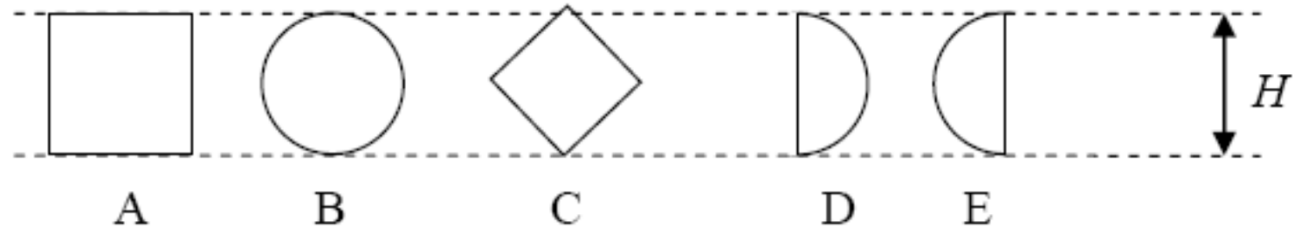
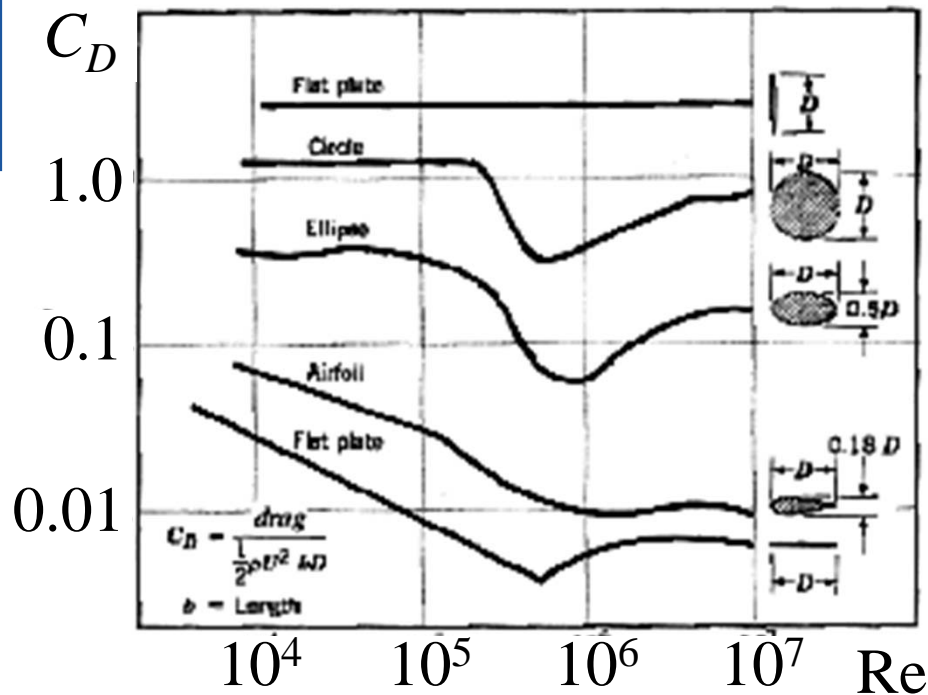


# Individual task:

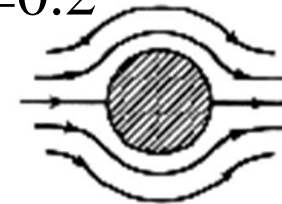
- Drag for a 2D object:



# Reynolds no. dependency

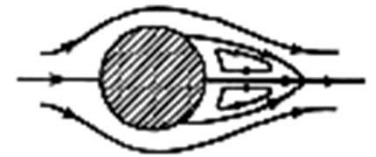


Re=0.2



No separation  
(A)

Re=12



Steady separation bubble  
(B)

Re=120



Oscillating Karman vortex street wake  
(C)

Re=30.000

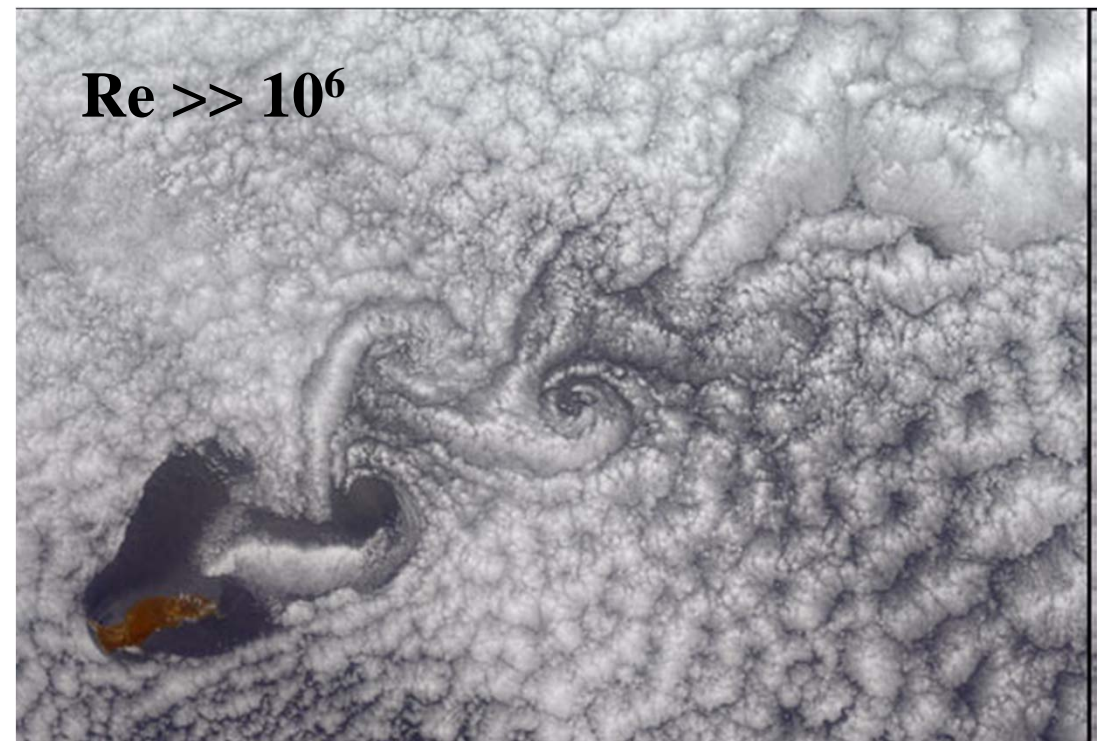
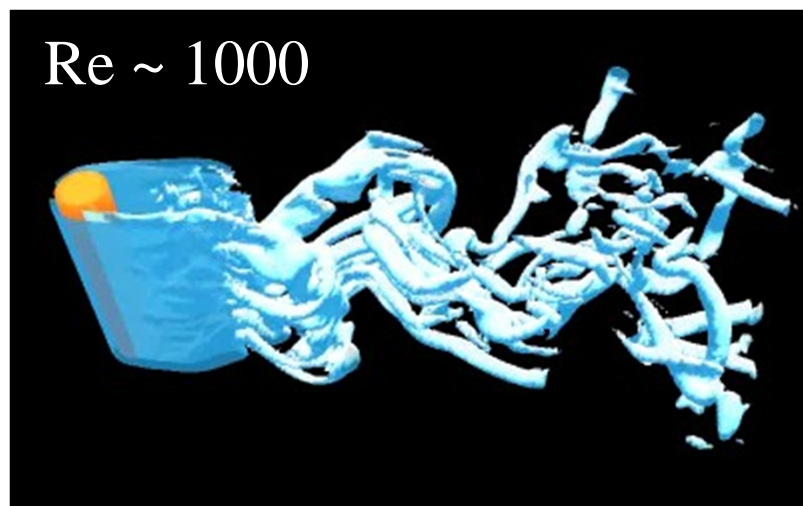
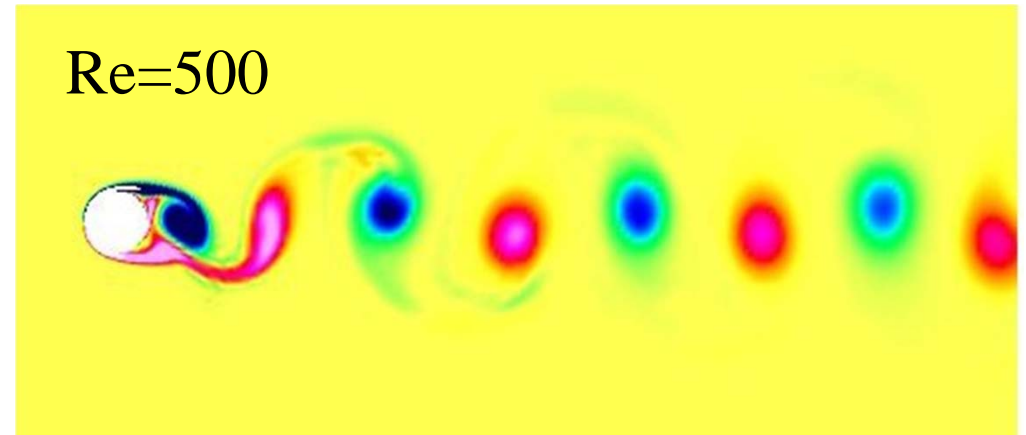
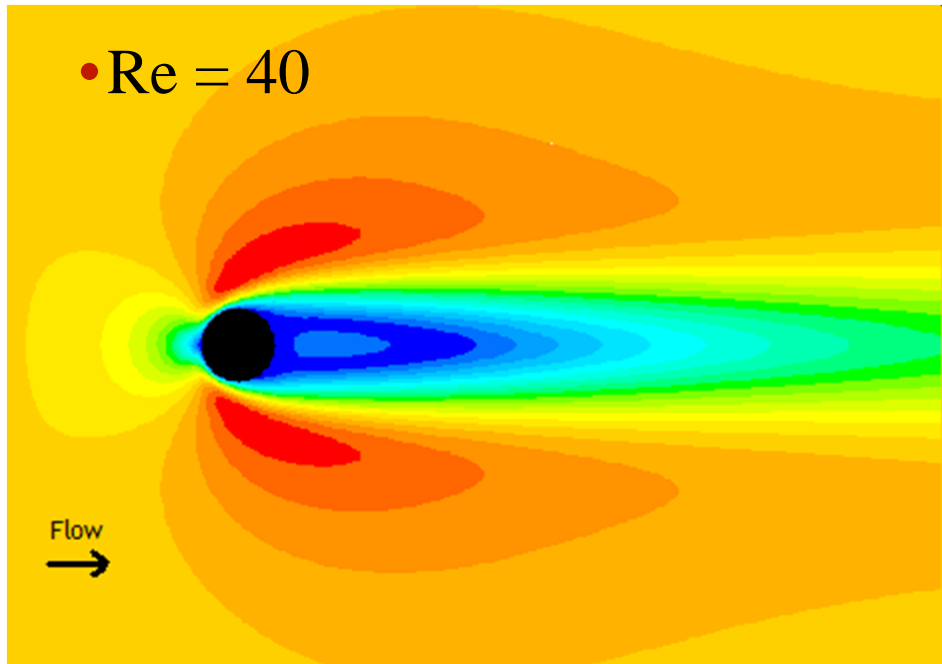


Laminar boundary layer  
wide turbulent wake  
(D)

Re=500.000



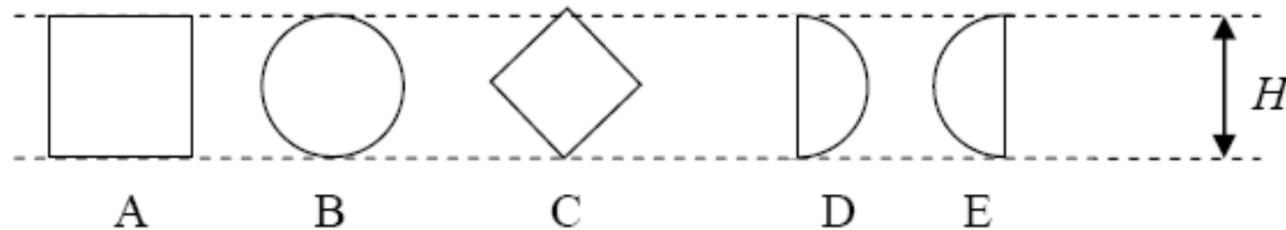
Turbulent boundary layer  
narrow turbulent wake  
(E)



# What to do:

- Objective

To derive the drag coefficient for a 2D object



- Setting

- Choose object
- Choose  $Re = 10^4, 10^5$  or  $10^6$
- Incompressible:  $Ma < 0.1$

- Derive

- Drag coefficient
- Grid and flow pictures

- Different approximations – no "correct answer"



# When:



- Preparation for lecture 2 (31/3):  
Sketch, Physical model, Reynolds number
- During lecture 2 (31/3):  
Determine the grid resolution requirements
- Before 18/4:  
Compute the case using Fluent  
Upload on bilda
- During lecture 5 (20/4):  
I will compare the different results – feedback