SHORT-TERM INTERNSHIP PROGRAMME
February 1st – July 31st

Barakat Bokharaie
Supervisor: Matthias Mentink

Outline

Profile

Completed projects

My project at CERN

Why CERN?

Interests

Profile

Barakat Bokharaie

Afghan-Danish

Mechanical engineering student

5th semester (Bachelors degree)

Aarhus University School of Engineering

Short-term intern

Performance evaluation (PE)

Completed projects: 1st semesterproject

Quickcord

Discover a problem and solve it

Protective case for in-ear headset

Product design

Process

The user

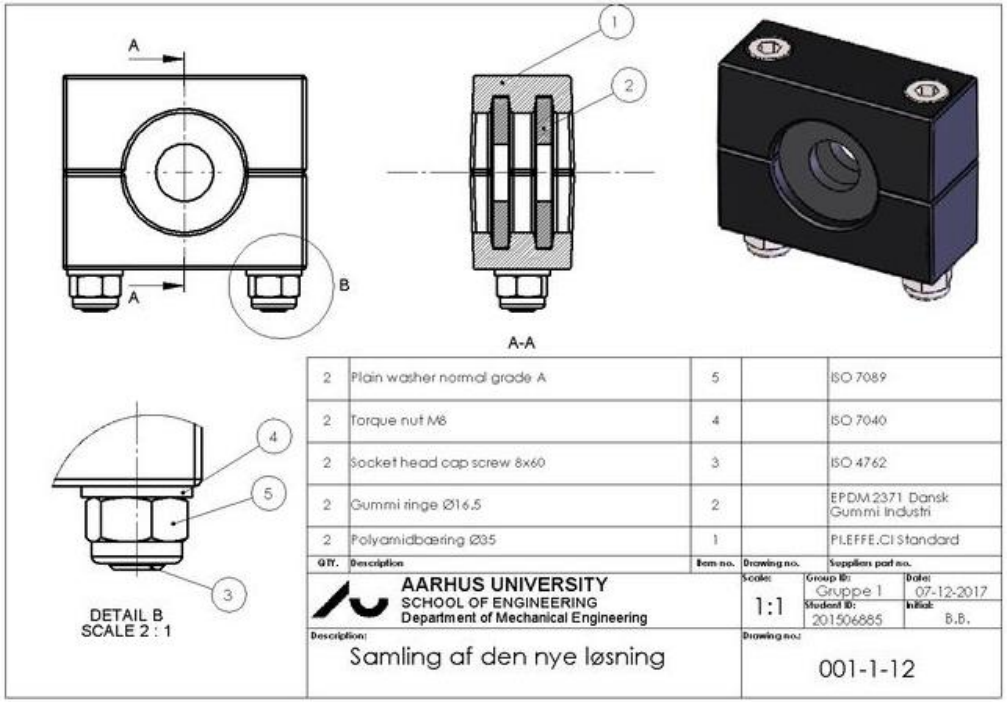
Completed projects: 2nd semesterproject

Carbon dioxide based cooling plant

Hot copper tubes fail due to fatigue from vibration

Develop new brackets, that absorb the vibrations

Cheapest and simplest solution: Polyamide-rubber brackets to spare the copper tubes



QTY.	Description	Item no.	Drawing no.	Suppliers part no.
2	Plain washer normal grade A	5		ISO 7089
2	Torque nut M8	4		ISO 7040
2	Socket head cap screw 8x60	3		ISO 4762
2	Gummi ringe Ø16.5	2		EPDM 2371 Dansk Gummi Industri
2	Polyamidbaering Ø35	1		PI.EFFE.CI Standard

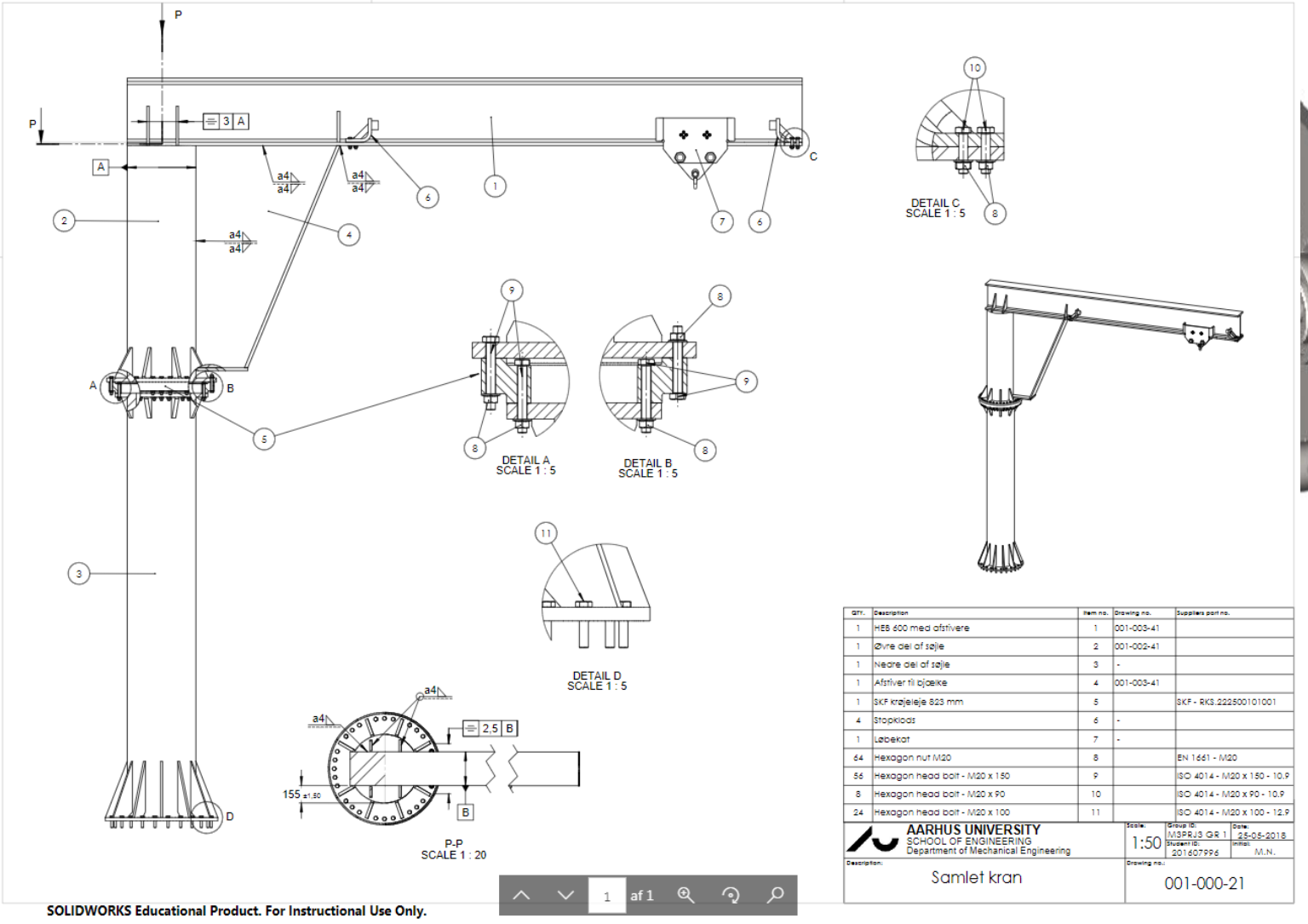
AARHUS UNIVERSITY
SCHOOL OF ENGINEERING
Department of Mechanical Engineering

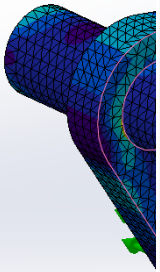
Scale: 1:1 | Group ID: Gruppe 1 | Date: 07-12-2017 | Student ID: 201506885 | Initial: B.B.

Description: Samling af den nye løsning

Drawing no.: 001-1-12

Completed projects: 3rd semesterproject





QTY.	Description	Item no.	Drawing no.	Supplier's part no.
1	HEB 600 med afstivere	1	001-003-41	
1	Øvre del af søjle	2	001-002-41	
1	Nedre del af søjle	3	-	
1	Afstiver til bjælke	4	001-003-41	
1	SKF krøjeleje 823 mm	5		SKF - RKS.222500101001
4	Stopklods	6	-	
1	Løbekat	7	-	
64	Hexagon nut M20	8		EN 1661 - M20
56	Hexagon head bolt - M20 x 150	9		ISO 4014 - M20 x 150 - 10.9
8	Hexagon head bolt - M20 x 90	10		ISO 4014 - M20 x 90 - 10.9
24	Hexagon head bolt - M20 x 100	11		ISO 4014 - M20 x 100 - 12.9

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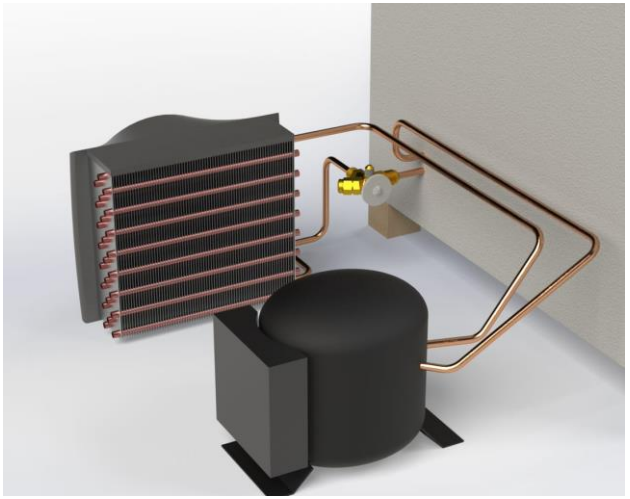
Scale: 1:50 | Group ID: M3PRJ3 GR 1 | Date: 25-05-2018 | Student ID: 201607996 | Initial: M.N.

Description: Samlet kran

Drawing no.: 001-000-21

Completed projects: 4th semesterproject



My project at CERN

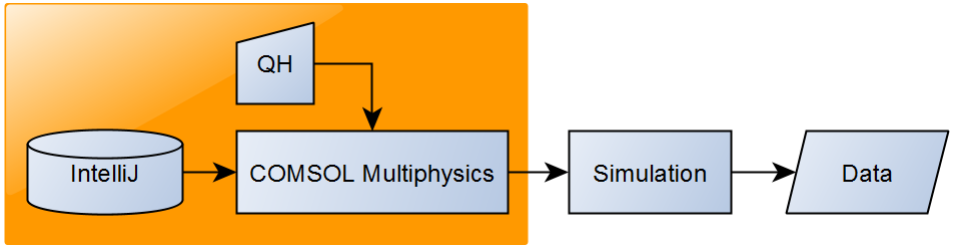
Develope SIGMA

SIGMA – Tool for producing FEM based simulation models for accelerator magnets.

Understand the behaviour of magnets in order to develop QPS such as QH

- Restructuring of SIGMA infrastructure → Reduce simulation time & simplifies model
- Addition of QH: Manual → Automatic
  - Reduce setup time
  - Reduce risk of input error

- Calculate key physical properties
- Compare with experimental results → Validation



Why CERN?

Special collaboration between Denmark and CERN

BIGGER = BETTER!

Great interest in particle physics

Great opportunity

How different fields work together

Trying something different

Put theory into practice

Interests