionLab.Berlin

WHAT HE BRINGS TO THIS CHALLENGE

- **Payment & Embedded Systems Integration** - C# and microcontroller development applied directly to integrating the WH Münzprüfer payment module incl. session logic, third-party hardware communication, edge case handling.
- **PCB Design & Production** - Designs, manufactures and assembles his own PCBs at MotionLab.Berlin. Specialises in microcontroller-based IoT boards.
- **Multi-Voltage Power Electronics** - Charging and power electronics across IoT and industrial applications. Directly applicable to ChargeLock's 24V–52V multi-standard e-bike charging requirement.
- **Enclosure & Sheet Metal Design** - Hands-on sheet metal fabrication, CNC and welding alongside CAD. Will guide housing design from a manufacturability standpoint, not just aesthetics.
- **Shipped Commercial Products** - Multiple products taken from concept to market, including hardware manufactured at MotionLab.Berlin.

BUILT FOR THIS CHALLENGE

Fred has built and shipped exactly the type of product ChargeLock is; namely, a physical unit with embedded logic, hardware-software integration, and real-world deployment requirements. He brings the full stack: PCB design, firmware, enclosure, and the manufacturing know-how to make it buildable at MotionLab.Berlin.

WHAT YOU'LL LEARN

- How to design and integrate embedded electronics into a physical product
- How to integrate a third-party hardware module into your own system
- How to manage multi-voltage power electronics safely and simply
- How to design an enclosure that is manufacturable, not just functional
- How to take a prototype from the bench to something that actually ships

WILL FISCHER

Hardware Engineer

15+ years across Thermodynamics

Climate Tech, Aerospace and Medical Devices

CEO, FISCHER INNOVATIONS

USPTO REGISTERED PATENT AGENT

MBA UNIVERSITY OF CHICAGO BOOTH



BACKGROUND

Hardware engineer and entrepreneur with 15+ years across R&D, thermodynamics, climate tech, aerospace and medical devices. Started his career researching convective heat transfer at NASA's Langley Research Center, building custom vacuum and environmental test chambers. From there: plasma etching systems at a nanotech medical device company, environmental control at industrial scale at Clarity Technology, and his own Berlin-based engineering company, Fischer Innovations. Holds an MBA from Chicago Booth and is a registered USPTO Patent Agent. This gives him a rare combination of deep technical and commercial perspective.

CAREER

- CEO & Founder · Fischer Innovations · Berlin · 2020–present
- Principal Engineer · Clarity Technology · Los Angeles
- Managing Partner · Voxdale · Berlin
- Materials Engineer · Nano Precision Medical · San Francisco
- Radio & Electronics Engineer · 10 years · international

CORE DISCIPLINES

- Vacuum & controlled atmosphere systems
- Thermal & environmental chamber design
- Sealed pressure system engineering
- Gas composition & process control
- IP strategy & patent advising

NOTABLE ACHIEVEMENTS

- Principal Engineer on North America's first integrated 100T Direct Air Capture and Sequestration Plant
- NASA-sponsored master's research on convective heat transfer in microgravity at Rice University
- Designed and built custom vacuum ovens and environmental test chambers for laboratory and industrial use
- Managed inductively coupled plasma etcher installation, processing and maintenance at Nano Precision Medical

WHAT HE BRINGS TO THIS CHALLENGE

- **Vacuum & Controlled Atmosphere Engineering** — From custom vacuum oven hardware at NASA to high-vacuum plasma systems at Nano Precision Medical and facility-wide gas composition control at Clarity, working under vacuum and protective gas is where his career began.
- **Thermal & Environmental Control** — Designed precise control of humidity, temperature and gas composition at industrial scale, including a 50kW oven.
- **Sealing & Pressure System Design** — Built sealed environmental chambers across multiple roles. Understands what it takes to maintain integrity under combined thermal and pressure load.
- **IP & Certification Awareness** — As a registered USPTO Patent Agent, he will instinctively flag IP considerations for ILLUTHERM and identify where CE re-examination of the illulab device may be triggered by the new module.
- **Systems Engineering at Pace** — Built a functioning 100T DAC plant with a team of 10 in 65 days. Delivers working physical systems under real constraints.

BUILT FOR THIS CHALLENGE

Will has spent 15 years designing, building, and testing systems that control temperature, pressure, and atmosphere, from a vacuum oven at NASA to a 100T industrial DAC plant. The ILLUTHERM challenge asks students to do exactly this at lab scale. He has built the real version.

WHAT YOU'LL LEARN

- How to design and validate a sealed system under real thermal and pressure load
- How to build and instrument a test rig that produces reliable results
- How to think about IP and certification from day one
- How to make fast, evidence-based engineering decisions
- How to take a hardware concept to a prototype tested on the real device

DUNCAN CORNES

Senior Mechanical & Systems Engineer

12 years across Aerospace

E-mobility & Climate Tech

CENG · IMECHE | MENG WARWICK | ROLLS-ROYCE GRADUATE | 3× FOUNDER | PATENT HOLDER



BACKGROUND

Chartered Mechanical Engineer with 12 years across aerospace, e-mobility and climate tech. Started at Rolls-Royce as a subsystem designer on the development of jet engines, before moving into startups: rocket fuel pumps, an EV battery taken to production in Rwanda, and three ventures of his own. Hands-on and cost-driven, equally at home in a corporate engineering environment and a fast-moving startup.

CAREER

- Sub-System Designer & Integrator · Rolls-Royce · 4+ yrs
- Senior ME — Rocket Fuel Pumps · Orbital Machines
- Senior ME — EV Battery · Ampersand
- Head Engineer · Blue Skies Minerals
- Founder · Mek-Tek · Resist · Compositive

CORE DISCIPLINES

- Fluid & thermal systems design
- Safety-critical mechanical engineering
- Pipe & harness layout
- Shock & vibration engineering
- DFMEA & failure mode analysis

NOTABLE ACHIEVEMENTS

- €1.7M saved — single installation design
- 30% BOM cost reduction, engine externals
- EV battery designed, built and deployed in Rwanda production
- Patent #10024761 — Rolls-Royce
- 100+ DFMEA sessions facilitated
- Author & Evaluator status on 7 Rolls-Royce engines

WHAT HE BRINGS TO THIS CHALLENGE

- **Fluid & Thermal Systems Design** - Pipe/harness layouts at Rolls-Royce and turbopump design at Orbital Machines applied directly to high-integrity R290 refrigeration circuits.
- **Safety-Critical Mechanical Design** - Author status on 7 Rolls-Royce engines and production lead on a 75V EV battery. Directly relevant to R290 containment and leak safety.
- **Shock & Vibration Engineering** - Engineered dynamic vehicle and aerospace systems built to survive real-world vibration loads, directly relevant for a vehicle-mounted demonstrator.
- **DFMEA at Depth** — 100+ sessions at Rolls-Royce and safety-critical startups. On an unsolved safety challenge, structured failure mode identification from Week 3 is not optional.
- **High-Voltage Systems Awareness** - Production lead on a 75V EV battery pack. Practical grounding for the team navigating AURORA's 400–800V electric compressor.

BUILT FOR THIS CHALLENGE

Duncan brings the thermal and safety engineering depth the AURORA challenge demands, from fluid systems on jet engines to safety-critical EV design and 100+ DFMEA sessions. He understands what it takes to design a system where failure is not an option, and how to guide a student team to do the same within a 10-week sprint.

WHAT YOU'LL LEARN

- How to design fluid and thermal systems that work under real operating conditions
- How to approach safety-critical engineering decisions systematically
- How to think about shock, vibration and durability from day one of the design
- How to identify and test failure modes before they become showstoppers
- How to translate a safety concept into a testable engineering specification.

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- Head Engineer · Blue Skies Minerals
- Founder · Mek-Tek · Resist · Compositive

CORE DISCIPLINES

- Robotic & Dynamic Joints
- Low-Cost DFM
- Actuator Integration
- Tolerance Stack-Up
- DFMEA

NOTABLE ACHIEVEMENTS

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WHAT HE BRINGS TO THIS CHALLENGE

- **Dynamic Loads & Climbing Durability:** Applies aerospace shock/vibration experience to repeated dynamic impact loads on leg structures and joints as quadrupeds walk and climb obstacles.
- **Low-Cost Open-Source Adaptation:** Achieved >30% BOM cost reduction at Rolls-Royce. Expert in adapting open-source quadruped designs for low-cost local fabrication.
- **Actuator & Interface Integration:** Designed 100+ subsystem interfaces. Manages tight tolerances so quadruped leg and actuator assemblies move reliably without binding during learning stack execution.
- **Early DFMEA & Rapid Iteration:** Led ~100 safety/reliability DFMEA sessions. Helped teams catch joint and structural failure modes early in Week 3 through rapid build-break-rebuild cycles.

BUILT FOR THIS CHALLENGE

Duncan combines aerospace dynamic load discipline with high-speed startup prototyping. He guides teams to adapt open-source quadruped hardware into low-cost, durable legs capable of walking and climbing in hazardous environments.

WHAT YOU'LL LEARN

- How to adapt an open-source design for lower cost and higher durability.
- How to design mechanical joints and structures that survive repeated walking and climbing impact loads.
- How to identify joint and actuator failure modes in Week 3, before they show up mid-build.
- How to iterate fast — build, break, rebuild.