Aeolian energy junior

The word “aeolian” derives from Aeolus, the Greek god of the winds, whose name, Aiolos, means “fast”. Wind is an atmospheric phenomenon caused by the Sun’s heat. The Earth transfers the heat received from the Sun to the atmosphere, but not uniformly. In those areas where less heat has been transferred, the pressure of the atmospheric gases increases, while where more heat is transferred the air gets warmer and the pressure of the gases decreases. Hence, areas of high and low pressure are formed. Air moves from high to low pressure areas. The same thing occurs when we let a balloon deflate; the high pressure within the balloon tends to force the air outwards where the pressure is lower, creating a small gush of air. Wind is therefore a fast or slow movement of air between areas with a different pressure: the greater the difference in pressure, the faster the movement of air and the stronger the wind. Moreover, wind is influenced by the Earth’s rotation

Man has been using wind energy for thousands of years. The Egyptians were the first to experiment sailing on the Nile 5,000 years ago, while the first wind mills were made by the Babylonians and date back to the seventeenth century B.C. In the centuries that followed, wind mills spread all over the Middle East. Between 1200 and 1300 they were used in Europe too, especially in the northern countries. Even Leonardo da Vinci worked at perfecting these machines. In 1887, the French Duc de La Peltrie built the first aero generator to produce electrical energy. Today aero generators are utilised to obtain energy from the wind. These modern wind mills exploit the wind to make the blades of a big propeller rotate: the latter is connected to a generator that transforms mechanical energy (deriving from the movement of the blades) into electrical energy. Aero generators vary in size and shape. In fact, they can have one, two or three blades of varying lengths: those with 50-centimetre-long blades are used as battery chargers; those with 30-metre-long blades are capable of producing energy to satisfy the daily electricity requirements of about 1000 households. When many aero generators are connected they form a wind-farm, which are real power stations. There are both on shore and off-shore wind farms.