

The hydraulic mills of Scano di Montiferro, Italy

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The theme of this dissertation originates from the study of a village called **Scano di Montiferro**, which is placed in Montiferru, a central area of Sardinia. The work analyses thoroughly a distinctive feature of this place: **the mills with hydraulic wheels**.



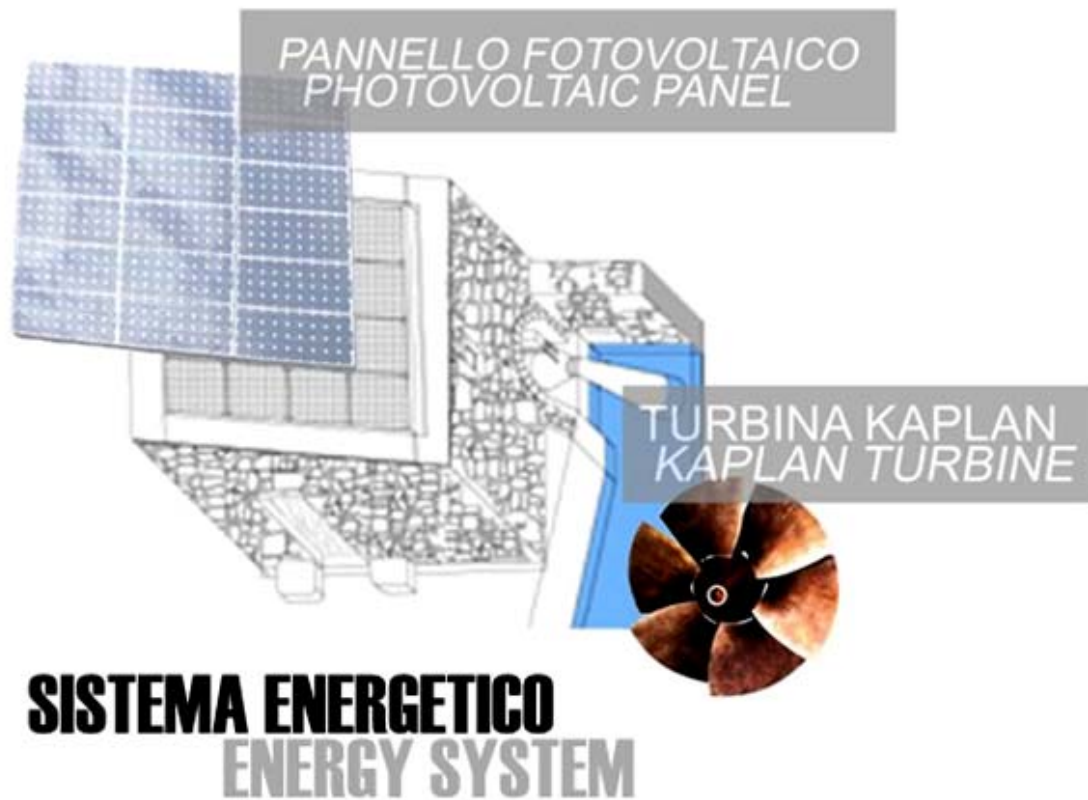
These buildings are located along a watercourse called Riu Mannu, which flows a few kilometres far from the inhabited area. The river rises in S. Antioco, a village upstream, and has its source in copious underground water springs. Riu Mannu's water fed the sixteen mills placed along its banks. The area where they are distributed extends as far as 3,5 KMs and is within the jurisdiction of Scano di Montiferro. The mills are about five hundred metres far from one another. The existence of such a hydraulic mills' concentration in a circumscribed area makes this site unique of the entire regional territory. The construction of these pre – industrial handmade buildings is justified by the water's abundance supplied by Montiferru's drainage basin. Some of them are still in a good state of preservation, the oldest ones appear only on the cadastral map or it is possible to discover a few traces of them in the area. Seven mills have been analysed, most of which used the horizontal hydraulic wheel. Two of them had the most fully – developed vertical hydraulic wheel and one of these is the only mill which is still working in Sardinia. The research on the field started with **the relief** of each of them, the only one which is now in existence.

This dissertation's work carried on through a study in depth of local reality's different aspects in order to come to an overall view of the situation.



These buildings' **historical study** was useful to find out their existence in this place since 1699 and it also stressed their medieval origin ascribed to the Camaldolite monks. The **anthropological research** recounted the life there was around the mills through the accounts of the last generation who saw them in action.

The analysis of two representative mills' decay proposes a restoration's example which can restore the decayed parts. Starting from these assumptions, the dissertation's aim was to achieve such buildings' re – functionality by a diffuse museum's plan. A muletrack, which formerly was of these mills' use, turns into the didactic route where the finds preserved in these spots are placed. As matter of fact, this itinerary tries to recall the life which took place along Riu Mannu's banks, characterized by the hydraulic wheels' untiring work and its course reveals important evidences of the nuraghi (nuraghe Nuracale, nuraghe Mesu' e Rios). The area's didactic and tourist peculiarity is strengthened by some service buildings' design, where a fundamental role is performed by the creation of an **apparatus of electrical energy's generation**. This system exploits the watercourse's potentialities by means of microhydraulics' plants which use the **Kaplan turbines** of the last generation and the solar ones of the geographical site by a **photovoltaic system**. The turbines are put into the mills' wheel space. The photovoltaic panels replace the mills' roofing, where it is no longer present, or they are placed on lay – bys hidden by artificial hillocks. The energy system's drawing up has been combined with the **maximum measuring** of the same one. The electric system is planted in order to avoid an unaesthetic and not very functional presence of wires and trellises in a particularly nice and full of vegetation landscape. **The climate's analysis** has been carried out to dimension the electric system and to achieve the *thermohygrometric comfort* in the service buildings.



The didactic route starts from *S. Antioco* village with an agritourism, it goes on with a series of rooms for the production and sale of typical products and at last ends in *Luzzanas* resort with a museum and a bar. The aforesaid service buildings are the direct utilizers of the energy produced by the water's and sunlight's power: the rest of the energy should be put in the Enel system. The aim of this energy system's design is to give again to these mills the productive dignity which characterized them in the past. Even though respecting their architecture, the mills no longer turn a biological food, the corn, into flour, but turn two natural elements, such as water and sun, into electric energy.

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