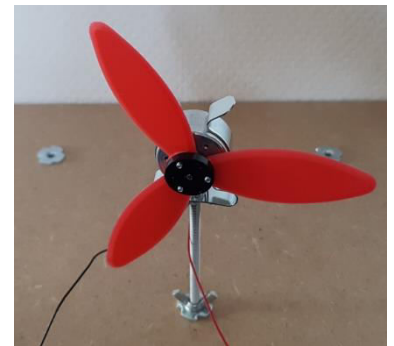
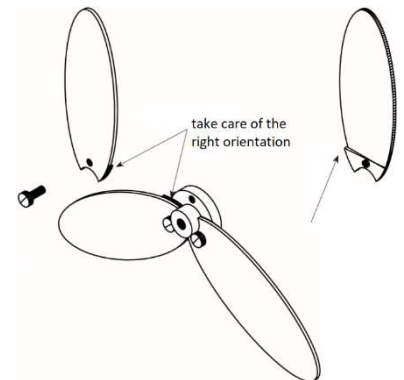


Constructing the windmill and first measurements

1. Your first task is to build a first small windmill. It should be easy to put all the parts together. Compare your windmill with the one in the picture.

Place your windmill in the center position of your board and fix it with a nut.



complete windmill

2. Take the fan/ventilator/hairdryer and make your windmill to start turning.
3. Connect your analyzer to the wires of your windmill and check if you can measure anything.
Don't care about the numbers you will get at this moment.

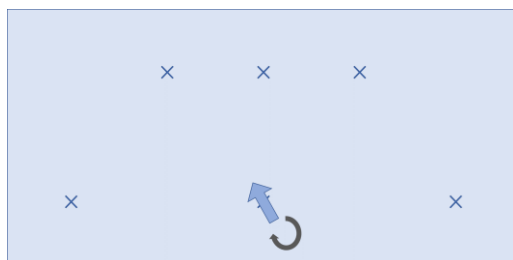
If everything seems to work, you can go on. If there are any problems don't hesitate to ask for help.

To simulate the blowing wind offshore an onshore you will change some settings now.

4. To change the wind **strength**, you should vary the **distance** of your fan/ventilator/hairdryer.
Compare your measured numbers from different distances.
Keep the direction of the wind coming straight to your windmill all the time.
5. To change the wind **direction**, you should vary the **angle** of your windmill.
Compare your measured numbers from different angles.
Keep the strength of the wind coming to your windmill by using the same distances all the time.

Does the camera of your smartphone/tablet have a slow-motion mode?

Try to take short clips with different wind strengths or angles.



Save all
your



experiences

and

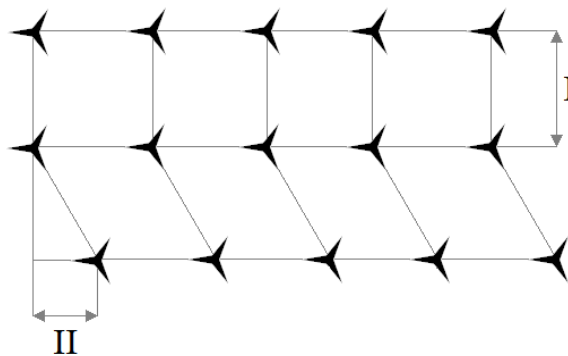
measurements online in
the prepared sheet.

tinyurl.com/yxsg7npe

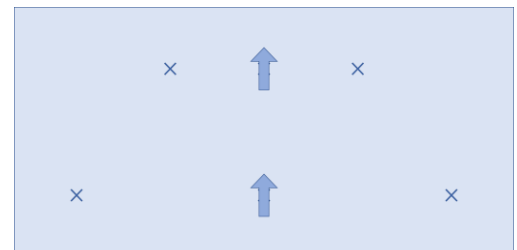
Increasing the number of the windmills

A single windmill is nice to have, but the more of these small power plants you combine the more power you will get. But there is a problem: All our windmills share the same wind they steal it each other.

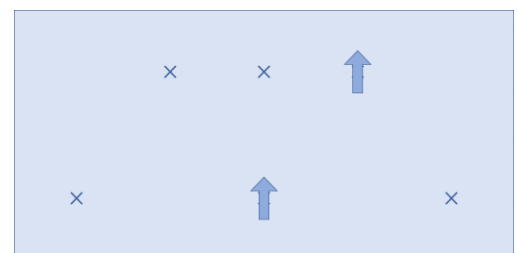
You will now provide an insight into the order of more than one windmill.



- I** Take two windmills and put the second one in a direct line behind the first one.
Increase the strength of the wind at the first windmill.
How does the second one behaves?
Use the slow-motion-mode of your smartphone/tablet to have a better view of the behavior of the two windmills.



- II** Move your second windmill to the side.
Increase the strength of the wind at the first windmill.
How does the second one behaves?
Use the slow-motion-mode of your smartphone/tablet to have a better view of the behavior of the two windmills.



- III** Now you can put a third windmill on your board to create am (very) small wind park.
- Which order of the windmills seems to be interesting for you.
 - Which data is needed to be measured?
 - Try to find online how real wind park (onshore or offshore) are built.