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Good Building Design in the Rhineland

Large agricultural building measures in outlying areas are increasingly being criticized by the public. Design requirements often contradict demands resulting from the utilization of the buildings. However, the proportions of functional building cross sections also match proven design criteria. Façade design as well as the choice of suitable materials and colours enable functional requirements to be harmonized with good design and to integrate even large buildings such that they are compatible with the proportions of their environment. In addition, good design may strengthen the acceptance of agriculture by the public.

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The choice of suitable locations in outlying areas is increasingly being restricted as a result of environmental protection requirements. The remaining locations often make the compatible integration of large facilities into the constructional environment more difficult. In approval procedures for projects in outlying areas, design aspects are therefore being given greater attention again. Historical construction forms can and should not be taken over. It is a goal of construction counselling in the Rhineland to harmonize the demands of agriculture regarding the construction of buildings with the understandable requirements of good design.

Measurements and Proportions

Stall facilities for large herds reach large building lengths and widths. Large building volumes with eaves heights of more than 4 m and roof inclinations of more than 20° are necessary in outdoor climate stalls in order to achieve sufficient air exchange at animal-compatible air speeds. This results in ridge heights of up to 11 m. Large ridge heights are also appropriate for storage halls for agricultural bulk- and staple commodities. Conditions which limit eaves- and ridge heights therefore contradict the requirements of species-appropriate animal housing as well as the necessities of labour management.

Eaves- and Ridge Heights

They are not primarily important for the question of whether a building well integrates into the landscape. Instead, the proportions of the buildings as seen by the observer and their relation to the scale of the landscape play the decisive role. In our cultural area, historical forms of agricultural construction are characterized by their roof landscapes and balanced proportions of the perceived gable-, wall-, and roof areas. Despite their height, we do not consider them disturbing. However, buildings which feature high eaves and low roof inclinations due to utilization requirements leave a box-like and industrial impression and are considered disturbing in the landscape (*fig. 1*).

Structuring of the Construction Masses

In large facilities, it can be reasonable for utilization purposes to establish a constructional separation between different functional areas. If less optical weight is attached to the individual structures, this supports the compatible integration of the entire facility into its environment (*fig. 2*).

In large and, in particular, long buildings, an even structure leads to compatible integration into the scale of the landscape. A proven means is making the design grid visible, e.g. by setting back filler walls and wall covers behind or between the front of the pillars (*fig. 3*).

This structuring effect is supported by greening measures. They are not intended to hide the building in the landscape because the demands of species-compatible and environmentally friendly animal housing require its free exposure to the wind. Greening measures which feature a varied structure and are deliberately designed as creative elements, however, equally meet the demands resulting from the utilization of the building and the requirements of landscape conservation. Together with well designed buildings, they can set new, attractive accents.

Design Requirements for Roofs

Most lower landscape authorities in the Rhineland generally require dark roofs for agricultural buildings, which are believed to

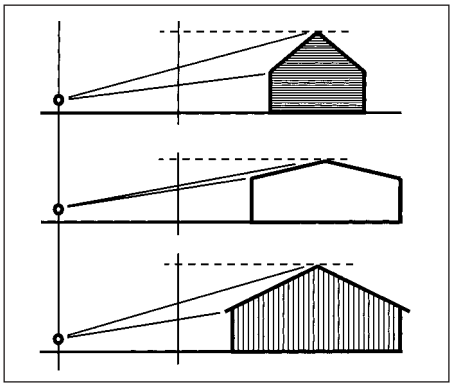

Fig. 1: Balanced relations of roof and wall characterise old farm buildings as well as new functionally appropriate new buildings

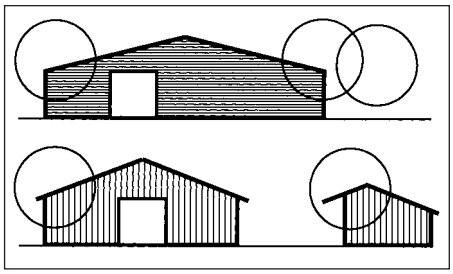

Fig. 2: Two separate buildings can be more advantageous regarding function and design

blend into the environment inconspicuously. For animal-friendly housing under conditions close to the outdoor climate, this requirement is unacceptable because it impairs the well-being of the animals by causing high stall temperatures. In buildings for the storage of agricultural products, excessive heat is also extremely disadvantageous.

Effects of Colour and Material

Colour and material cannot be considered in an isolated manner. Natural building materials have broken colours and matt surfaces. Nuanced grey or tile-red covers which harmoniously blend into the colours and structure of their environment therefore determine the picture of historical roof landscapes depending upon the region. The usual, suitable covers for new buildings do not allow this effect to be reached easily, especially if design requirements exclusively concern the colouring. The large-area elements used are often only weakly structured and generally have very glossy surfaces. Monochrome, large surfaces, especially in intensively shining colours (in particular green, which is believed to make the building blend harmoniously into the landscape), form a striking or even upleasant contrast to the seasonally changing colours of nature, which are rich in nuances.

Harmony of Roof and Landscape

Depending on the incidence of light, dark roofs appear glaringly light or almost black. In this case, they dominate the landscape picture and do not fit in inconspicuously. Broken colours in medium to light shades seem rather inconspicuous against almost all landscape backgrounds. During the vegetationless period, they harmonize with the colours of the scenery and allow compatible stall temperatures to be maintained. From the viewpoint of design, tile red or broken shades of brown corresponding to the soil colours which determine the picture are suitable depending on the region. Profiled cover elements limited in length are advantageous for heat conduction and favour integration into the structures of the landscape. On large wall- and roof areas, however, surfaces with the lowest possible degree of gloss are more important than the colour itself.

Walls

For massive filler walls, prefabricated concrete elements provide price advantages over conventional designs. However, washed concrete or impressed wall structures do not compensate for the disadvantageous effects of large, unstructured areas. However, clinker-like structures attached by the manufacturer which feature a genuine joint picture and colours matching the material come very close to the liveliness and attractiveness of conventional designs. In most farm buildings today, the walls only serve to afford protection against wind and precipitation. A traditional cover in many regions is perpendicular wood boarding in the form of floor-cover or batten boarding.

Proven Light Wall Designs

Proper construction includes a splash-guard base and sufficient roof projection. The latter also serves to protect the fresh air installations against precipitation. It is also advantageous for design reasons. Such covers have proven extremely durable. They are inexpensive, easy to maintain and can be installed using elements produced by the manufacturer, which are mounted at the construction site, or by the owner himself. Open-pored paints, particularly in the colour of natural greying, make such buildings appear like a natural part of the landscape, which even gains particular attractiveness with increasing age. Such covers are preferred by the lower landscape authorities and the monument protection authorities and, building utilization permitting, they are recommended in counselling. Often, however, there is a wish for wall covers which are believed not to require any care and whose appearance does not change during their entire life. In such cases, steel profile sheets also provide an optically satisfactory design. However, this also requires that smooth surfaces, intensively shining colours, and glossy covers be avoided.

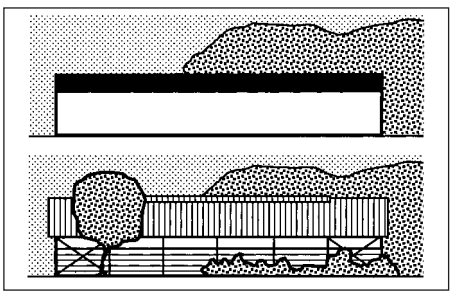

Fig. 3: The building below fits well to its surrounding

Foto Nienhaus

Fig. 4: Clear forms and simple materials suffice for an appealing design

Good Design Can Be Inexpensive

Expensive, high-quality materials alone are no guarantee for good design. Especially simple means of design and restraint in the choice of materials and colours enable agricultural architecture to present itself as appropriate for its purpose and as a natural sign of structural developments. The demands which result from the utilization of the building can well be harmonized with the criteria for good design. The latter does not require money, but thought. However, reflexion pays off if the quality of building design leads to greater public acceptance for the needs of agriculture.