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| <b>Topic:</b> physics in nature and technology / wind power   |
| <b>Lesson Title:</b> “Is bigger better” – or – Do the size of the rotor and the wind speed have an effect on the performance? (lesson 1+2)  |
| <b>Lesson objectives / goals / outcomes:</b> <ul style="list-style-type: none"> <li>- help/support to understand, how the windmill works – how to use the wind for our life ...</li> <li>- The students will know the fundamental components of the windmill. The students will build models of wind turbines and will measure the output voltage of the generator depending on the wind speed.</li> <li>- Co-operative learning and respect for others – this is a reason for success and good work</li> </ul> |
| <b>Required material / resources:</b><br>PPP with main information and working steps; pieces of cardboard, hot glue gun, shashlik spit; a fan, an anemometer, a generator and a voltmeter; vocab list on the subject of wind power – and good ideas   |

| Time       | Task / Activity   | Teacher / Student      | Materials  |
|------------|---|------------------------|--|
| 10 minutes | introduction: <ul style="list-style-type: none"> <li>- turbine types (VAT &amp; HAT)</li> <li>- lesson plan and working steps</li> </ul>          | T/S discussion         | PPP  |
| 35 minutes | group work: <ul style="list-style-type: none"> <li>- constructing different turbine types</li> <li>- different rotor layouts and sizes</li> </ul> | 4 Groups of 4 students | see above  |
| 30 minutes | tests and measurement of values like wind speed output voltage, filling in protocols  | group work             | Protocol, test station with anemometer and voltmeter |
| 15 minutes | discussion and evaluation of results: Do the size of the rotor and/or the wind speed have an effect on the performance?                           | T/S discussion         |  |