INDUSTRIAL DESIGN

PORTFOLIO

Harry KP

Hi,
I'm Harry.

British Lead Designer. 3 years experience in Tokyo, designing award-winning CNC machines, tools & components at *Makino Milling Machine Co.*

- Founding member of Makino Design, a cutting-edge in-house team spearheading industrial design for Makino, a world leading CNC machining company.
- Led and developed projects from initial brief to final 3D product visualisation and global manufacture. Skilled at working in fast paced environments, public speaking and collaborating with cross-functional, international teams.

- A curious individual with a desire for adventure.

harry.kp58@gmail.com www.harrykp.com

Commercial History

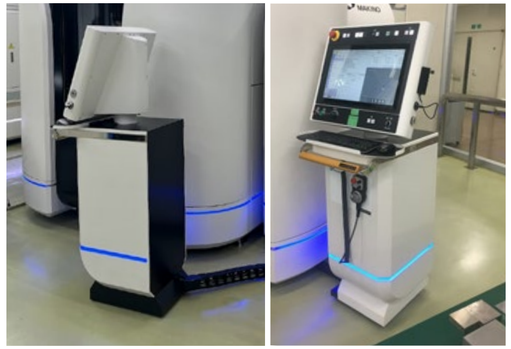
Industrial Design

Makino Luminizer LB300/ LB500 - Exterior Casing

Commercially released 2021

Makinos's entry into the laser processing machine business, releasing the LUMINIZER LB300 and LB500.

High-speed and high-precision machining of small parts made of difficult-to-cut and brittle materals. Developed for use in fields such as aircraft, medicine, and semiconductors.

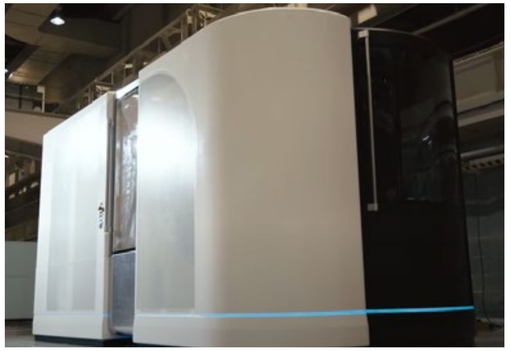


Makino Luminizer LB300/LB500 - HMI Control Pillar

Commercially released 2021

Pioneer & lead industrial designer of the HMI control pillar for the Makino Luminizer machine models.

Original hand-sketch concepts, CAD development and proposals to internal teams & management. Group discussions, presentations and collaboration with Japanese engineers to create the final product.



Makino Concept E-Machine - Exterior Casing

Commercially released 2020

A concept machine that embodied the direction of future of CNC machining & manufacturing at Makino. Representing: electrical, endurable, expandable, easy-to-use, exchangeable & ecological machining.

Manufactured and showcased at the 2021 Tokyo CNC Milling & Machining Exphibitions.

Commercial History

Graphic Design & Branding

Makino Design Team

Commercially released 2019

Makino Design Team was established in 2019 as the in-house innovation team for Makino Machine Milling. Global headquarters located in Tokyo, Japan.

Alongside the team logo and branding, the Makino Asia visual design guidelines were renovated and finalised by the Makino Design Team, as the opening and headline project.

ATHIUM Material

Commercially released 2020

ATHIUM is a new, light and rigid casting that is 60% lighter while maintaining the same Young's modulus as gray cast iron.

Used in the moving structures of machine tools, Athium enables agile movement and reduces the impact during movement, achieving higher reliability and energy savings.

Makino Concept E-Machine

Commercially released 2020

Promotional branding, and the official logo of the Makino concept E-Machine was designed by the Makino Design Team.

The E-machine logo and branding represents the modernised design style and eco-friendly direction. A bold logo that emcompasses meaningful detailing, linking to the Makino heritage and future innovation.

Contents

Included in portfolio

Rapid Calibrator Smart Tool

Commercially released 2022

Sole visual designer.

Tasked with redesigning the visual style, silhouette and detailing of Makino's latest smart tool. Personally responsible for the name and final visualisation for international release.

Makino Spindle Sensor Cover

Commercially released 2023

Sole visual designer.

Designed and collaborated with engineers to create the protective cover for an intelligent sensor. The sensor cover is attached onto Makino's world-class spindle and deisgned for international markets.

FENIX Portable Rehab Device

Personal Design Project

The compact cable device that improves the injury rehabilitation experience for athletes. FENIX allows the user to perform their rehab exercises anywhere and encouraging to maintain social inclusion and team moral. Real-time feedback and progress can be seen by the user, coach & carers via the connected app.

Rapid Calibrator Smart Tool

Sole visual designer of the Makino's latest smart tool.

Designed the form, detailing and name of the Rapid Calibrator smart tool. Collaborating with Japanese engineers to prototype and manufacture the tool for global market release.

SKILLS: Sketch ideation, 3D CAD development, realistic rendering, presenting.

TASKS: Silhouette design. Tool detailing. Product colour & material selection. Final visualisations. Tool name choice.

Product released June 2022

Introduction

MAKINO SMART TOOLS

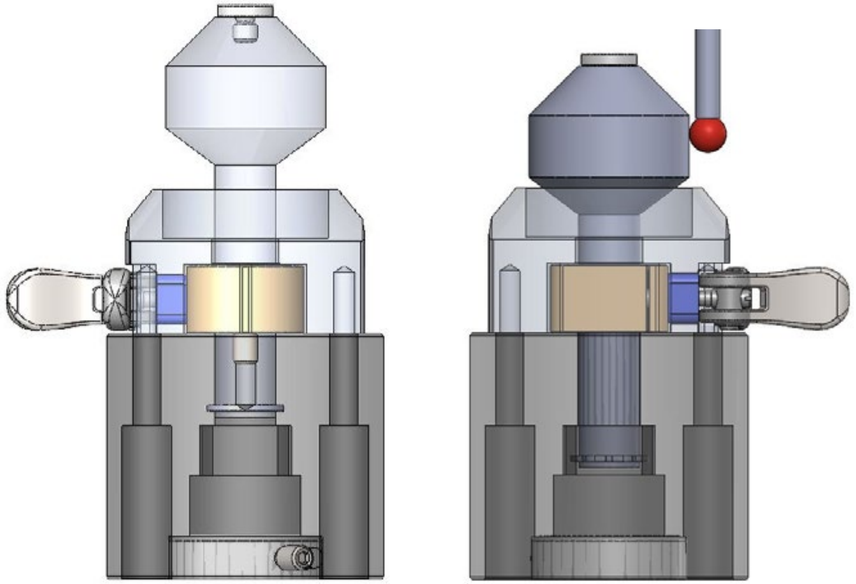
“Engineering tools that maximize the performance of processing machines. Smart tools contribute to quality improvement and cost reduction in various processes.”

THE RAPID CALIBRATOR

“A calibration tool for automatic workpiece measuring equipment. High precision in 3 easy steps, reducing the burden on workers & improves productivity.”

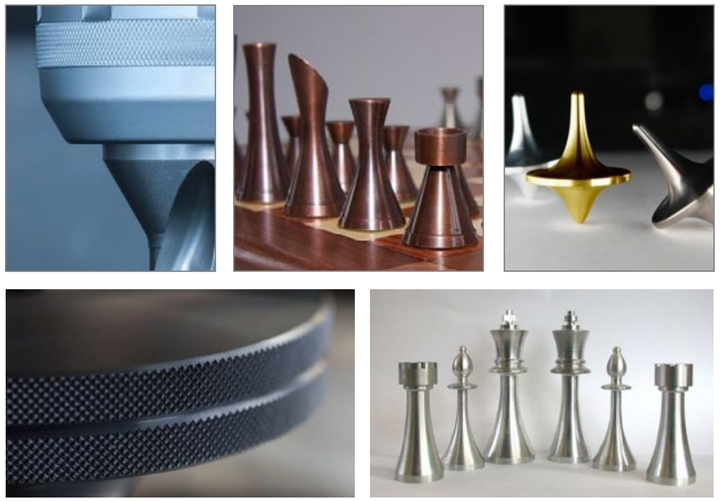
THE TASK

Redesign the form and additional detailing for a Makino Smart Tool. Branding & name choice is to be considered and proposed for global manufacture and marketing.

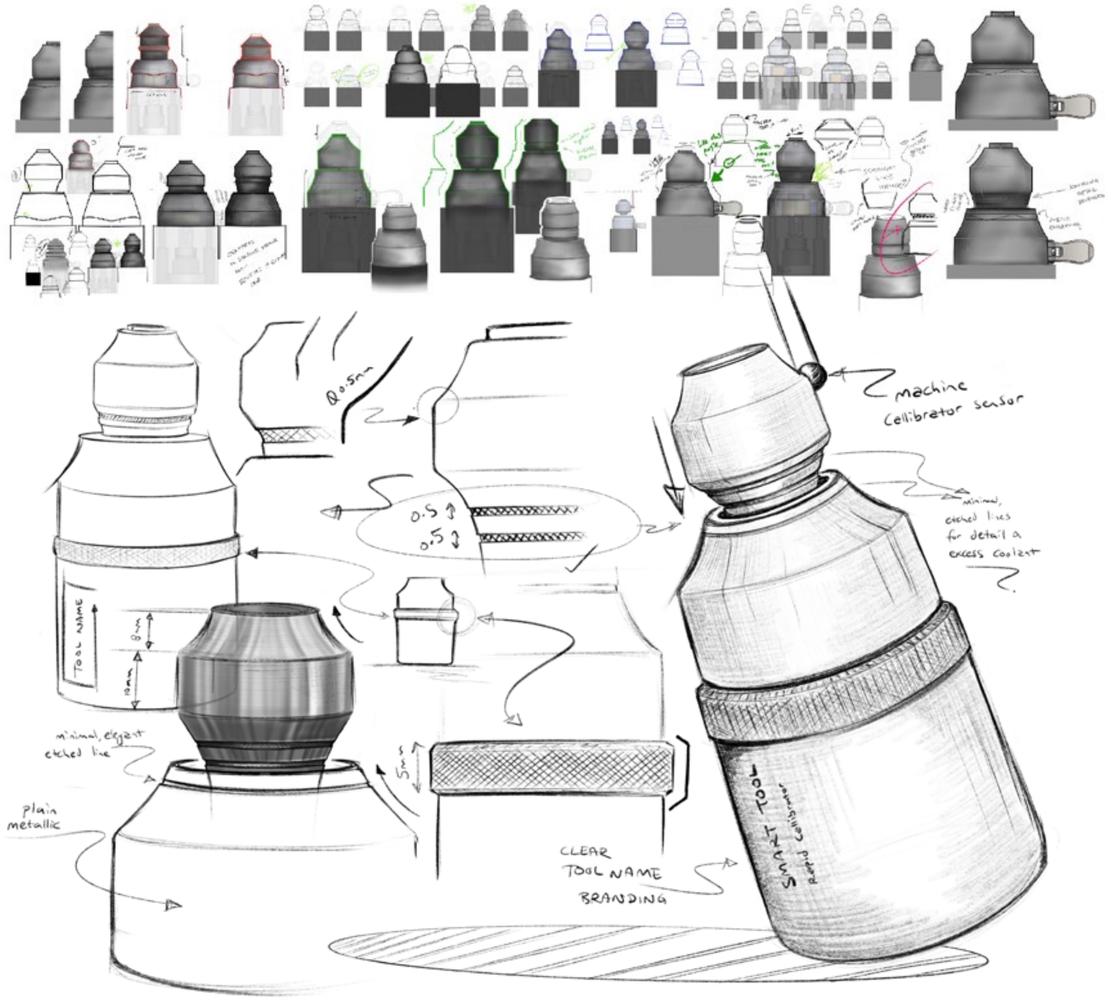


Initial CAD files provided by R&D team
Elevated + Compressed tool profile

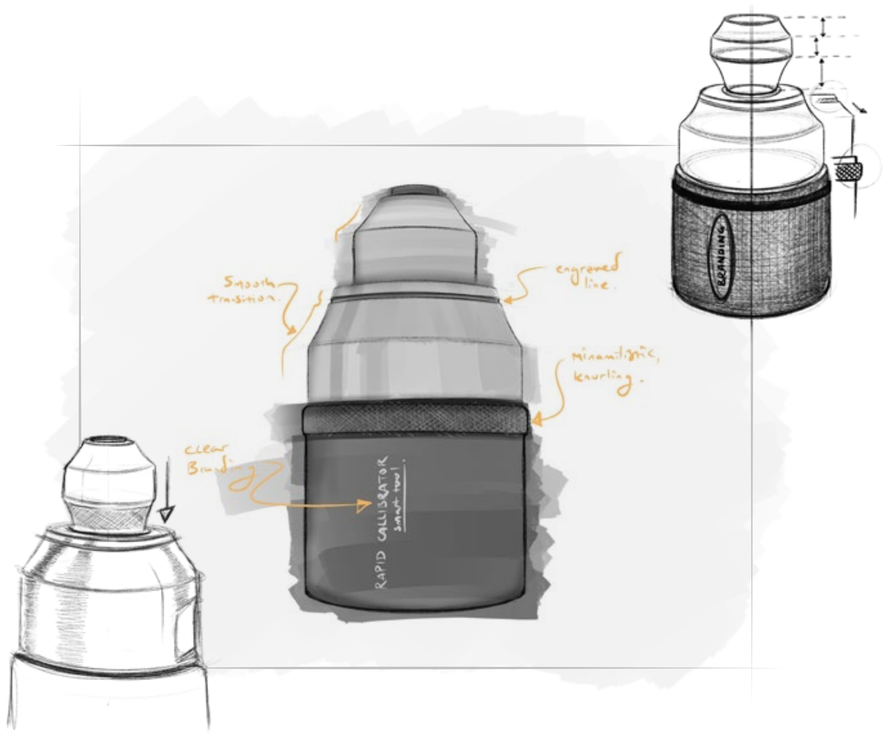
Inspiration



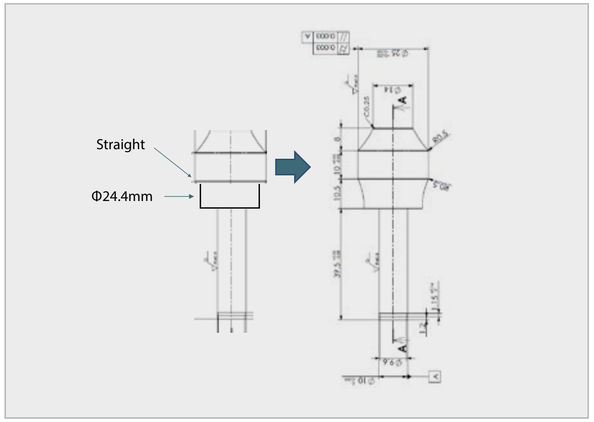
- A range of products, tools and categories provide out-the-box thinking and initial inspiration to the project.
- Minimal, metallic chess pieces gave a personal similar feeling to the desired product outcome.
- Existing machine tools were researched for trends and visual styling across international markets.

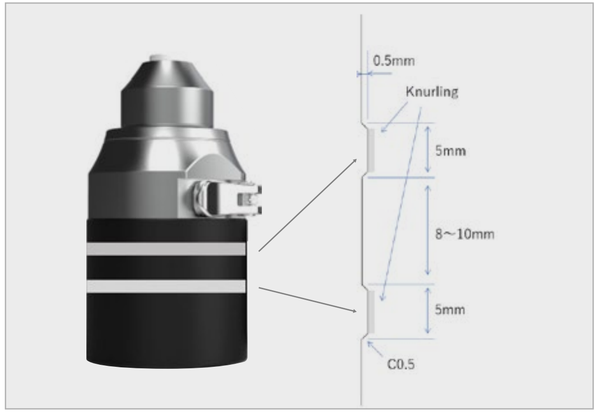


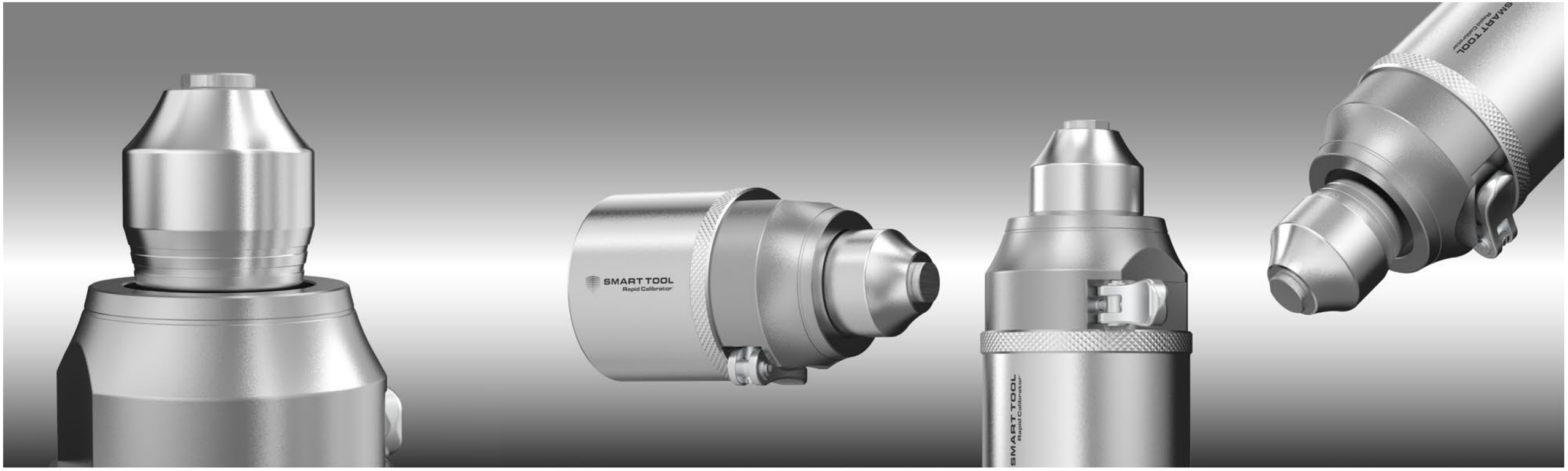
Development



- Final sketch ideation led to clear CAD development. Refined details were tested and developed on the 3D CAD model, as well as testing various metal shades and material choice.







Proposal

3D renders and final CAD drawings were presented to engineers & approved to manufacture. Size & depth of knurling was adjusted upon engineers feedback.

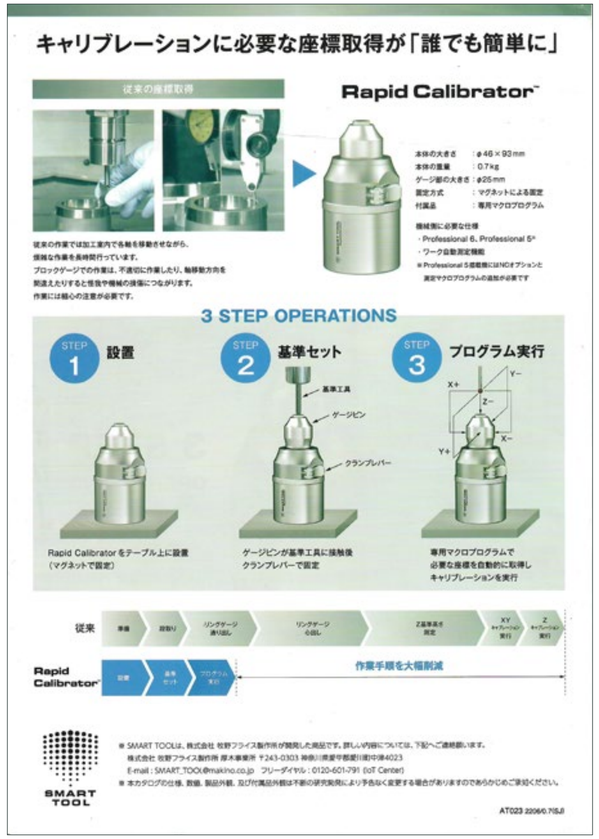
Personal product name choice of "Rapid Calibrator", & branding location was approved from these images.

Prototype

The prototype of the Rapid Calibrator was allowed slight adjustments to be made before final manufacture. The metal upper and lower parts of the tool were adjusted to different shades. Branding will be engraved onto the final, manufactured product.

Smart Tool Family

The Rapid Calibrator is the latest release in the Smart Tool family. The unique machine tools "reduce cycle times, setups and cost while enhancing quality and throughput."



The Rapid Calibrator

A calibration tool for automatic workpiece measuring equipment. Measuring a workpiece with high precision requires periodic calibration, which is a lengthy & skilled process. The Rapid Calibrator can perform the accurate calibration by anyone, safely in 3 easy steps.

Makino Spindle Sensor Cover

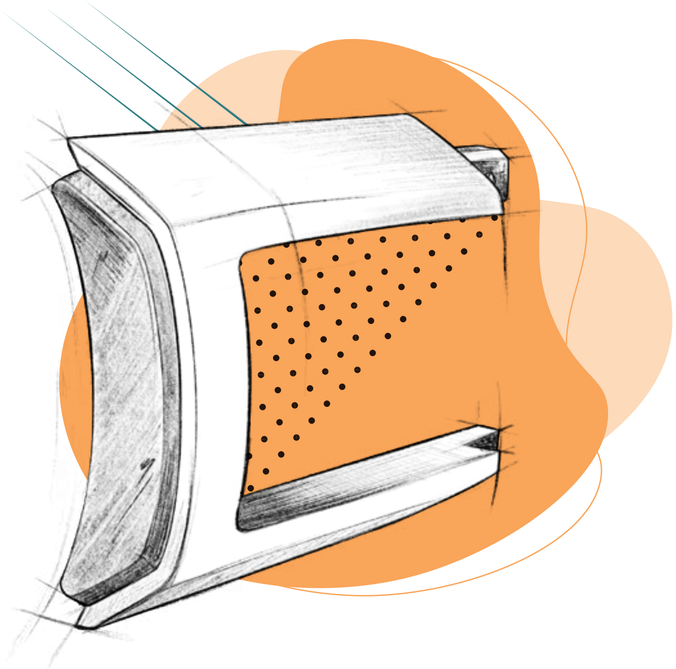
Sole visual designer of the protective cover for Makino's smart spindle sensor.

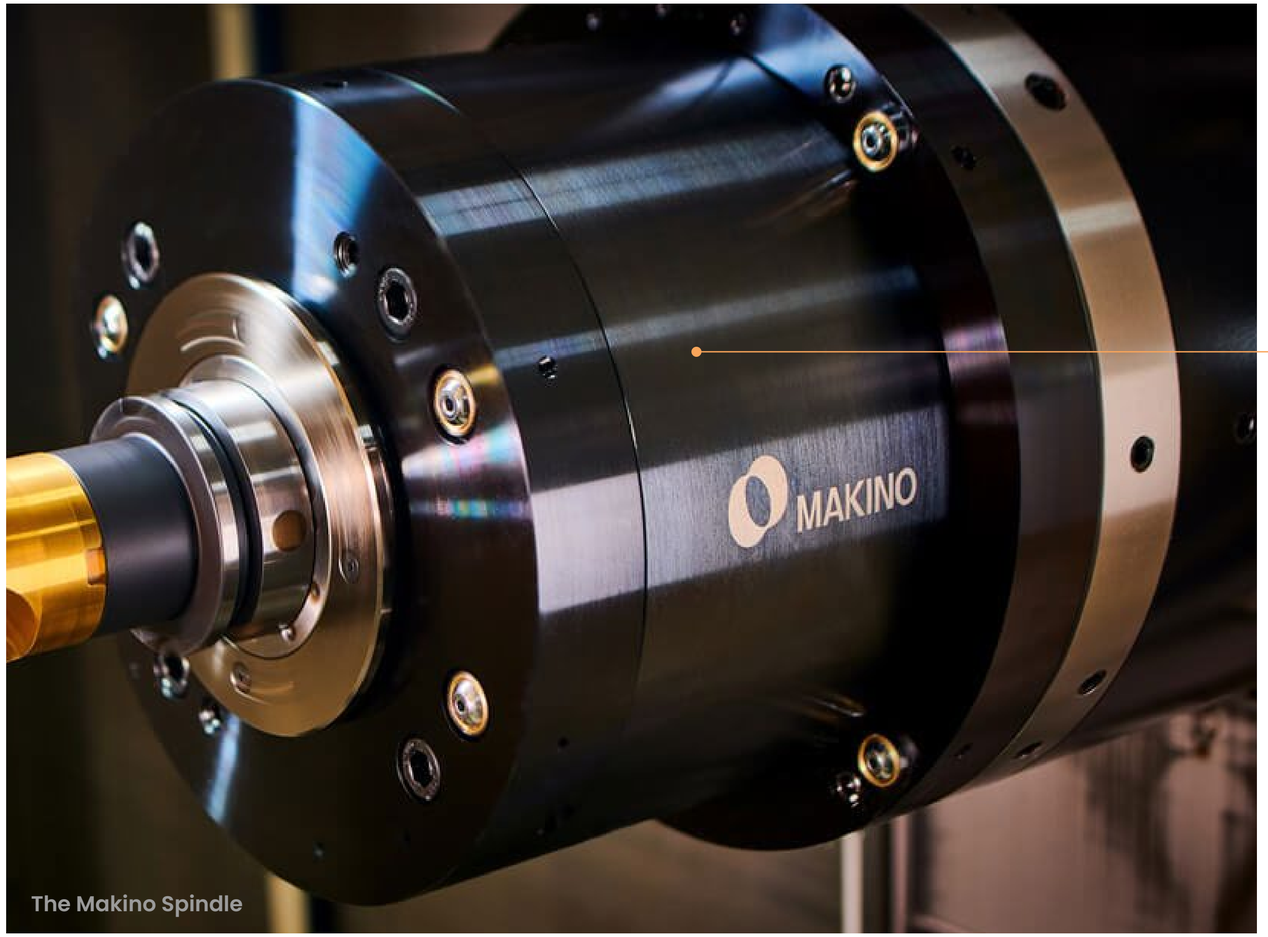
Product to be manufactured and attached onto Makino's world-class spindle, with current and future machines, in the Asian, European and American market.

SKILLS: Ideation. CAD development. 3D Visualisations. Presenting to management.

TASKS: Silhouette design. Logo location and styling. Collaboration with engineers.

Machined prototyped finalised April 2023





The Makino Spindle

Introduction

MAKINO SPINDLE

Known as “the heart of the Makino machine”, which shows the importance of designing a case that will be proudly attached onto the spindle & protect the new, smart sensor.

SMART SENSOR

Monitors performance and health of the Spindle. Data is tracked and displayed, providing information about Spindle performance and maintenance alerts to the workers.

PROTECTIVE CASE

Emobidying Makino visual design language and suitable for current and future Spindles. The case should be robust with a sleek visual style. Makino logo sizing, placement and finish on the casing should be considered and proposed.

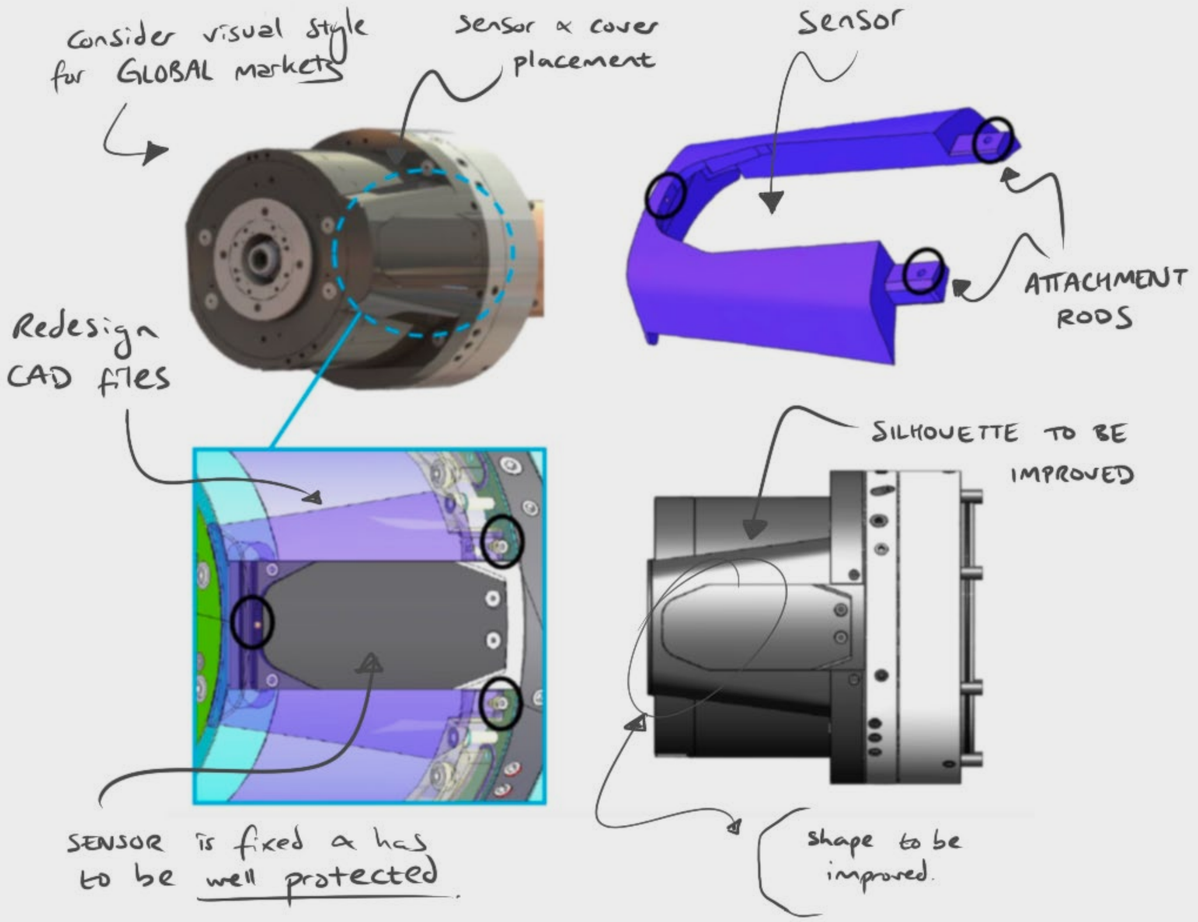
Notes From Engineer's Draft

CONSTRAINTS

- Size of cover is constrained to the sensor measurements.
- Size and location of casing rear attachment points.
- Front attachment area to cover & protect the sensor.

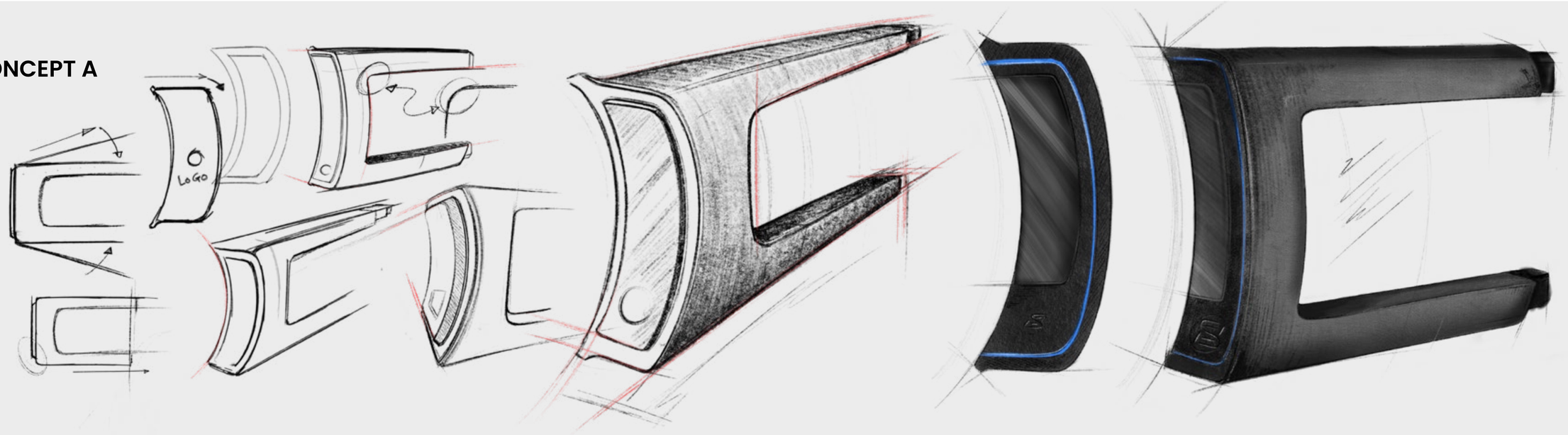
IMPROVEMENTS

- Overall form and silhouette of the outer case.
- Styling cohesiveness of the different elements.
- Spindle attachment rods.
- Design aesthetics from all angles.
- Makino branding to be placed on the casing.

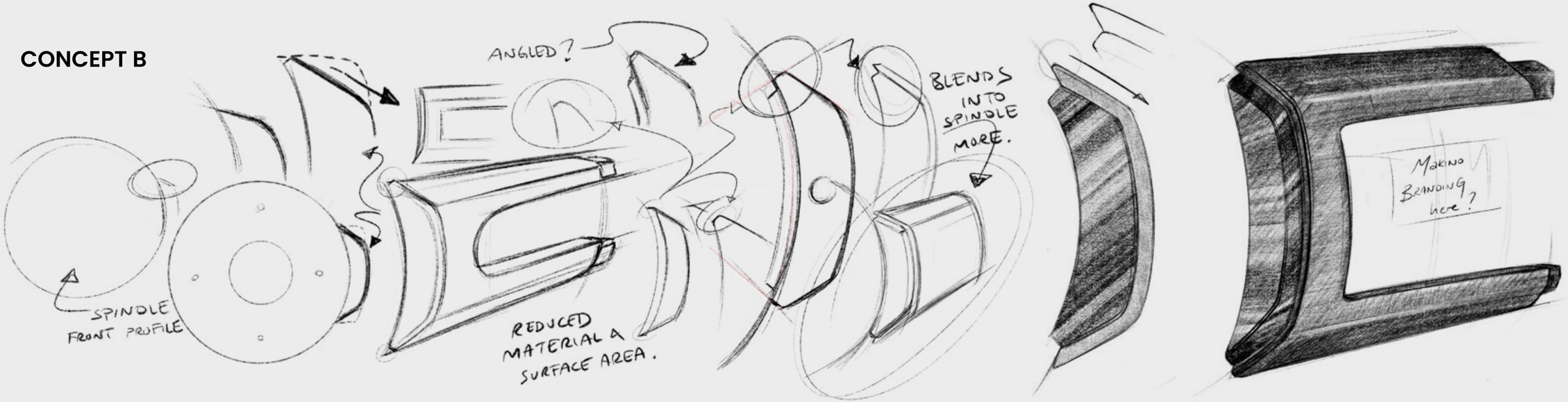


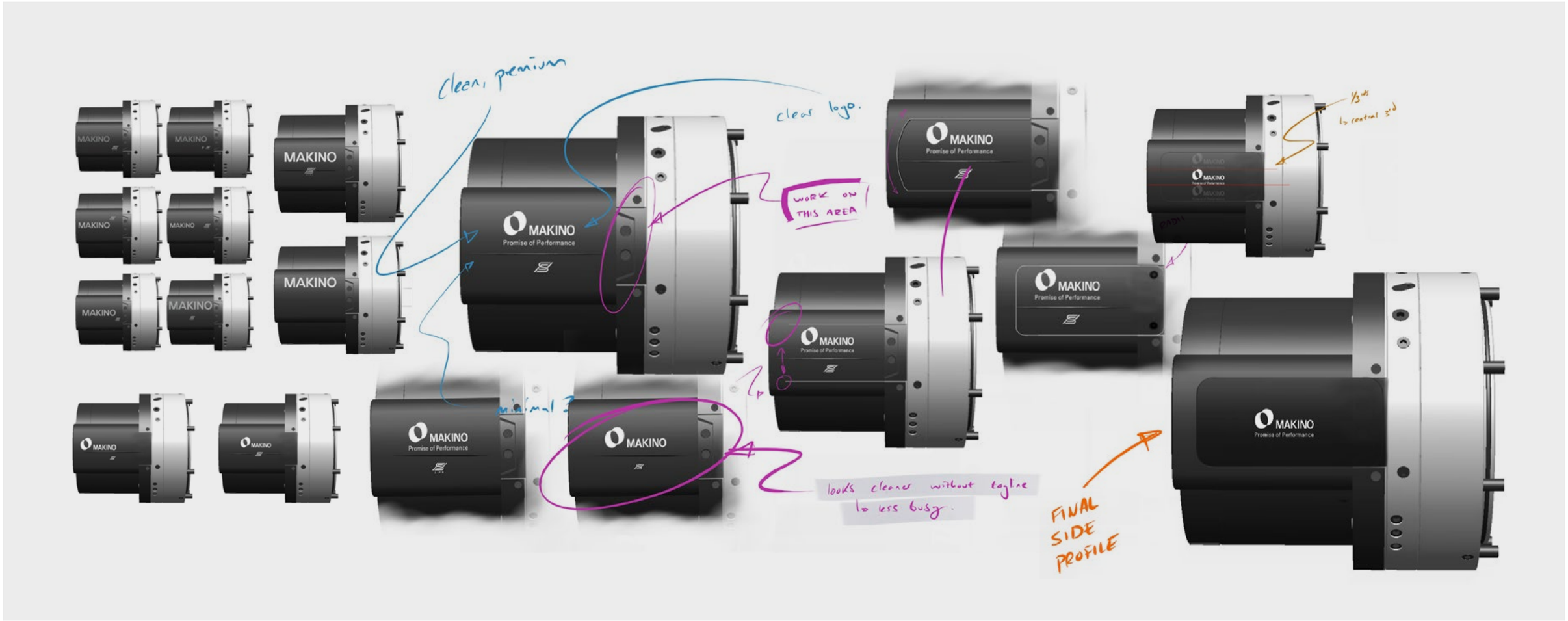
Initial annotations from Engineer's draft

CONCEPT A



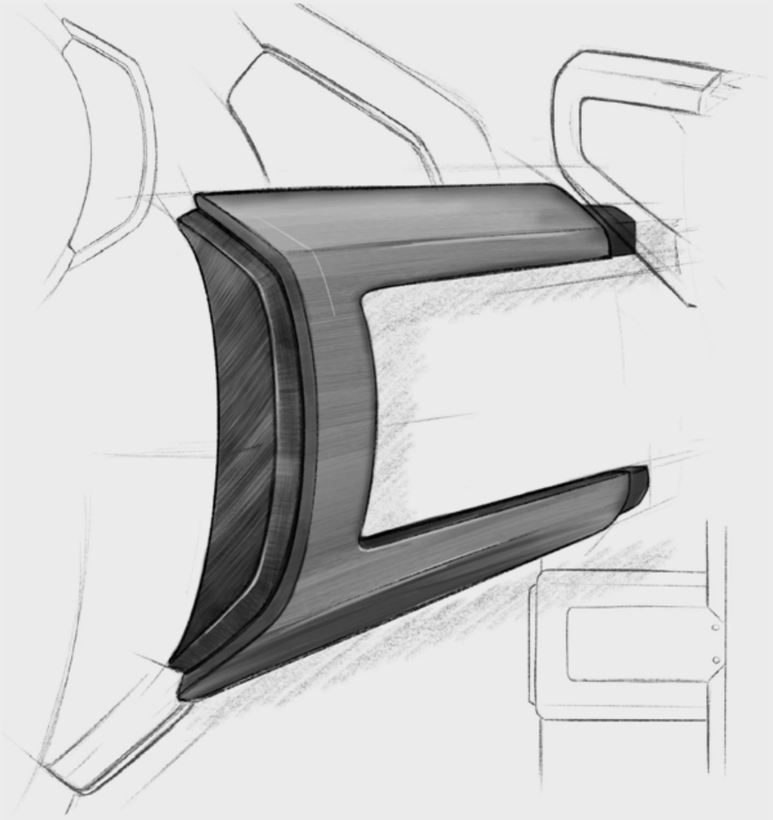
CONCEPT B





Branding

Location: side of the protective cover.
Ideation: location, sizing, tagline and main logo.
Task: professionally designed for international markets.

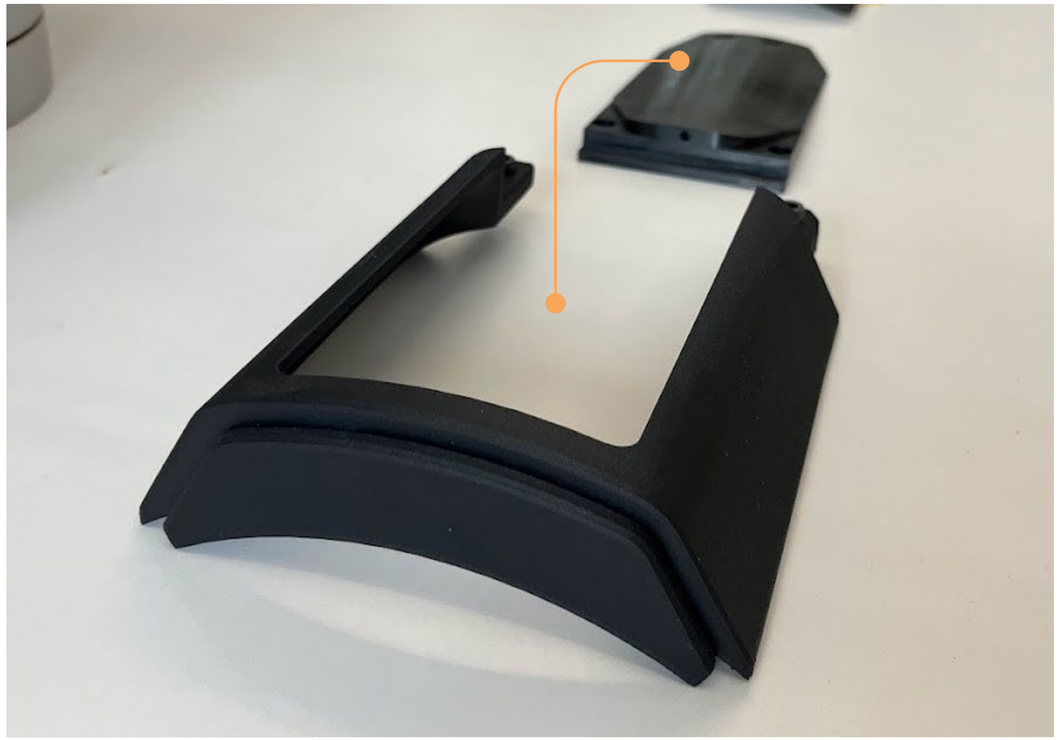


Final Design

The final design shows a cohesive product, where radii, chamfers & silhouettes are carefully curated and designed. The product is functional and aesthetically designed for an international market, to be attached on world-famous Makino Spindles.

Proposed Design

Engineers and senior management approved the final design. CAD development & the full design process was presented, explaining design considerations behind the final proposal.



Prototype

A minimal & carefully designed outer cover allows the sensor to be well protected and promoted as a new feature.

The prototype was manufactured to gain further understanding of how the product will look & feel.

Makino Smart Sensor Cover
- Manufactured Product

The manufactured sensor cover was attached on the side of the Makino Spindle for next gen Makino machines. The final design was positively viewed across the company & internal teams.

Testimonial

"

Harry worked on a variety of projects during his time at Makino. Harry was an excellent hand sketcher - quickly producing high quality visuals of design concepts. He's proficient in SolidWorks and Keyshot, producing 3D models and photorealistic CG images to communicate ideas to engineers. Harry was knowledgeable in using Adobe Illustrator and Photoshop - he produced professional graphics and layouts alongside his industrial design work. He was hard working and had a desire to learn new skills.

Harry's a creative and passionate designer who brought great energy to the work environment. He had high attention to detail and was a team player who had a good working relationship with all his co-workers. While living in Tokyo, Harry learned basic Japanese which was highly appreciated by his Japanese colleagues.

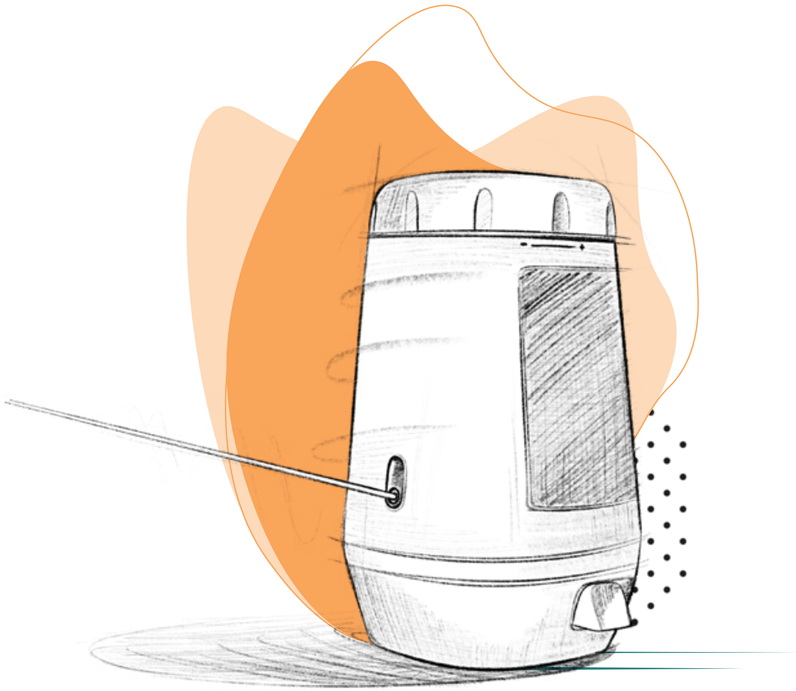
Jeremy Cane
Makino Design Studio Team Leader

FENIX Portable Rehab Device

A compact cable device that aims to improve the injury recovery experience for athletes.

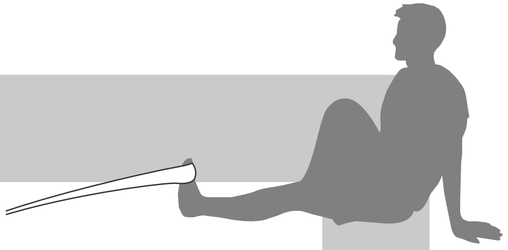
FENIX monitors rehabilitation exercises for injured athletes, encouraging the user to perform the exercises with pride. The portability of FENIX allows for social inclusion and reduces the likelihood of re-injury.

SKILLS: Ideation. Prototyping. CAD & product visualisation. App user interface.



THE ISSUE

Basketball players have recurrent **ankle injury rates as high as 80%**



Supervised rehabilitation of an ankle sprain **reduces risk of recurrence by > 50%.**

30% of individuals who suffer an **initial ankle sprain** eventually **develop chronic ankle instability.**

THE SOLUTION

A portable device that monitors & promote rehabilitation compliance for injured athletes.

ACCURATE MONITORING

Informative statistics provided to the user & their support circle improves exercise compliance and can help improve understanding of their recovery.

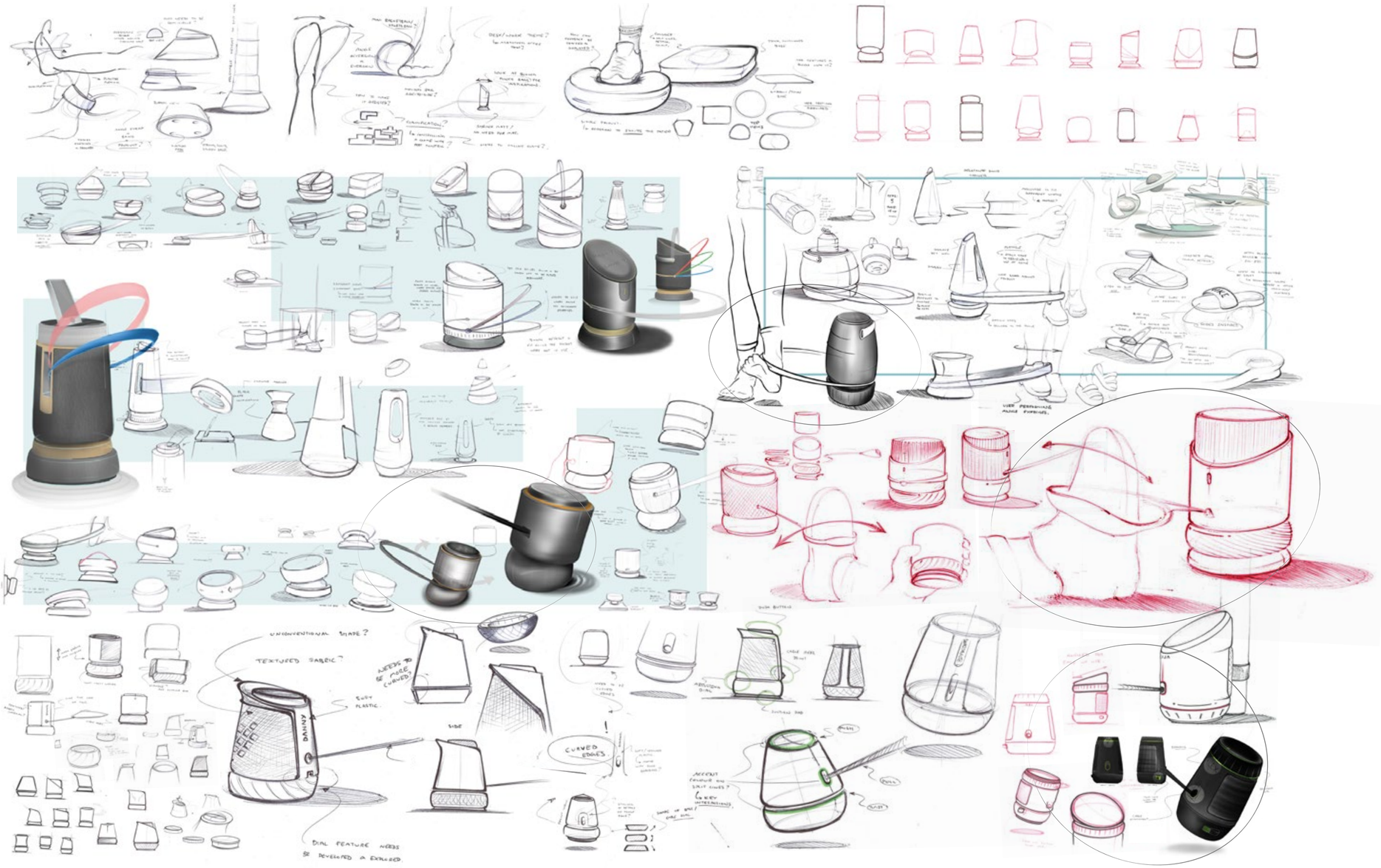
PORTABILITY

Device can be carried with the user's sports gear, allowing them to feel less confined to where they perform the exercise and feel included socially.

SOCIAL CONNECTION

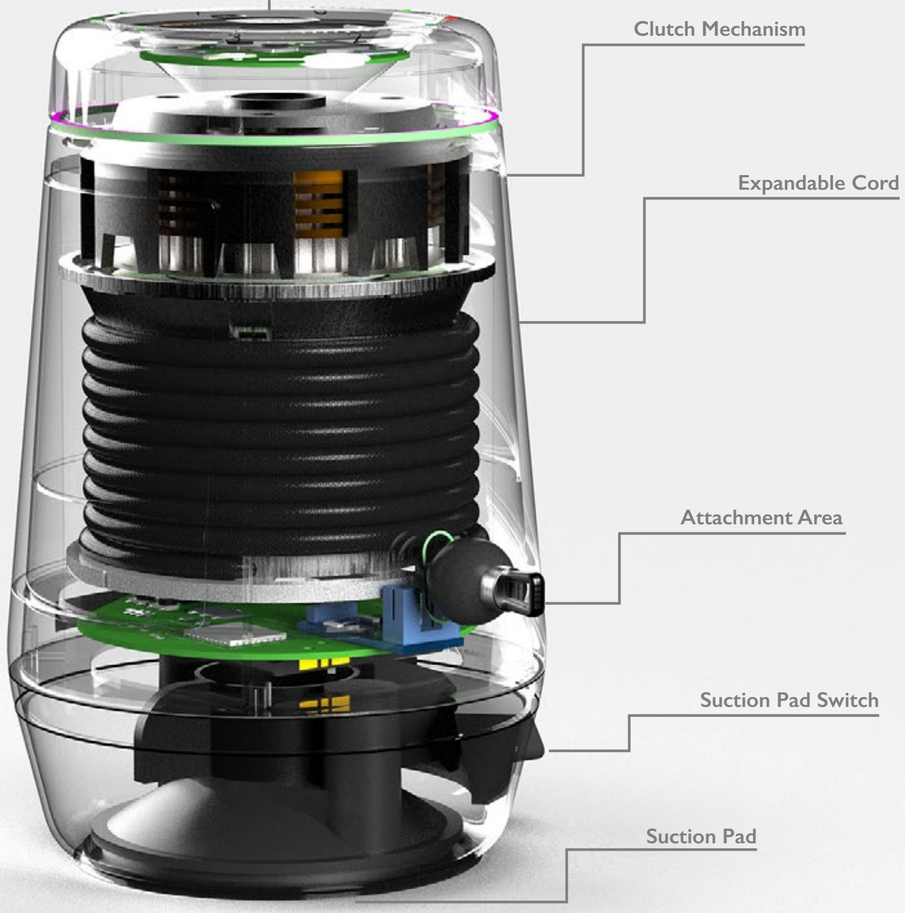
Injury recovery should be done with pride & with support. Online social support, encouragement, & social connection should be included.

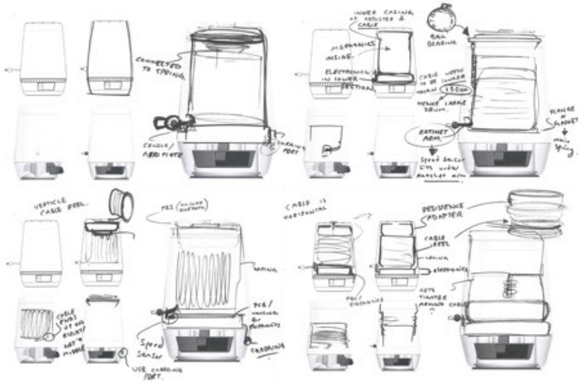
Hand sketching helped explore design direction before ideating form, usability and internal components.

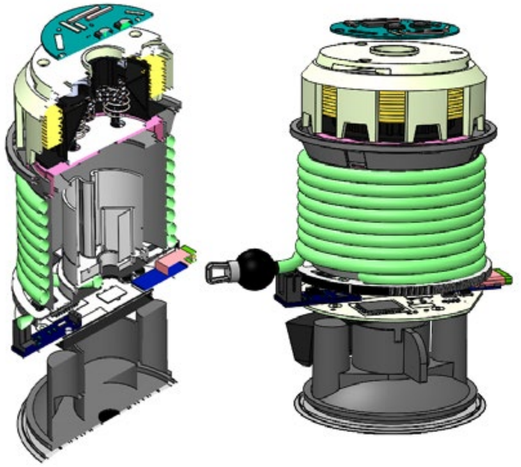


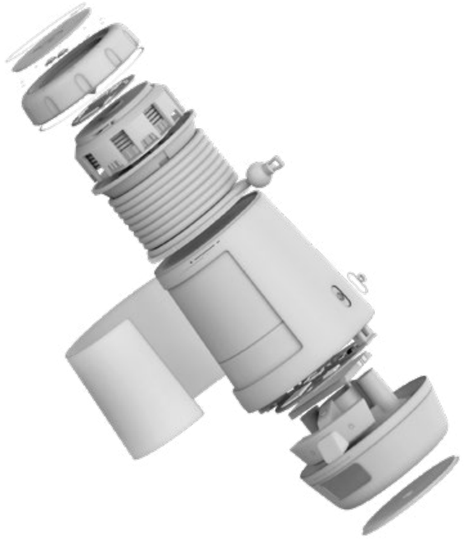
PROTOTYPING

Low fidelity foam models helped test sizing, portability, user interaction & ease of use. Cable length, usability & mechanics were also tested.



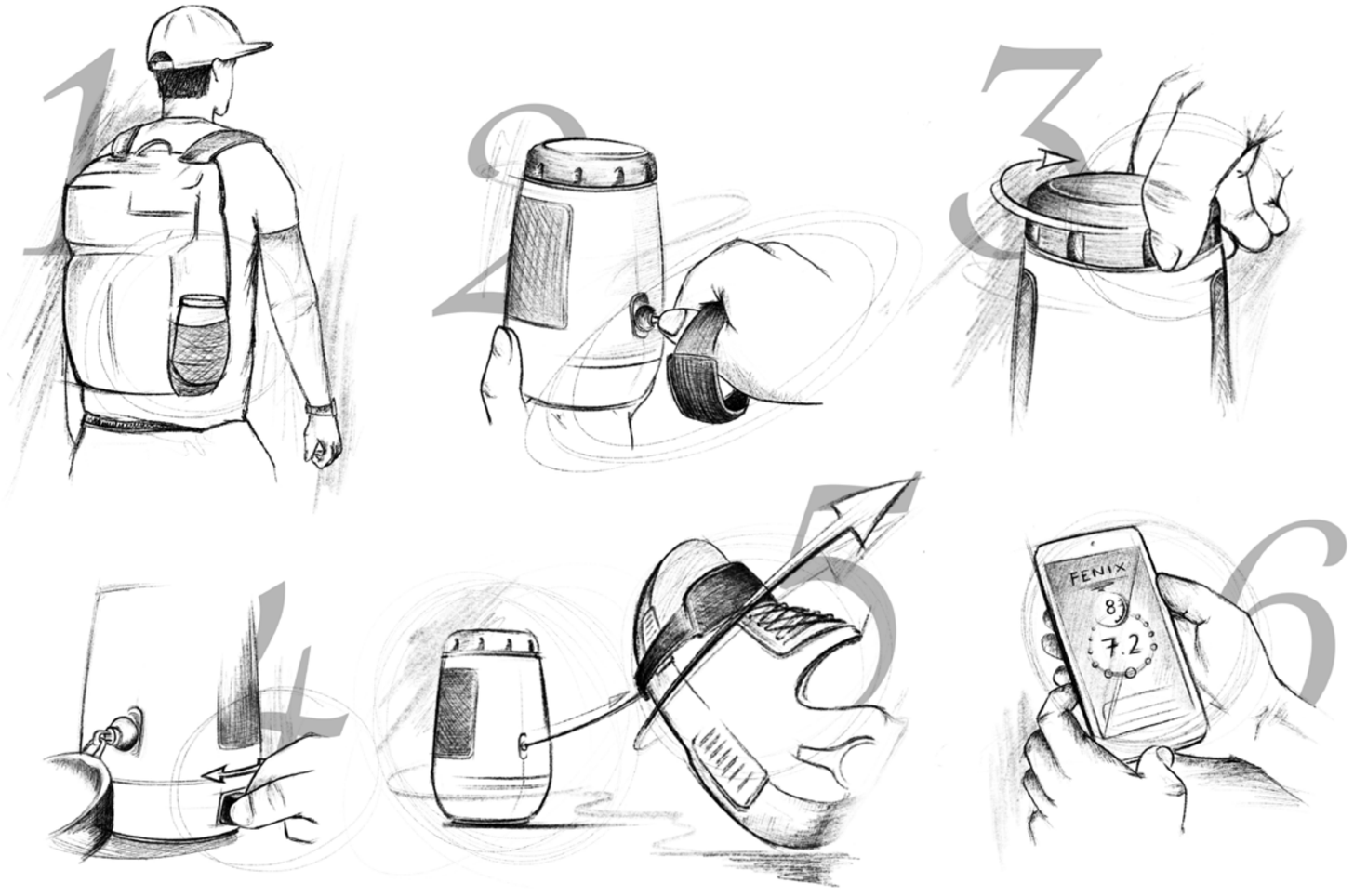






INTERNALS

A 6 foot cable is wrapped round a central pillar with a clutch resistence mechanism. The electronic system tracks the force being pulled. A suction pad securely seals the product to the floor of sports halls & smooth surfaces.



SCENARIO

1. User takes FENIX to training in their sports bag, allowing the individual to be around their team mates.

2. Chosen joint strap is attached to the product.

3. Resistance level is easily adjusted at the turn of the top dial.

4. Lever switch activates suction pad and seals product to surface.

5. Individual performs their exercises (given to them via the app).

6. FENIX app displays in-time feedback of the force pulled and compliance of the daily exercises.

FEATURES

Suction Pad Switch

- Quick and secure surface seal.
- Does not mark or damage sports hall surfaces.
- Operated with one hand, or with their foot.

Turn Dial

- Rotate to adjust the cable resistence level.
- Subtle markings to reduce embarrassment.
- Finger grooves create comfortable operation.

Usability

- Range of joint strap attachments.
- Overall form is clean and minimal. Form follows function of internal mechanics and usability.
- Product is robust, stable and easy to use.

FENIX

The device encourages athletes to comply with their exercises by accurately tracking their recovery & be proud of their rehabilitation progress.

FENIX can be taken to training and used on indoor sports courts, encouraging the user to be around others. A variety of exercises can be performed with Fenix. Data is monitored and shared with the coach, physiotherapist or friends.

Commissioned Artwork

Freelance sport & adventure commissioned art.

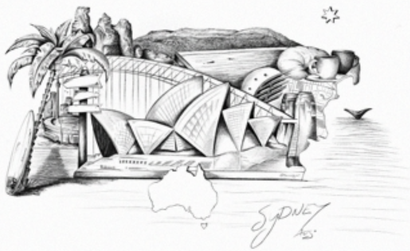
Hand-drawn & digitial sketching has always been a creative outlet to decorate memories. The following pages include a snippet of sport & travel inspired art pieces for a global clientele.

View more at: www.harrykp.com/art

CLIMBING

I've discovered the bouldering community to be welcoming and sociable. The sport is supportive of all ages, abilities and backgrounds.
These unique and personal drawings were created for climbing friends from around the world.

"Time in Nature is Never Wasted"



Sydney, Australia

Geometric Everest

"A Small Reel of Big Adventures"

The Peak District

The Tempest Two

Makino Design,
Tokyo, Japan

ADVENTURE

Custom drawn as one-off prints, framed displays & tattoo designs. Each piece has a story behind it, making the artwork uniquely special and brings the adventure to life.

Resume.

Profile

Founding member of Makino Design team, a cutting-edge in-house consultancy spearheading digital innovation at Makino, a world-leading CNC milling machining company.

- 3 years industry experience in Tokyo, Japan.
- Designs manufactured and released worldwide.
- Devoted to empowering individuals and communities through impactful and meaningful design.

Awards

- Grand Prize Winner, Machine Industrial Design Award IDEA, 2023
- 1st Place Live Projects, DCA, 2021

Interests

Ultra-marathon runner. Experienced ski & snowboarder. Qualified tennis & volleyball coach. Curious adventurer.

Employment

Lead Designer / Makino. Tokyo, Japan
Sept 2021 - Oct 2023

Junior Designer / Makino. Tokyo, Japan
Sept 2019 - Apr 2020

Freelance Illustrator
Jan 2023 - Present

Commercial Releases

Industrial Design
- Makino a900Z 5-Axis milling machine, 2023
- Makino Rapid Calibrator Smart Tool, 2022
- Makino Luminizer LB300/LB500, 2021
- Makino Concept E-Machine, 2020

Graphic Design
- Makino E-Machine logo, 2020
- ATHIUM material logo, 2020
- Makino Design team logo, 2019

Education

Industrial Design, Bachelor of Arts
Loughborough University, UK, 2017 - 2021

Software

Adobe CC
- (Ai, Id, Ps, Lr, Xd)
SolidWorks CAD
Keyshot Rendering
Microsoft Office
ProCreate
Blender
Figma
Miro
Canva

Skills

Industrial Design
Product Design
Graphic Design
UX/ UI Design
3D Visualisation
Visual Design
Prototyping
Storyboarding
Wireframing
Presenting

Contact

Email:
harry.kp58@gmail.com

Website:
www.harrykp.com

Thank You

for taking the time to read through my portfolio of work.

www.harrykp.com