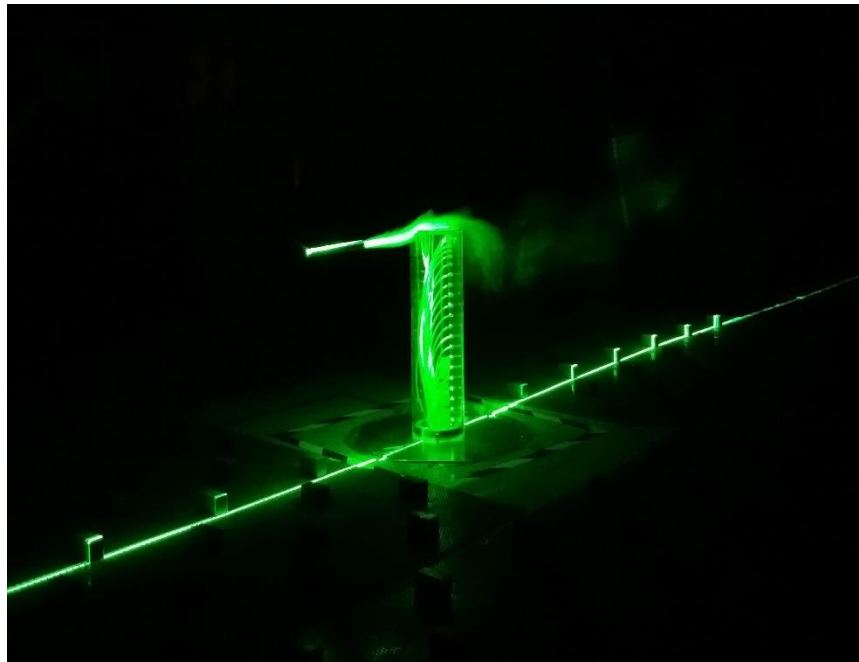


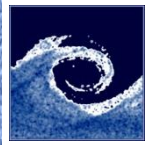


## Project 5 Presentation

# Flow visualisation laser sheet development using series of low cost laser diodes



Bartos Ágoston - BVAVH5  
Orosz Dávid - X2BOOH  
Mihalics Gábor - V006UN  
Bedőcs Barnabás - NHWJ54



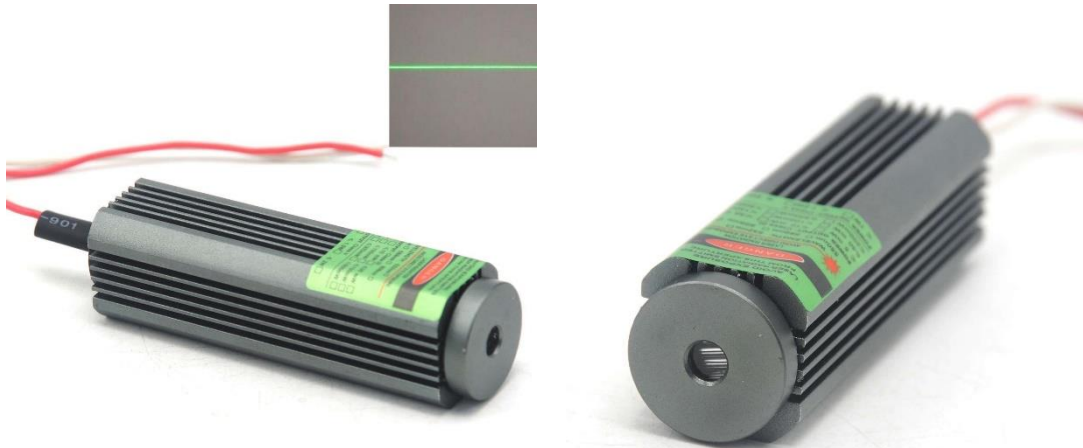
## The goal of the project

- The goal of the project was to develop a relatively **cheap laser sheet** which can be used **for flow visualization in the large wind tunnel** of the department.
- Main requirements of the laser sheet:
  - Favourable price
  - Fast and easy fixing to the traverse of the wind tunnel
  - Opportunity to use different number of laser diodes
  - Adjustable laser sheet angle ( $\pm 5^\circ$ )
  - Adjustable distance between the diodes
  - Components which can be manufactured easily or bought fast

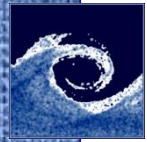


## The chosen laser diode

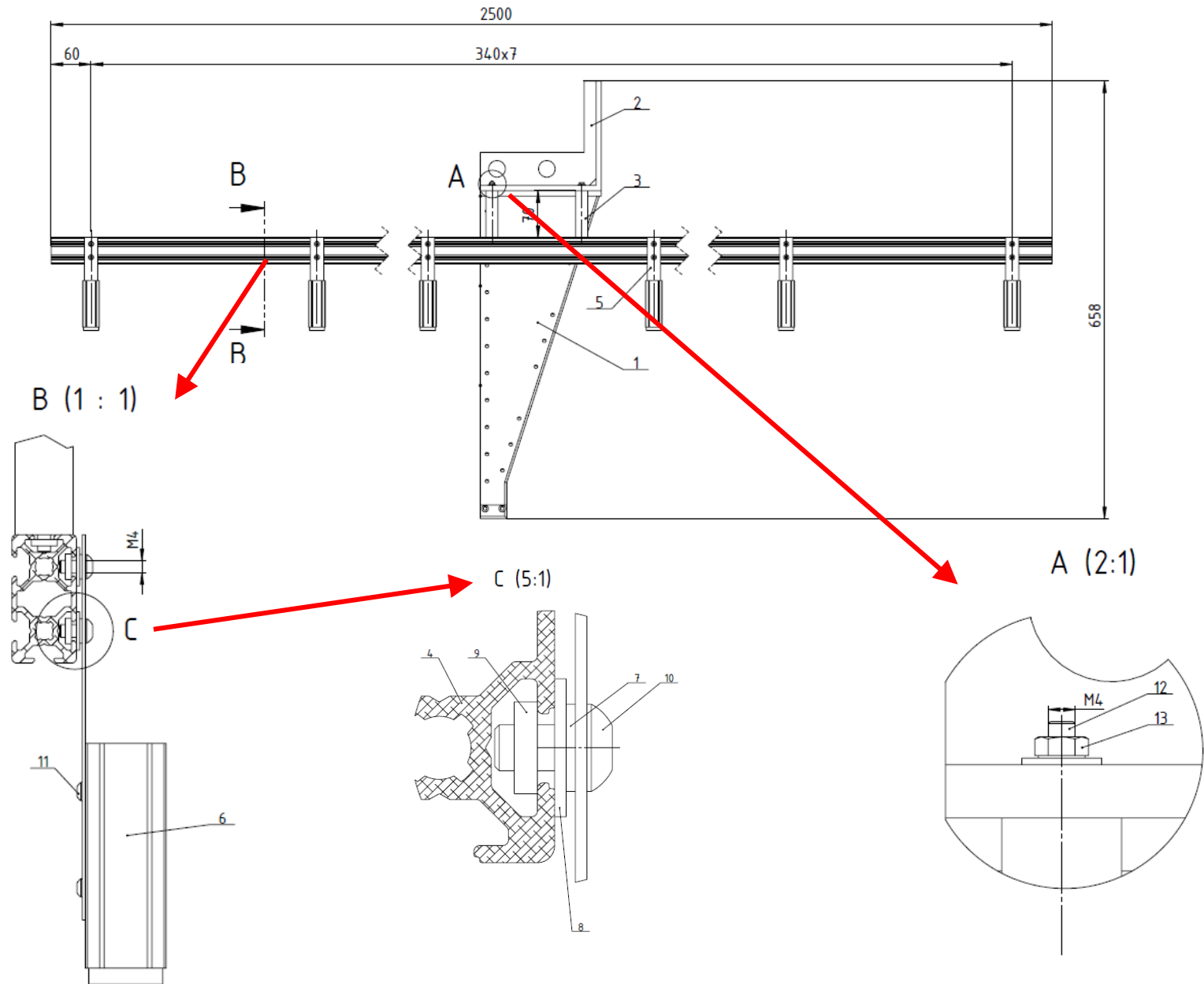
- Ten laser diodes were ordered from ebay:

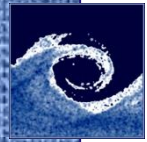


- Main properties:
  - Price: US \$39.28 (~**10500 HUF**)
  - Output Power: 45-55 [mW] (**Measured: 15-75 [mW]**)
  - Output wavelength: 532 [nm] (**Green**)
  - Working Voltage: DC=3-5 [V] (Measured FV: ~2.5 [V])
  - Working Current:  $I < 350$  [mA]
  - Opening angle: 110 [°] (**Also quite variant and should be decreased**)

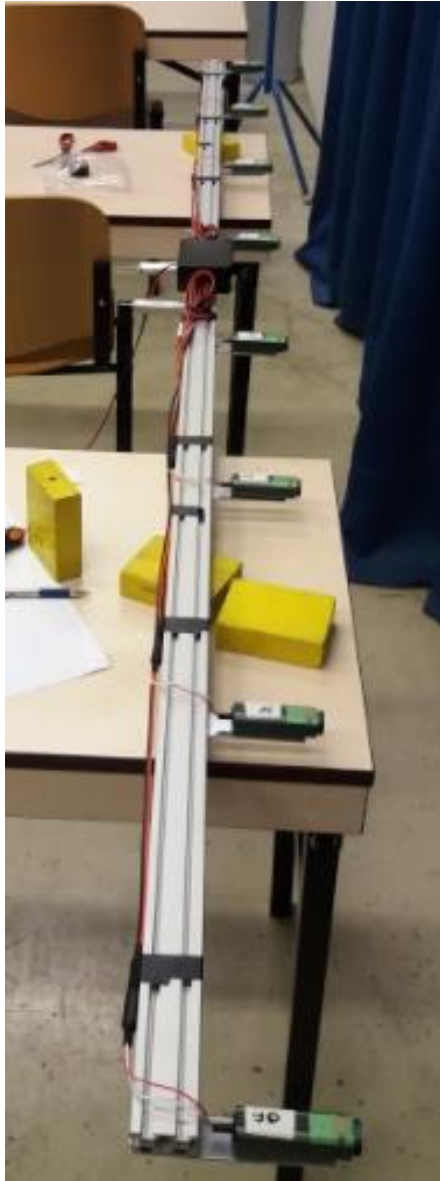


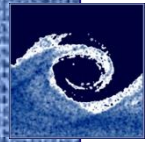
# Equipment construction



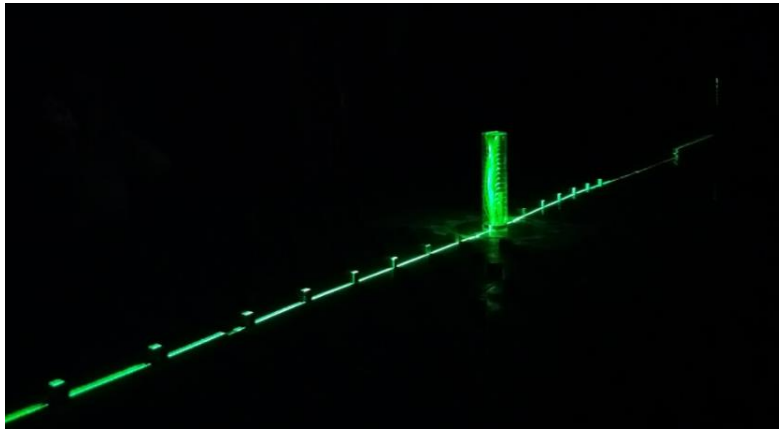


# Equipment construction

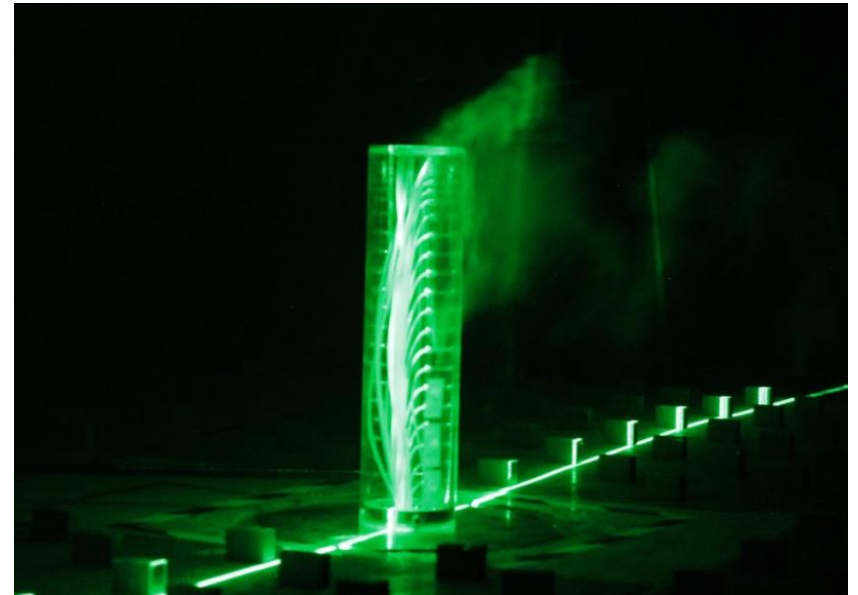
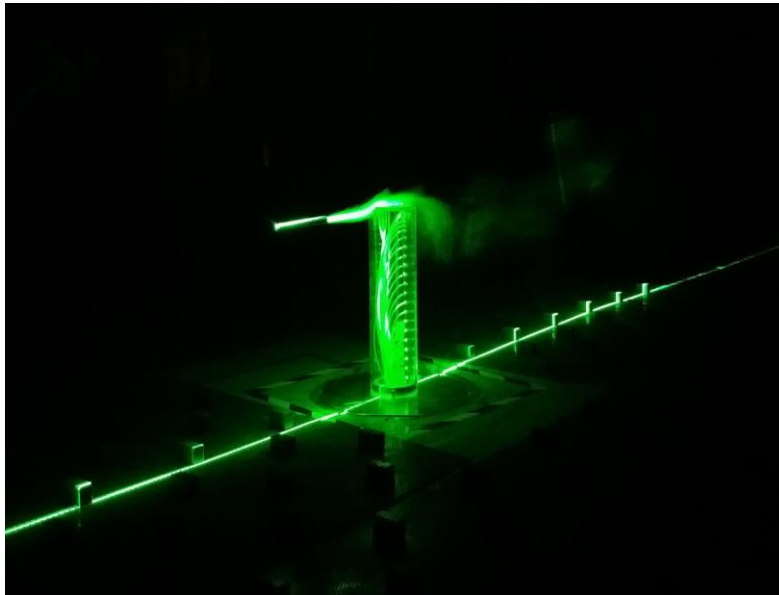


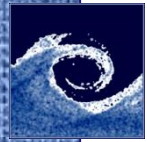


## Flow visualization

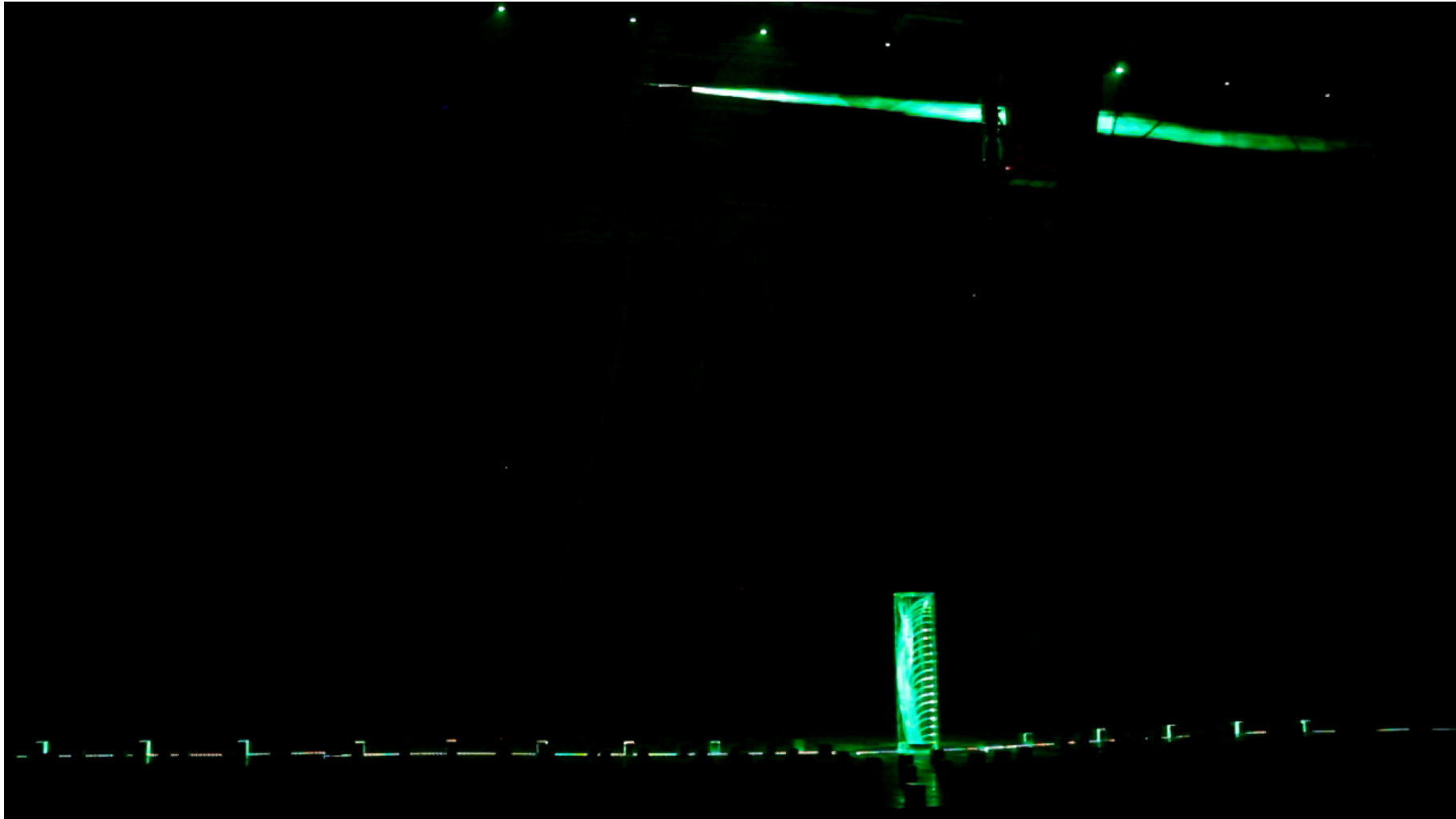


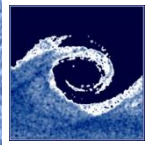
- Merged laser planes (no split-up)
- No shielding effect
- Long range





# Flow visualization

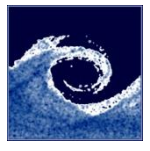




## Possibilities for the development

- Based on the tested structure, we get some improvement possibilities:
- Recommendations for the next developre group
  - More rigid structure
  - Lenses fixed against rotation
  - Narrow light shape lenses
  - Use more durable materials to fix cables





Thank you for your kind attention!

