Swissloop

11. Mai 2020
Vorstellung Fokusprojekt 2020/2021

Inhalt Übersicht: Team 2020 / 2021

Thomas Umbach

Team Lead 20/21

Fabio Leuenberger

Mechanical Lead 20/21

Philip Wiese

Electrical Lead 20/21

Yvan Bosshard

Operations Lead 20/21

Prof. D. Kochmann

Supervisor

Julius Wanner

Vorstand

Pascal Finker

Vorstand

Nathalie Nick

Vorstand

Inhalt Übersicht

Präsentation

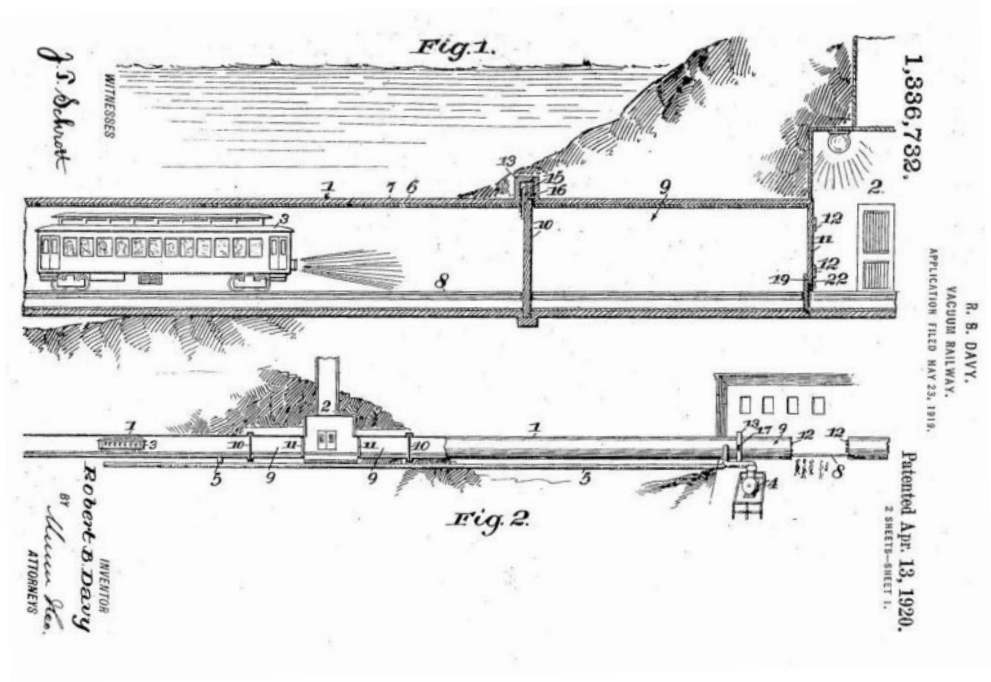
- Hyperloop-Konzept
- Swissloop
  - Überblick & History
  - Saisonablauf
  - Fokusprojekt 20/21

Diskussion

- Offene Diskussion
- Breakout-Rooms
  (für spezifische Fragen)

Hyperloop-Konzept

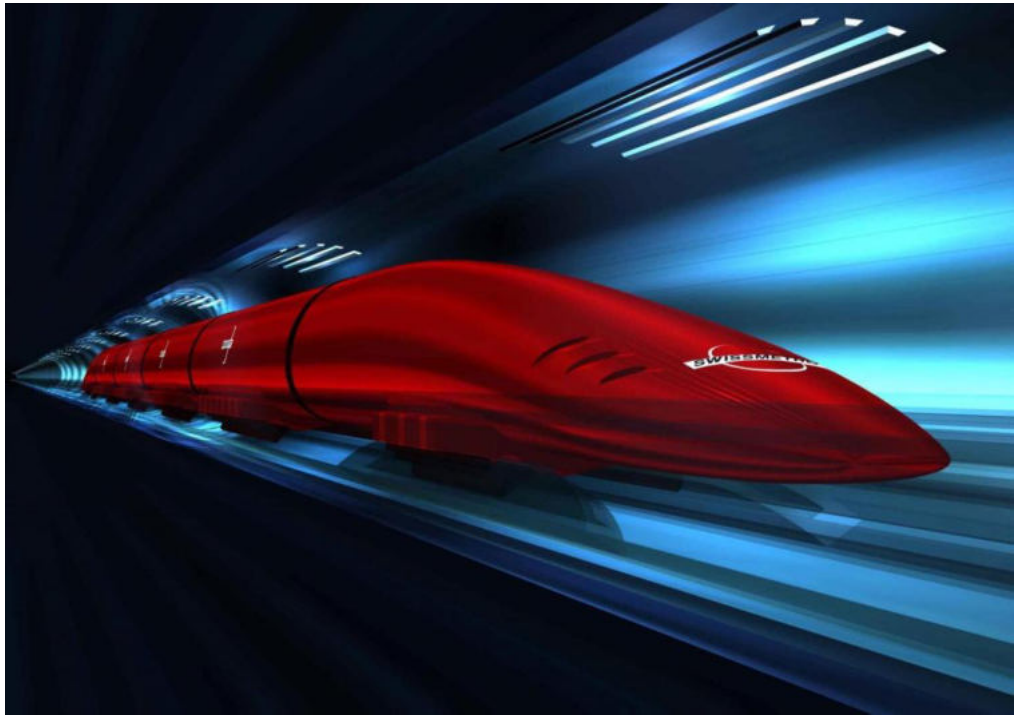
Hyperloop

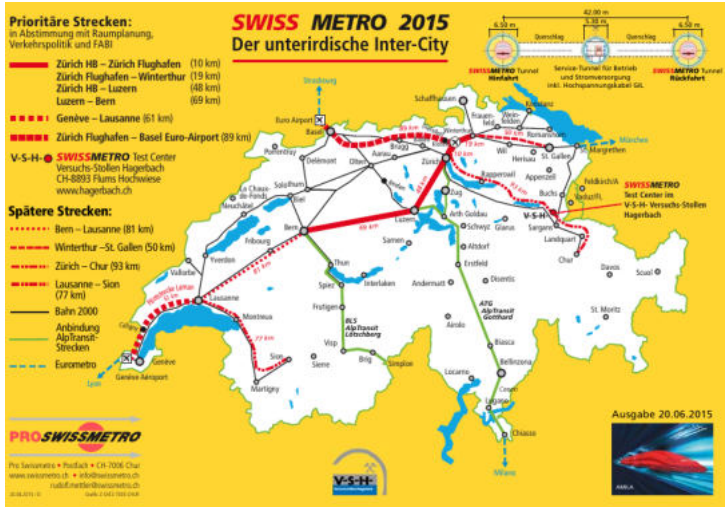


- Reduktion des Luftwiderstandes
- Anfang 19. Jahrhundert
- Stand der Technik ungenügend

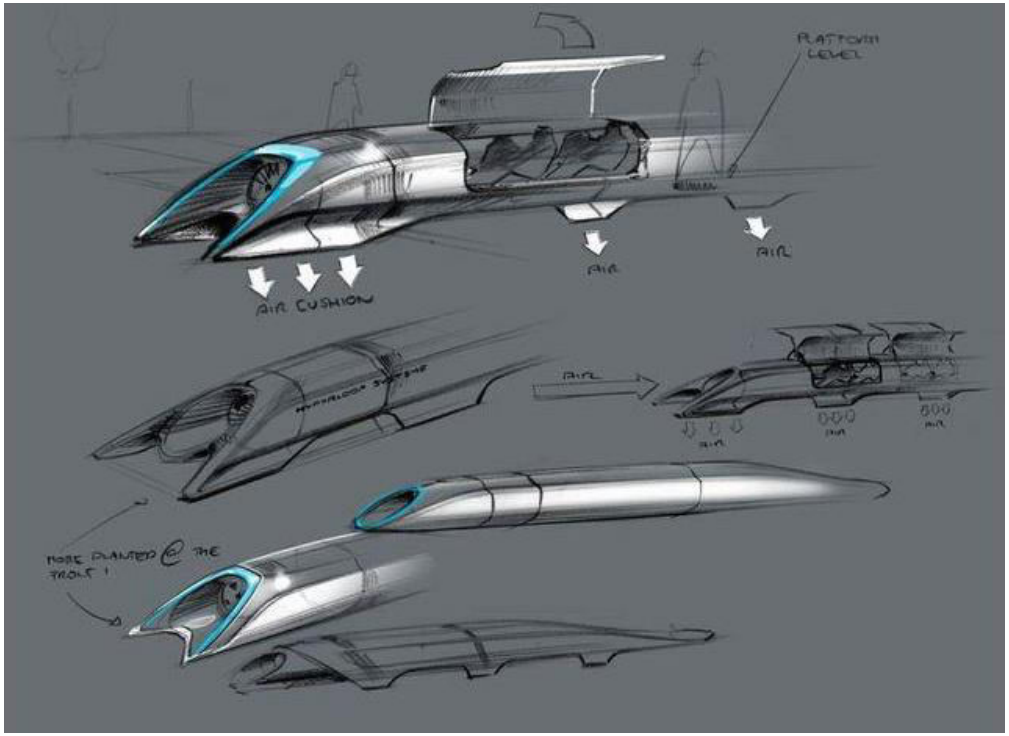
Hyperloop

- Schweizer Konzept: Swissmetro (1970er – 1990er)
- Finanzierung gescheitert





Hyperloop



- White Paper „Hyperloop Alpha“, Elon Musk, 2013
- Forschungsprojekte weltweit

Ziele

Reisezeitverkürzung

Kapazitätserhöhung

Umweltfreundliche Fortbewegung

Swissloop - Überblick

Überblick

- Studententeam
- ETH Zürich (Basis) und weitere Schweizer Universitäten
- Interdisziplinarität

- Forschung am Hyperloop Konzept
- Hyperloop Wettbewerbe und Konferenzen

- Enge Zusammenarbeit mit Industriepartnern
- Engineering intern von Studierenden

Mission

Praxisorientierte Ausbildungs-
plattform für Studierende

Förderung des interdisziplinären Ge-
dankens- und Wissensaustauschs

Unterstützung der Forschung
am Hyperloopkonzept

Selbständiger, nicht ge-
winnorientierter Verein

Vermitteln von Wissen über das Hy-
perloopkonzept in der Öffentlichkeit

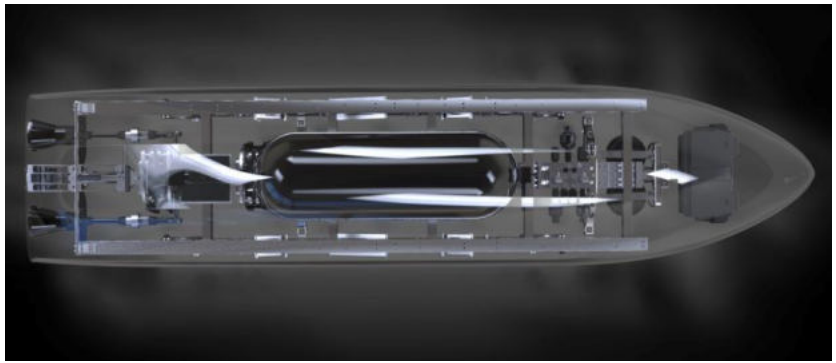
Organisation in 2020 / 2021

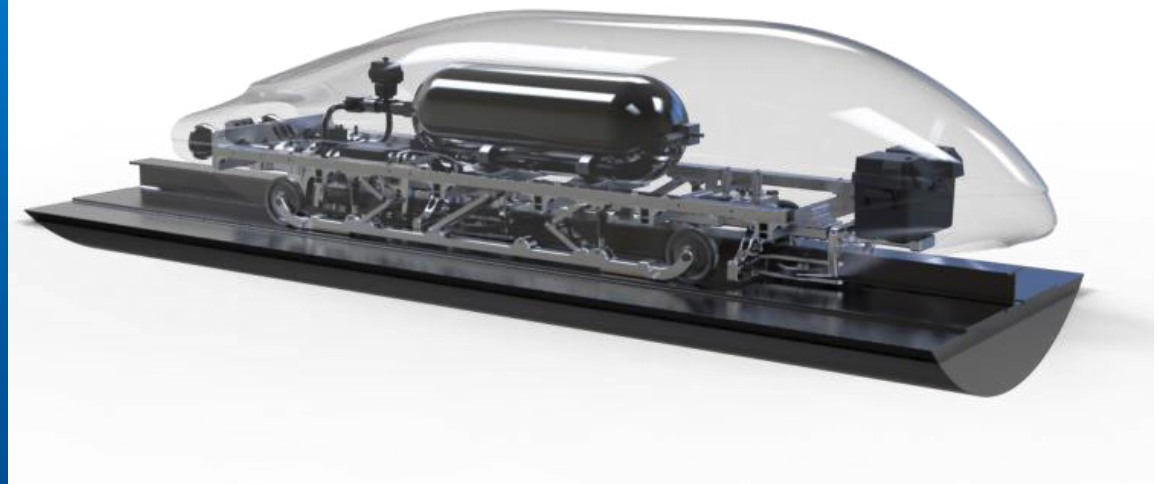
swissloop

Vorstand		
Co-Präsident / Projektleitung	**Co-Präsident / Projektleitung**	**Quästor**
Team Lead		
Mechanical Lead	**Electrical Lead**	**Operations Lead**
Maschinenbauingenieur	Elektrotechnikingenieur	PR Vertreter
Maschinenbauingenieur	Elektrotechnikingenieur	Industrial Designer
Maschinenbauingenieur	Elektrotechnikingenieur	Webmaster
Maschinenbauingenieur	Elektrotechnikingenieur	
Maschinenbauingenieur	Elektrotechnikingenieur	

2016 / 2017

Pod Escher



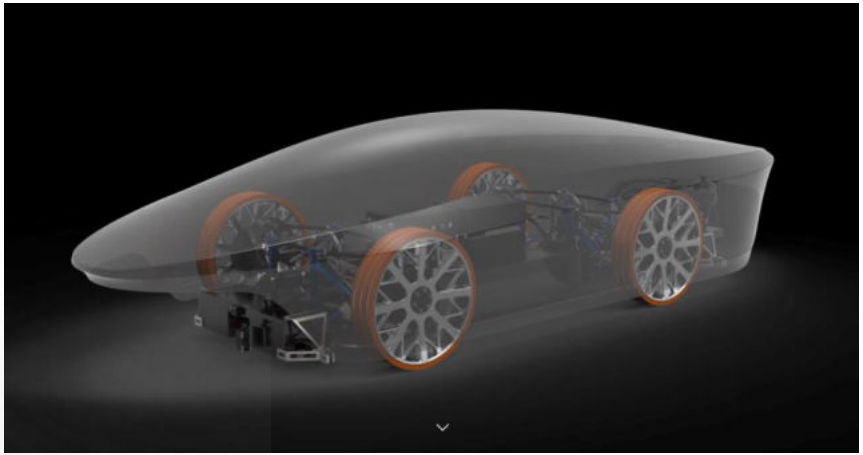


- Kalt-Gas-Antrieb
- 240 kg
- 800+ Teile
- Länge: 3.5 m
- 3. Platz Hyperloop Pod Competition

2017 / 2018

Pod Mujinga

- Elektrorotationsmotoren
- 260 kg
- 1000+ Teile
- Länge: 2.6 m (3.6 m mit Shell)



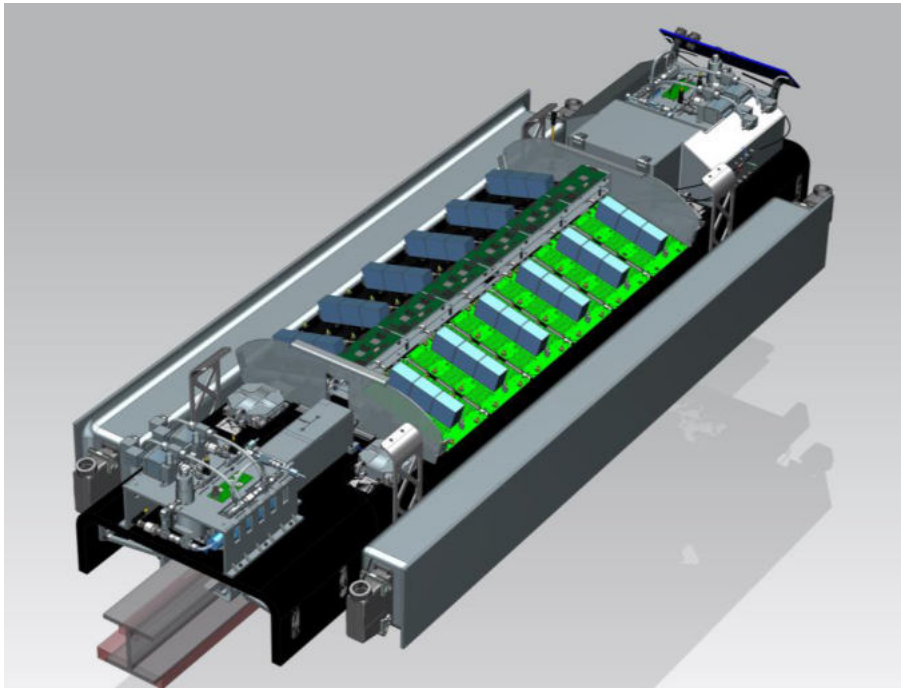
2018 / 2019

Pod Claude Nicollier

- Linearinduktionsmotor (LIM)
- 200 kg
- 1415+ Teile
- Length: 2.5 m (3.3 m mit Shell)
- Beschleunigung: 2g

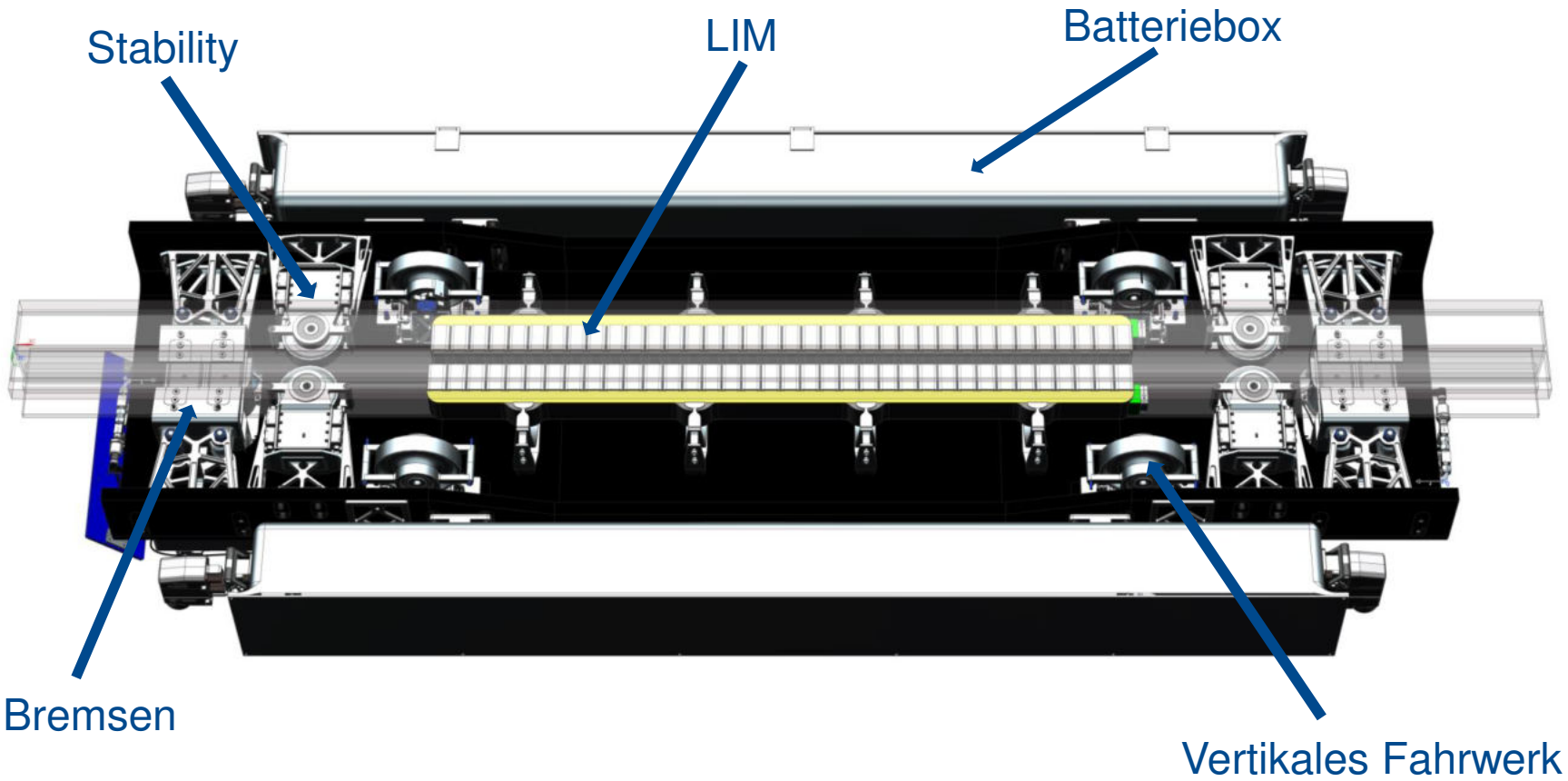
  Bremsverzögerung: 5g
- 2. Platz Hypeloop Pod Competition

2019 / 2020

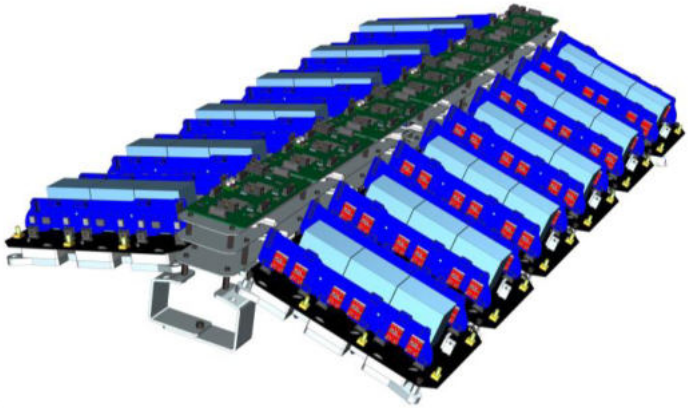


- Linearinduktionsmotor (LIM)
- Dezentralisierter Inverter für 1.5 MVA
- Batterieleistung 640 kW @ 800 V
- Batterie 4700 mAh
- Pneumatisches Bremssystem
- Länge: 2.181 m
- Beschleunigung: 2g
- Bremsverzögerung: 8.5g

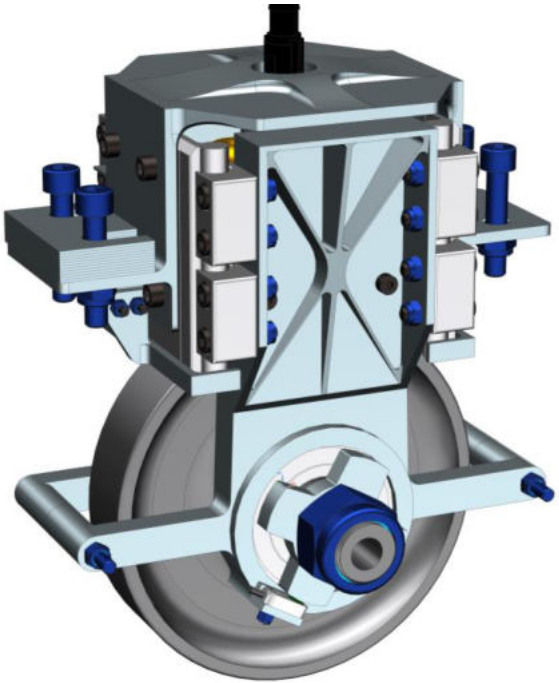
2019/ 2020 Pod Übersicht

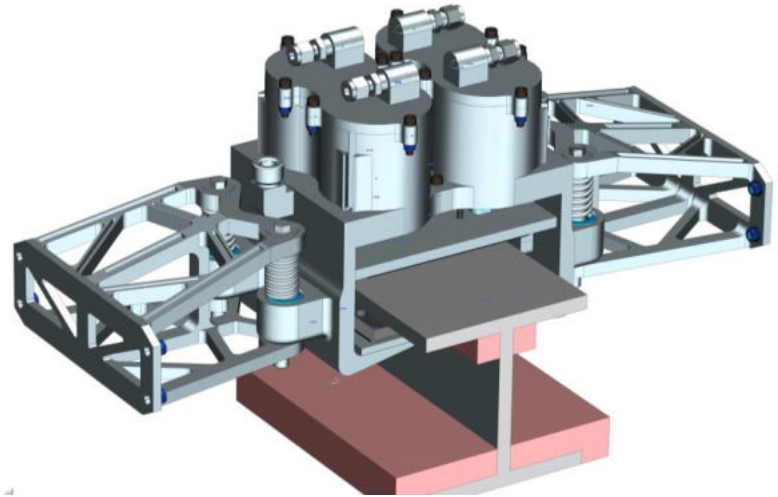


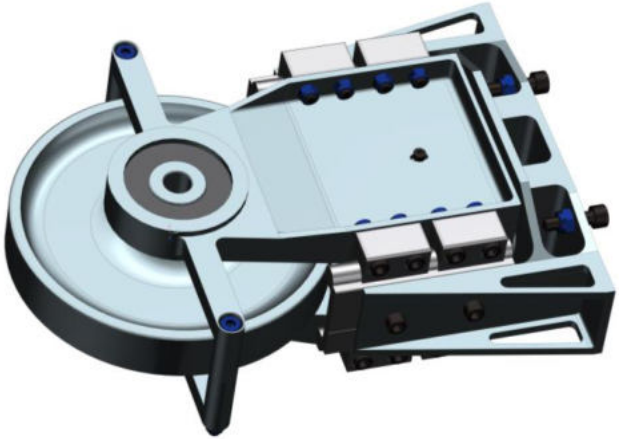
Mechanische Subsysteme



Mechanische Subsysteme



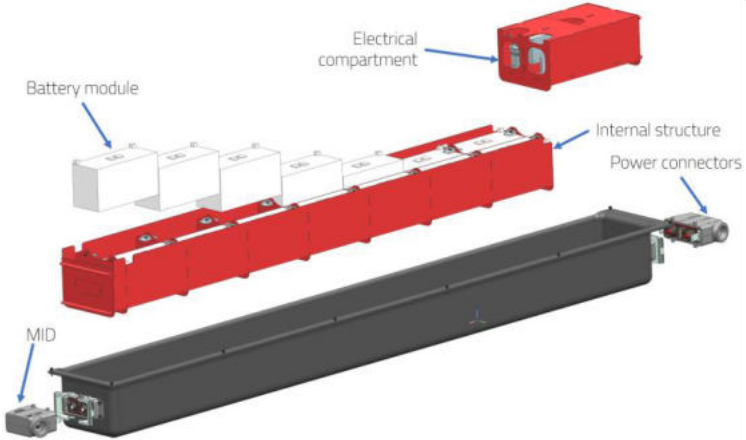


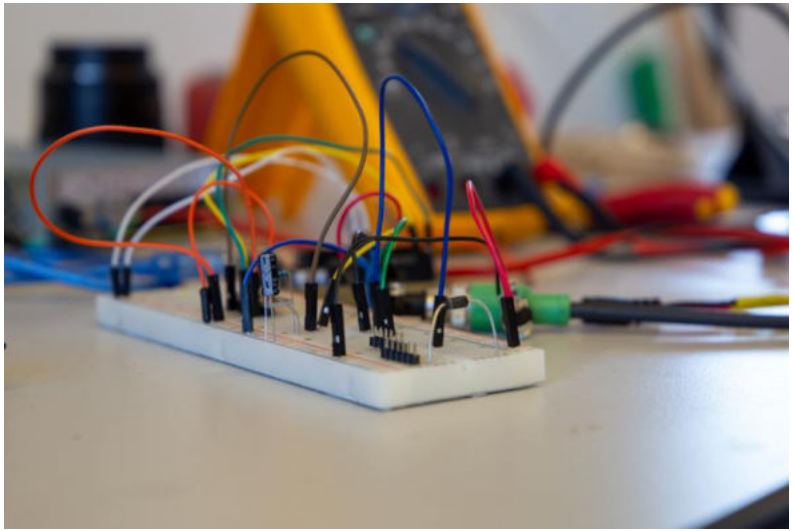


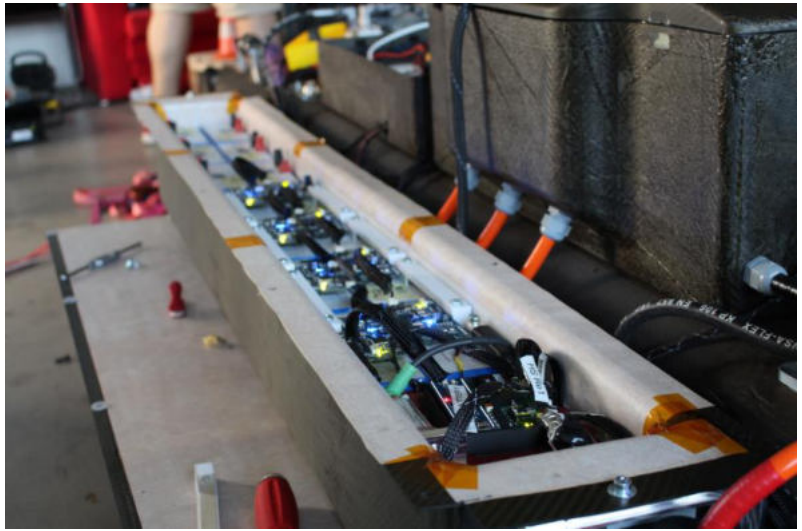
Elektrische Subsysteme

Main Control

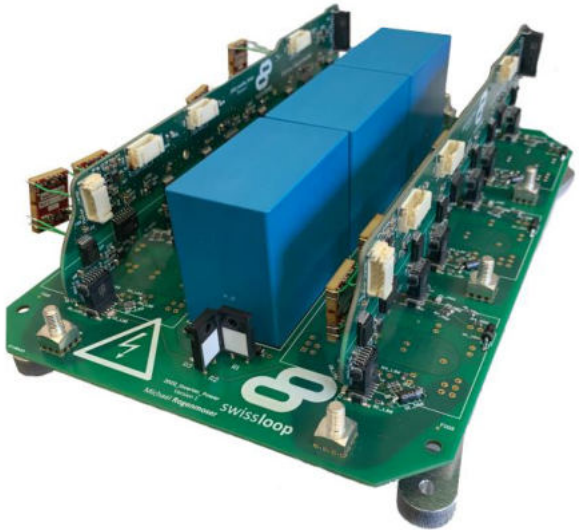
- Sensoren
- Aktoren
- Stromversorgung
- Datenverarbeitung und Steuerung
- Interne Kommunikation
- Statusanzeige
- Datenspeicherung
- Externe Kommunikation

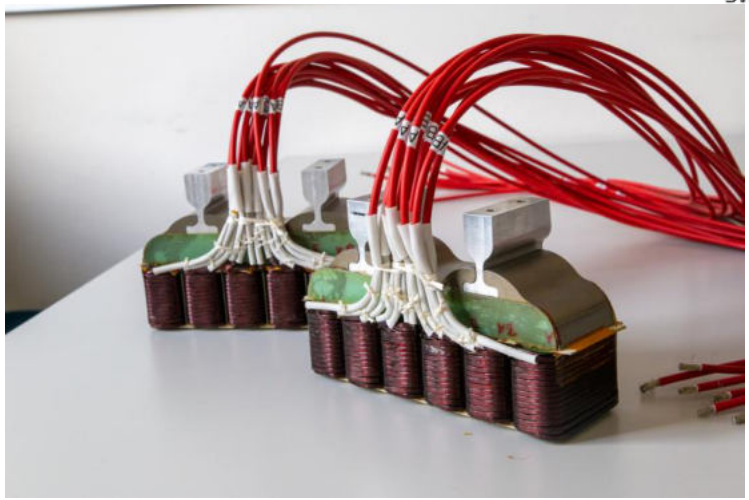


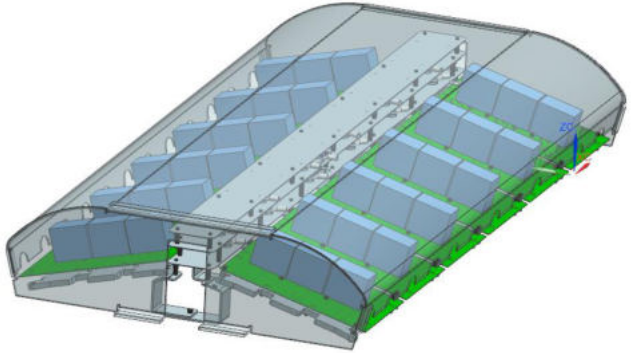


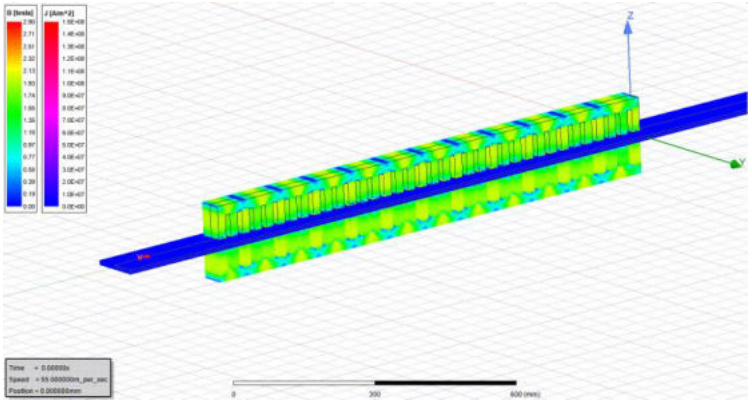


Elektrische Subsysteme





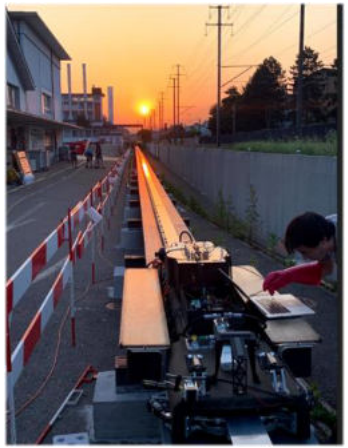




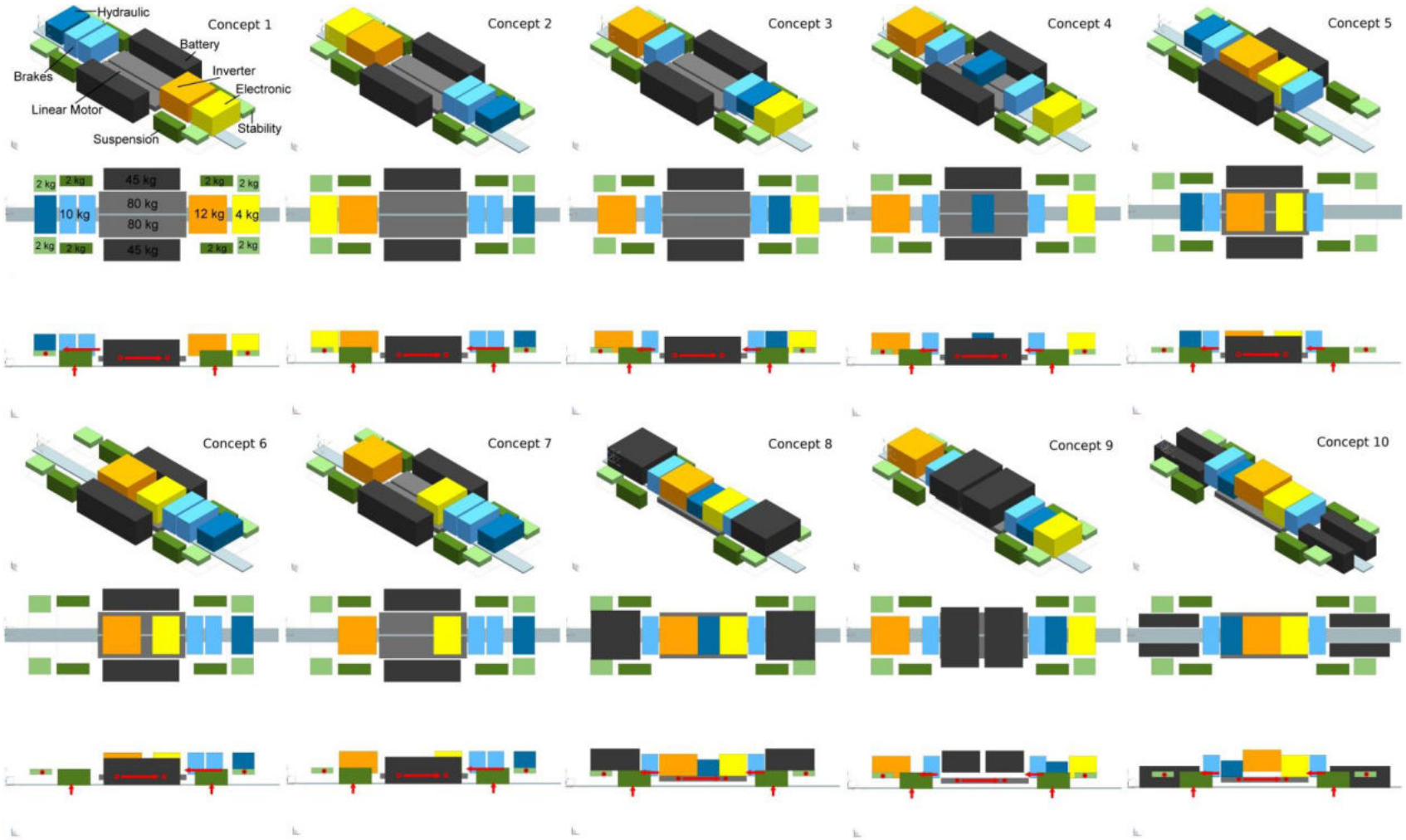
Swissloop - Saisonablauf

Timeline

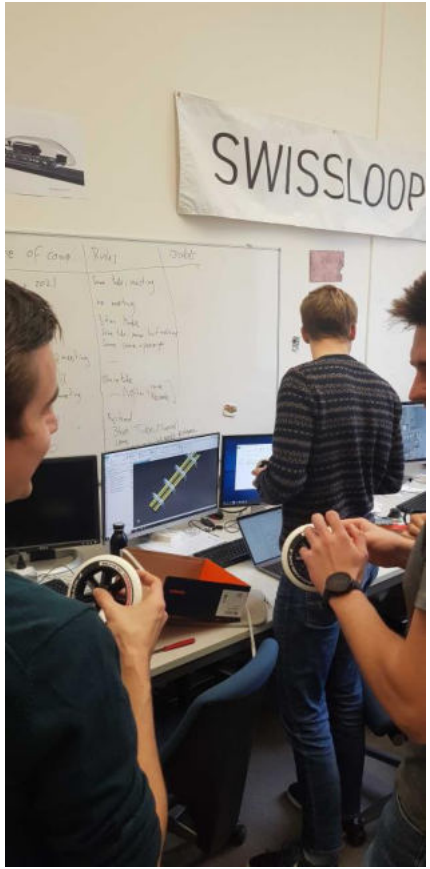
Entwicklung	Produktion	Assembly	Testing	Finalevent
September-Dezember	Dezember – Februar	Februar - April	April - Juni	Juli

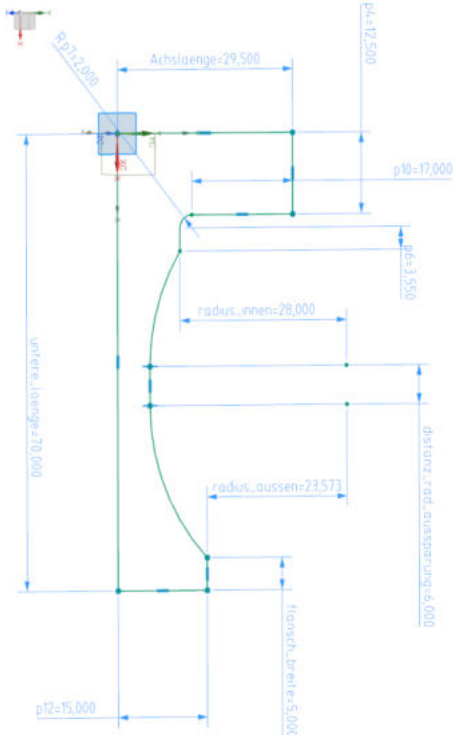


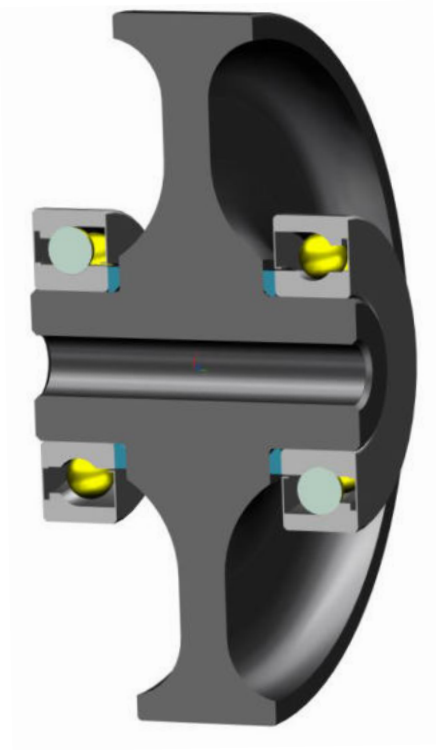
Entwicklung – Packaging



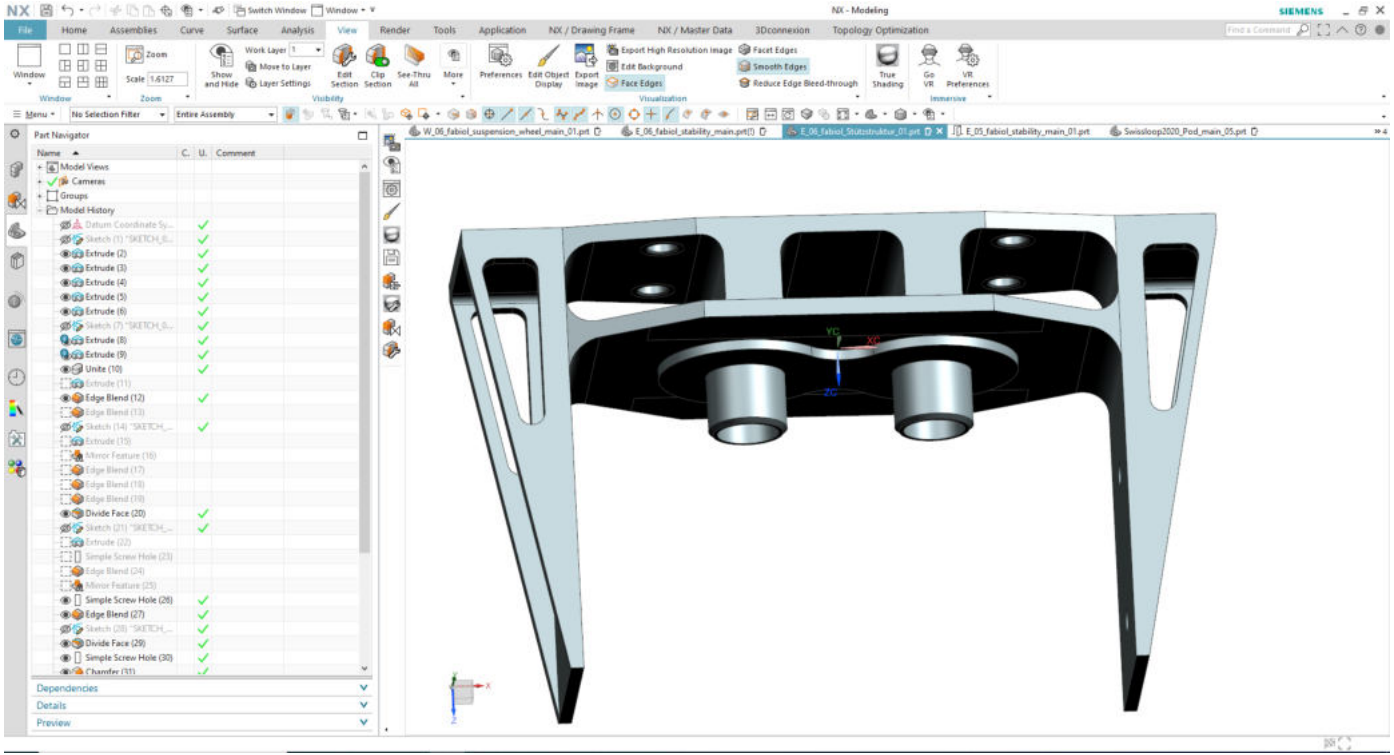
Entwicklung – Brainstormen und Design



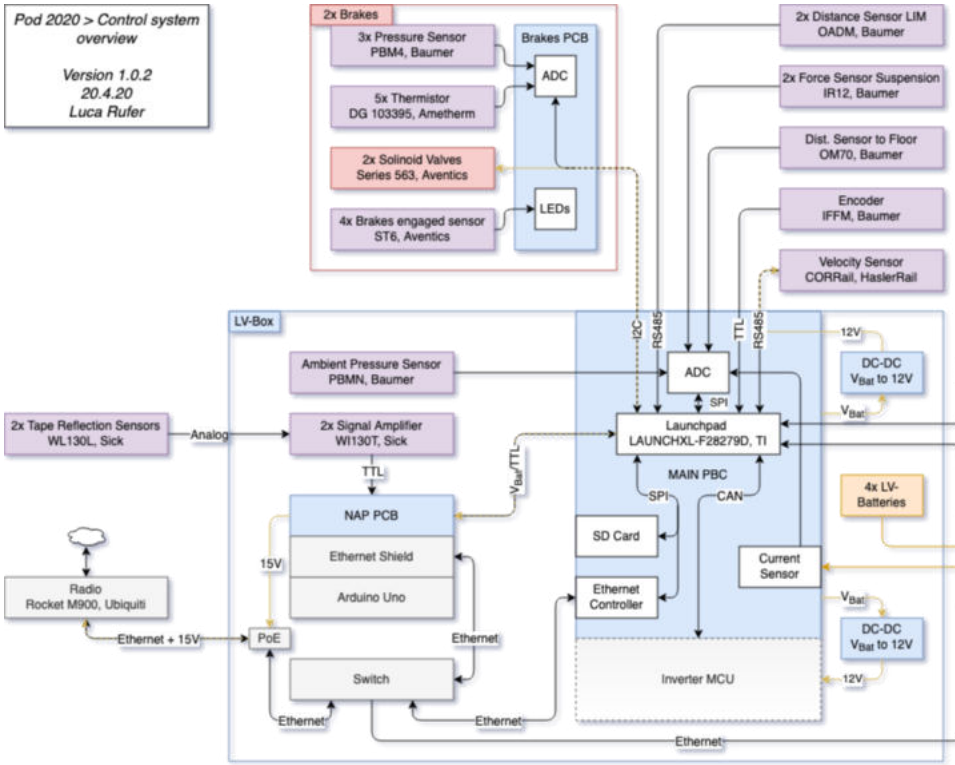


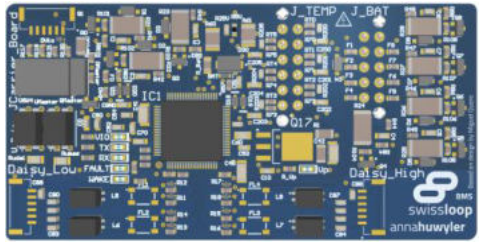


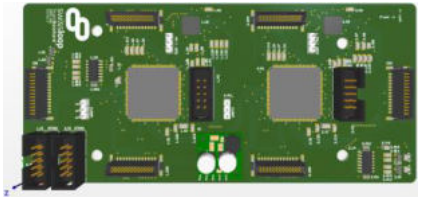
Entwicklung – CAD

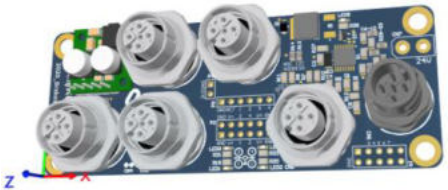


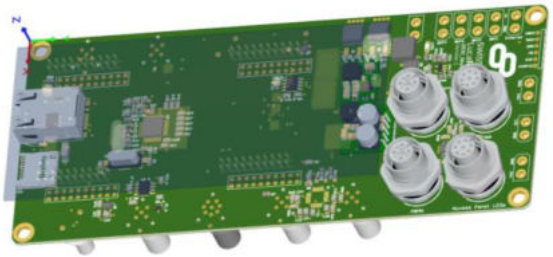
Entwicklung – Architektur



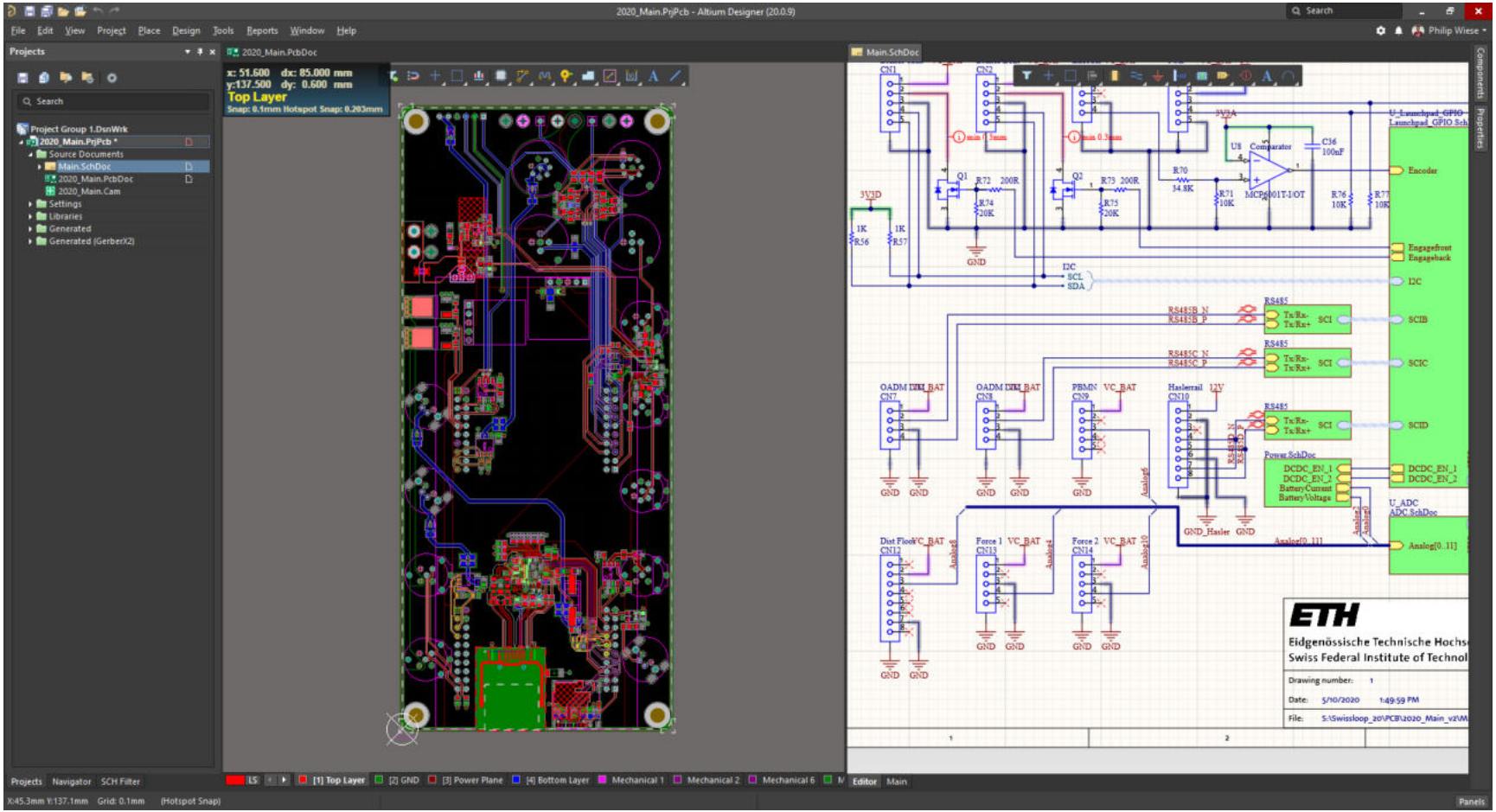




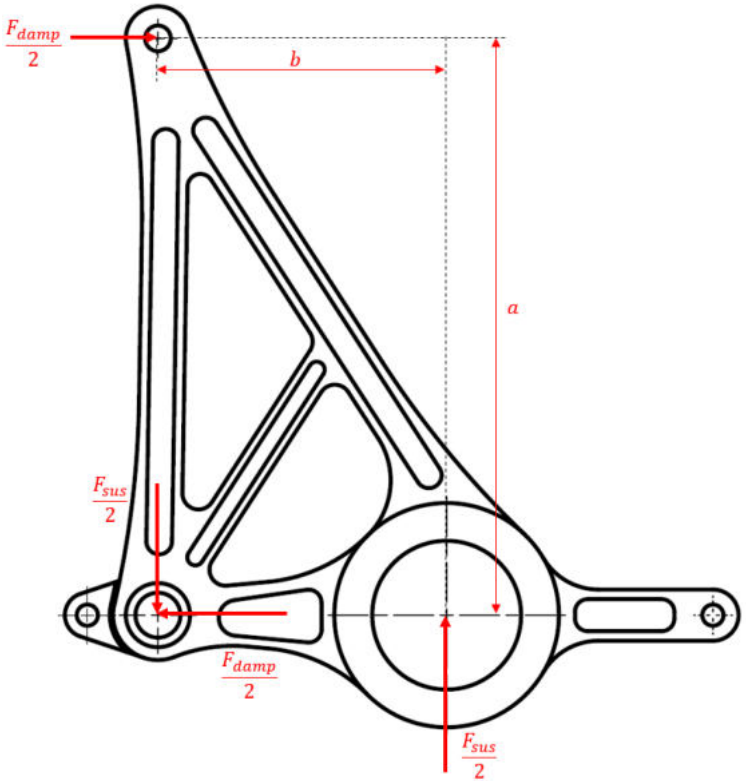


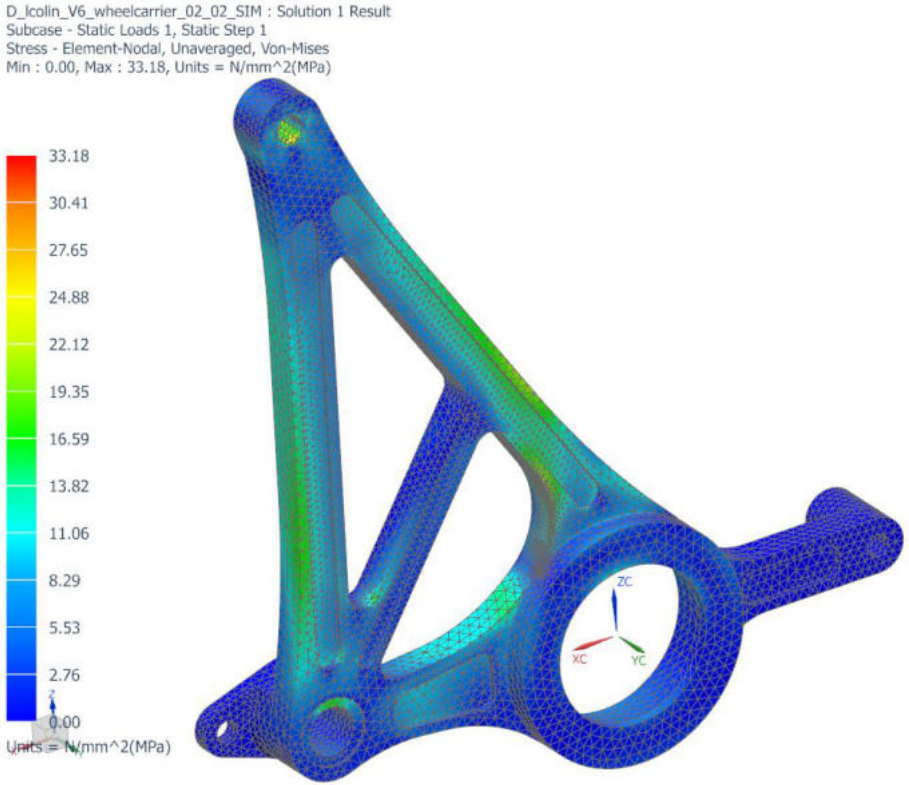


Entwicklung – PCB Design

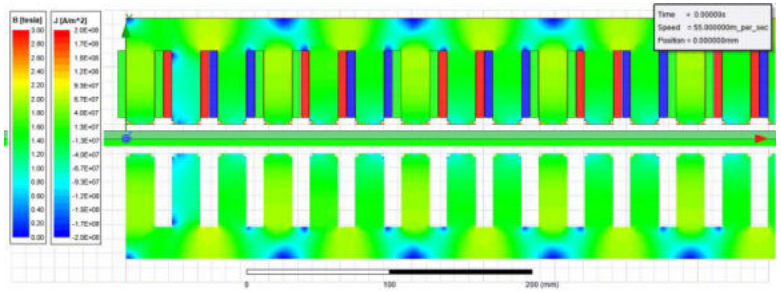


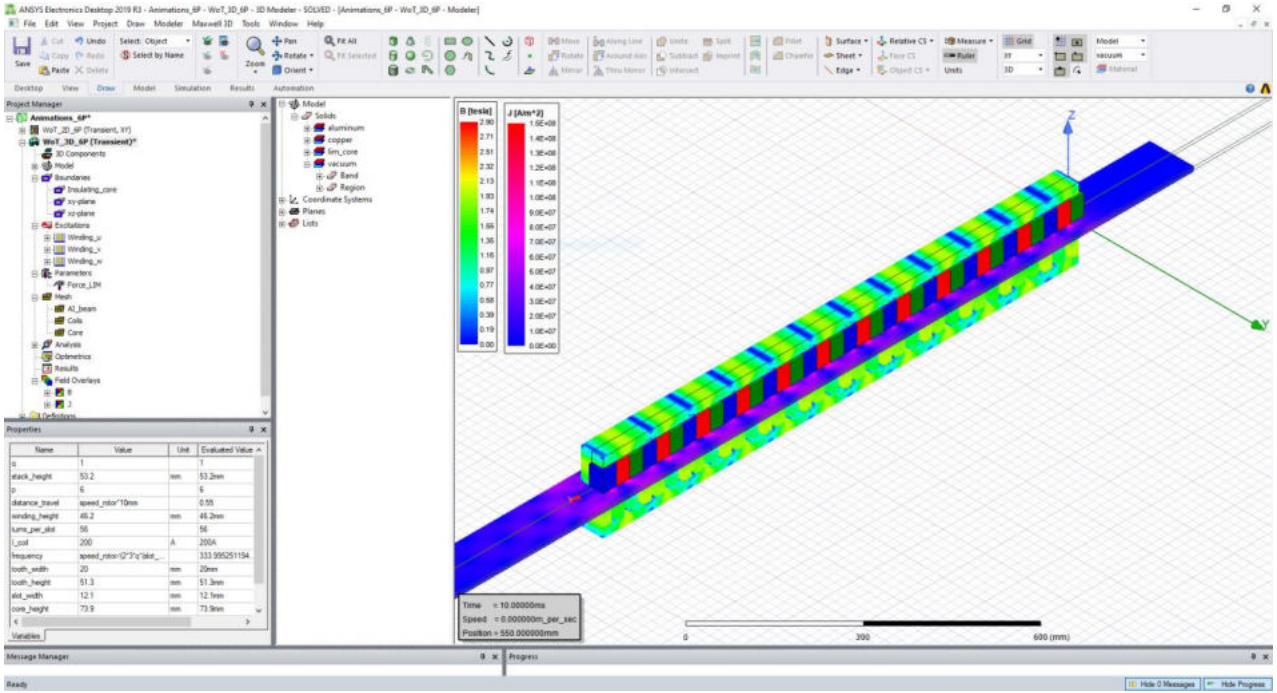
Entwicklung – Simulationen



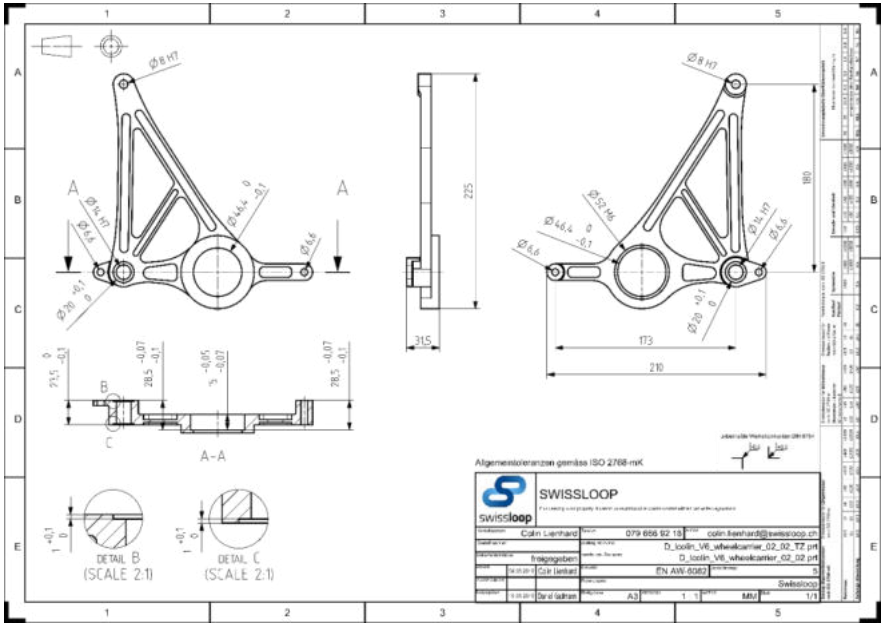


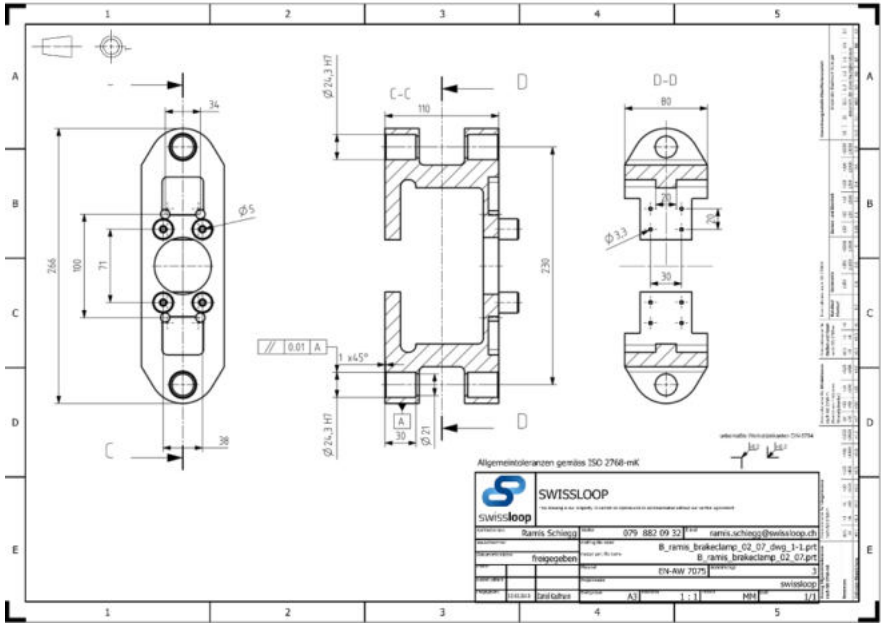
Entwicklung – Simulationen



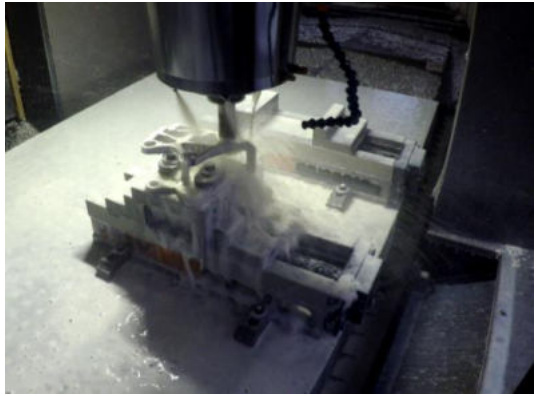


Entwicklung – TZs erstellen

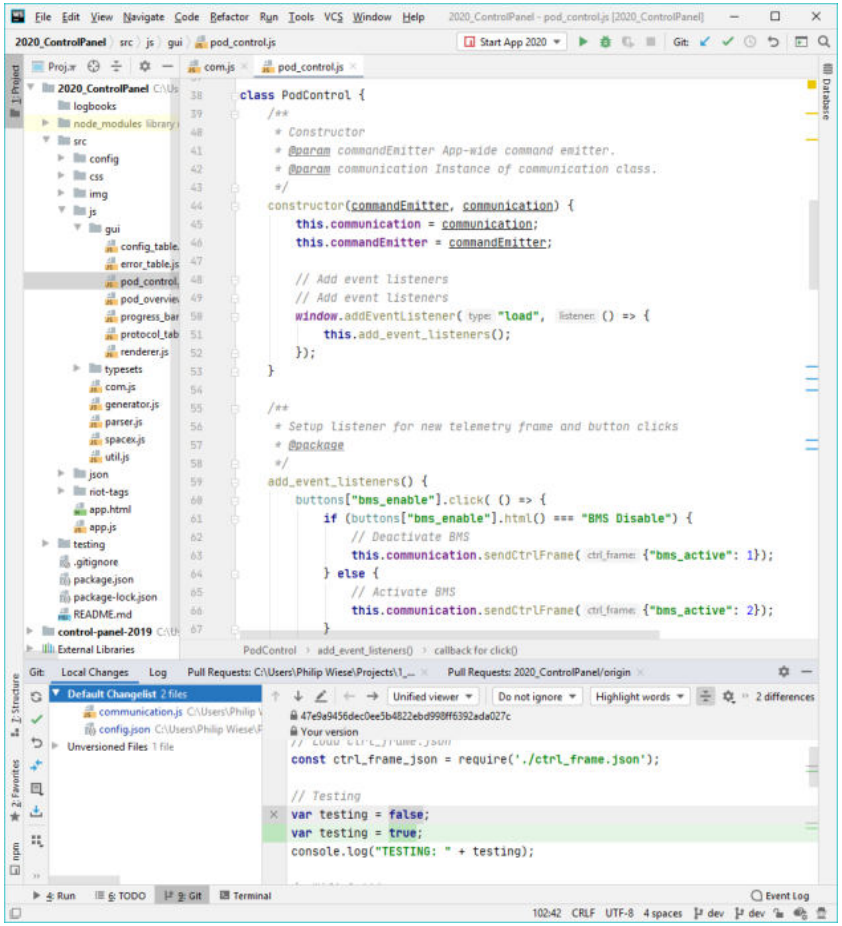




Produktion – Intern & Extern

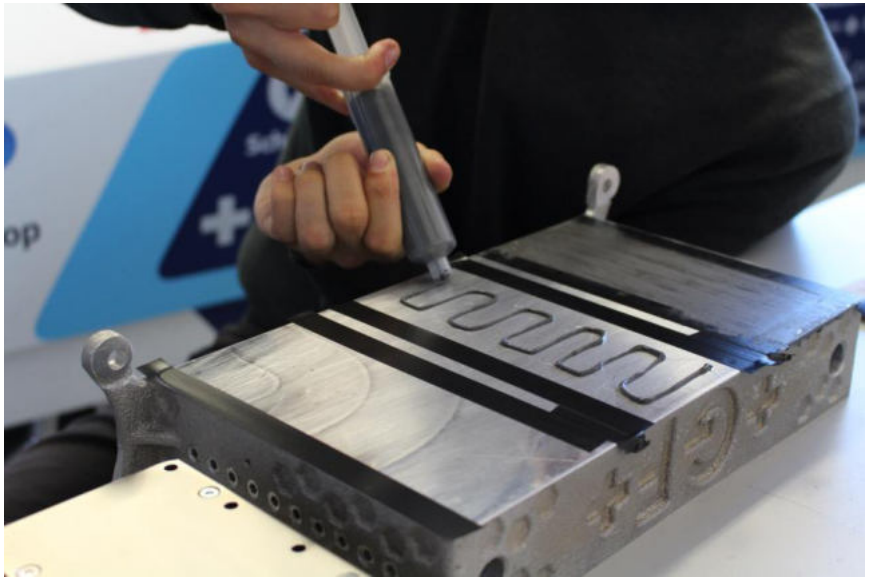


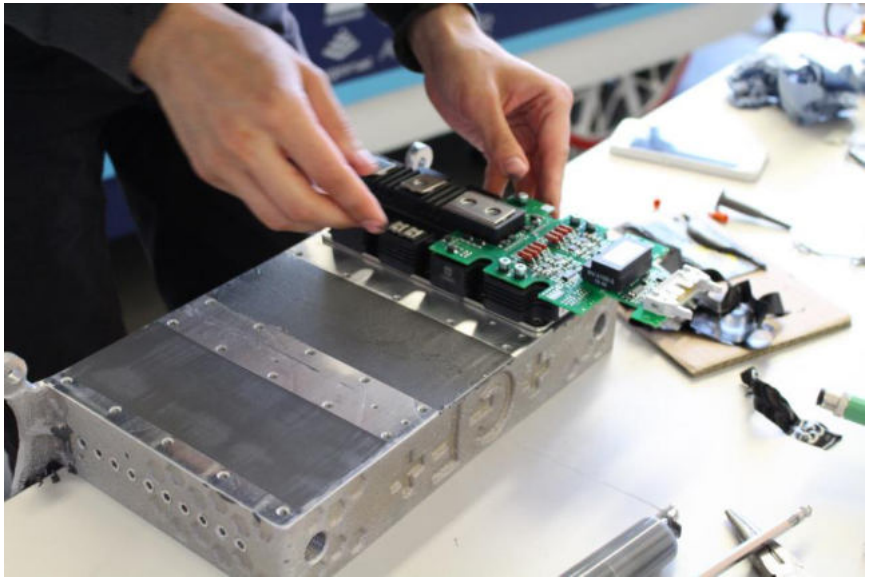
Produktion – Software



Assembly

Assembly





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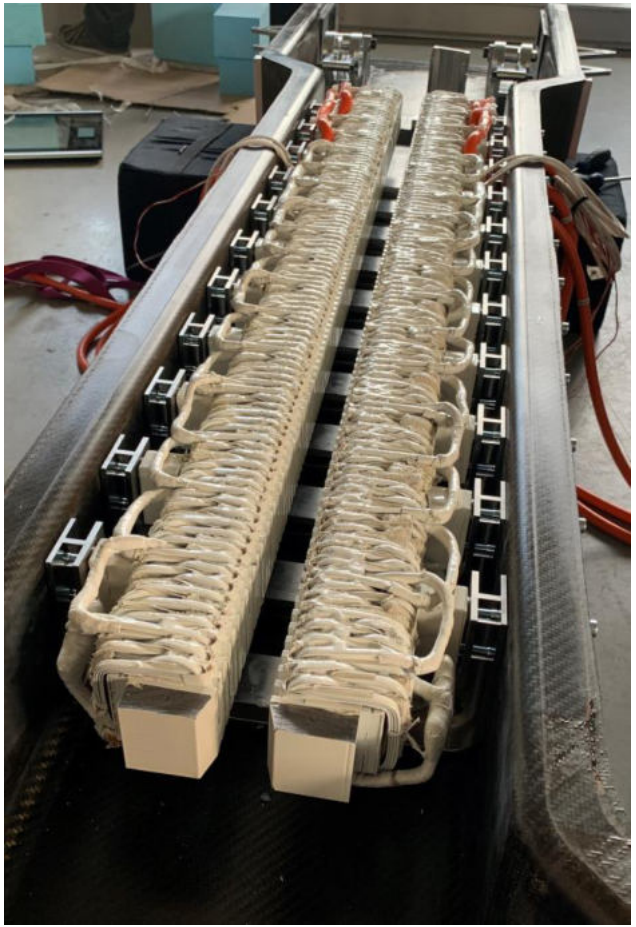
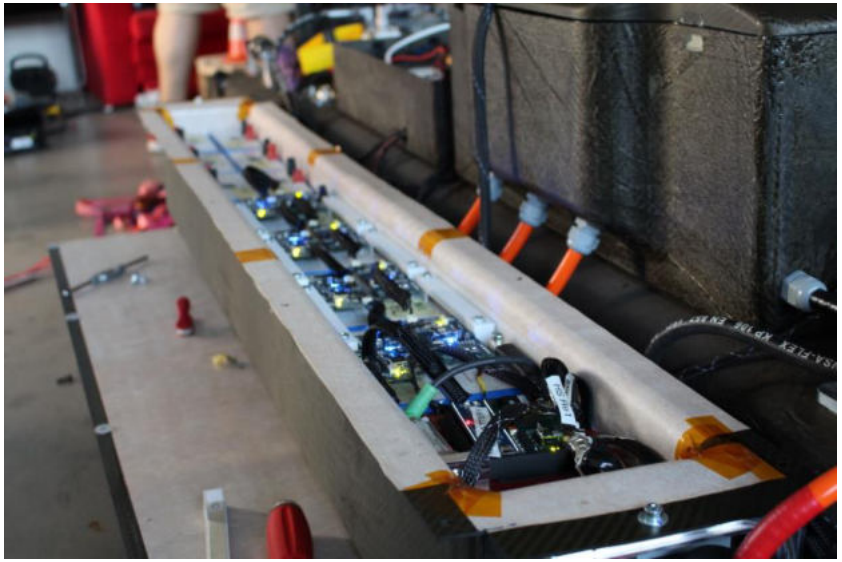
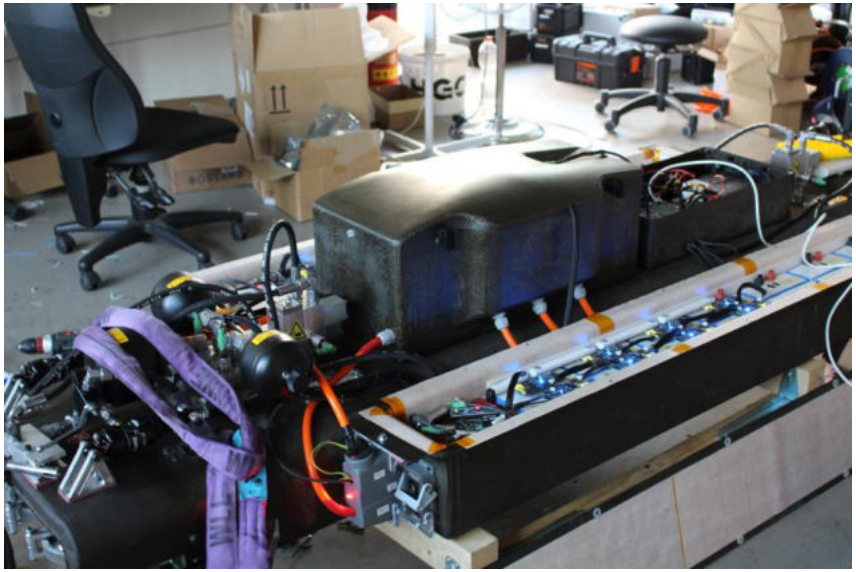


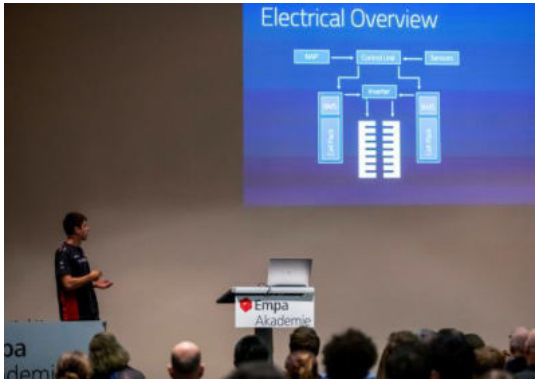
Assembly

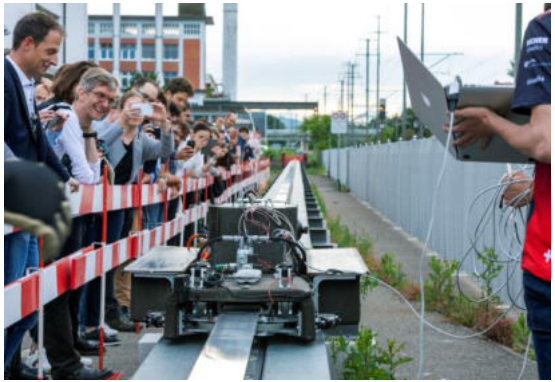




Testing

Finale Events

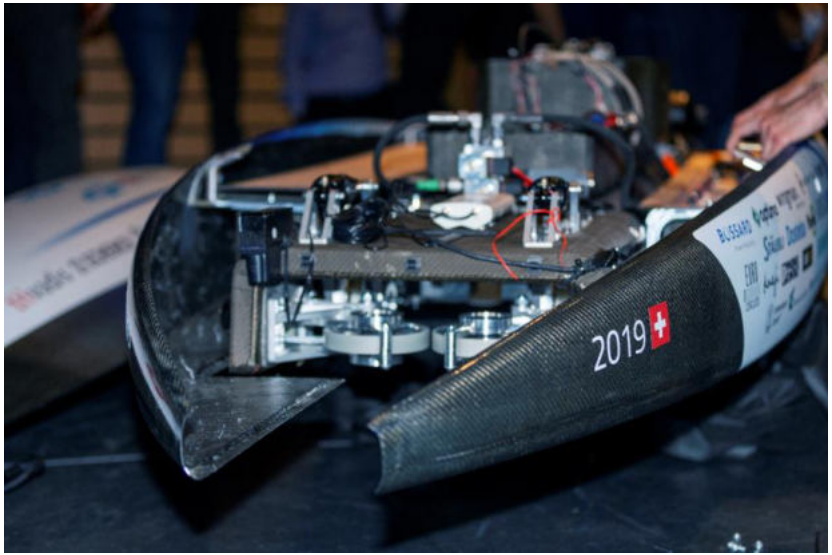




- Fokus Rollout @ETH
- Sponsoren Rollout @Empa
- EHW @Valencia, Spanien

EHW
EUROPEAN
HYPERLOOP
WEEK

Finale Events



SpaceX Hyperloop Pod Competition

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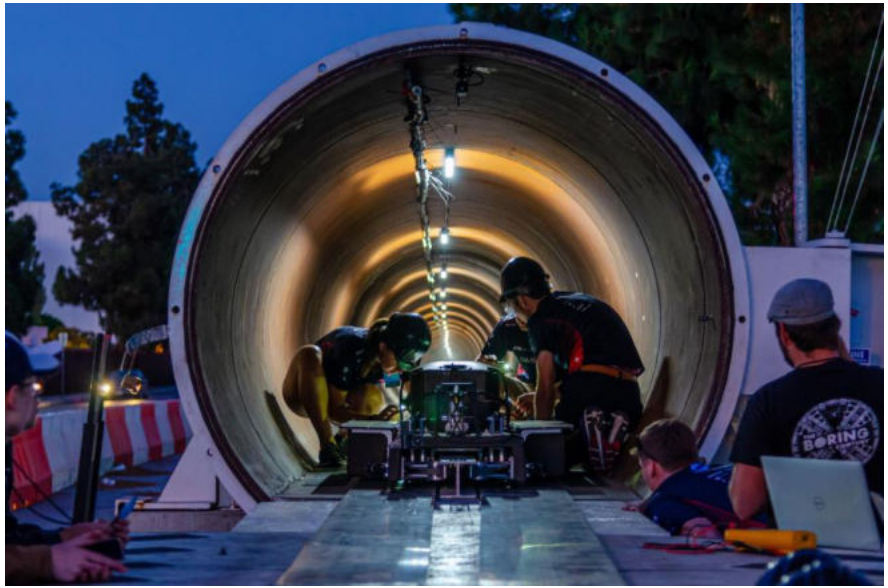

SpaceX Hyperloop Pod Competition

Key Learnings

- Innovation in kurzer Zeit
- Von Fehler zu Fehler
- Fast Forward Thinking
- Lösungsorientierte Arbeit

- Teamgeist
- Kreativität
- Kommunikation
- Wissenstransfer

- Starke Partner
- Struktur/Organisation
- Zeitmanagement

Swissloop - Fokusprojekt 2020/2021

Ziele 2020 / 2021

- Weiterentwicklung Linearmotor → **Schwebender LIM**

- Entwicklung einer Podstruktur für Schwebeantrieb

- Weitere Forschung & Entwicklung am Hyperloopkonzept

Ausblick 2020 / 2021

- Fokusteam mit 8 Personen
- Akitvteam mit rund 20 Personen

Was wir Euch bieten

- Forschung an der Mobilität der Zukunft
- Motiviertes, innovatives Team
- Voller Produktentwicklungsprozess
- Kontakt mit Sponsoren und Partnern
- Internationale Hyperloop-Community

Was wir Euch bieten – ein tolles Team!!

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Was wir von Euch erwarten

- Teamgeist
- Motivation und Leidenschaft
- Zeit und Engagement
- Verantwortungsbewusstsein
- Sinn für Problemlösung

Rekrutierung

- Voraussetzungen MAVT
- Unterlagen: CV & Motivationsschreiben
- Bei Fragen: info@swissloop.ch

- Timeline:

Anmeldefrist	**Sonntag, 31.05.2020**
Bewerbungsgespräche	**Mittwoch, 03.06.2020**
Bekanntgabe Fokusteam 20/21	Bis 08.06.2020
Start Fokusprojekt 20/21	14.09.2020

Vielen Dank für Ihre Aufmerksamkeit!

Let's break a pod together!

swiss**loop**
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