

Straw bale architecture in Poland

PhD Thesis

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Wydział Architektury Politechniki Krakowskiej

Kraków 2023

Summary

The subject of the work is the development of straw bale architecture in Poland, presented in the context of general characteristics of strawbale building techniques and history in the USA and Europe.

The technique of building from straw bales was invented at the end of the 19th century in Nebraska. Forgotten in the 1940s, it was rediscovered in the 1970s and brought back to use on the wave of interest in sustainable and affordable ways of construction. Since the 1990s, straw bale architecture has been developing intensively in many countries, in Europe, especially in France, Germany and the United Kingdom. The wide possibilities of using straw bales have been confirmed through laboratory tests, European technical assessments and in practice – for example through the implementation of large scale residential and public utility projects.

In Poland, the first building made of straw bales was built in the year 2000. Since then, constructions of this kind have been systematically increasing in numbers. An accelerated development has been observed since 2011. As a result of research completed at the beginning of 2023, the author managed to confirm the existence of 320 buildings (finished and/or in construction) made of straw bales and collect information about the probable construction of about fifty more.

Research on existing straw bale buildings and those under construction in Poland allowed determining which solutions are most often used. Characteristic solutions were distinguished and the conditions which influenced their development were described. In Poland, buildings made of straw bales are primarily single-family houses and buildings used for leisure, very often self-build (or self-organized) with high involvement of investors. Straw is most often used in the walls of buildings, less often in other partitions. Among the available construction solutions, the use of a timber frame with straw bales as infill dominates. What the author considers as typical is the use of double posts (studs) with straw bales laid flat and the use of straw compression in the walls with jacks or belts. Another construction technique that is gaining popularity is the prefabrication of wood and straw elements off-site. The appearance of straw bale buildings is influenced by the most commonly used finishing materials: clay and/or lime plasters and (slightly less often) wooden facades.

Straw bale architecture can be (and is) adapted to local conditions in Poland, and its further development is justified mainly by the need for solutions that reduce the carbon and ecological footprint of construction.

Keywords:

strawbale architecture, straw bale, natural building, ecological architecture, sustainable architecture, clay plasters, lime plasters, wooden constructions