

**BULLETIN
OF THE
EUROPEAN COAL AND STEEL
COMMUNITY**

**COMMISSION OF THE
EUROPEAN COMMUNITIES**

Housing design competition

No. 70

LUXEMBOURG

12th year – No. 6

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FOREWORD

The High Authority's call to architects and engineers to devote practical attention to the problem of industrializing residential building has met with a quite unlooked-for response. All over the world, roughs and sketches have been brought out for a fresh look, and new ideas got on to the drawing-board. People are taking stock of present received thought on the subject, and in the process are coming to see both the dead ends and the way ahead—the way to be followed if the ever-growing demand for decent, pleasant accomodation is to be met by modern industrial methods.

Today, new modes of collaboration are having to be devised among the different professions involved: in building as in other fields, the lone innovator has had his day. The problems are too complex. All the technical headaches may be overcome without the result being necessarily a paying proposition; even a house that is technically faultless and reasonably inexpensive to build will not be *ipso facto* certain of market success.

"A house of conventional design, prefabricated throughout, priced about the same as a large car, put up in 135 hours and livable-in from the Baltic shore to the slopes of Mount Etna,"

—such, as pithily summed up by one of the entrants, Mr. Bernard Murisier, was the aim of the Housing Design Competition.

Has that aim been achieved?

The Competition whose results are described in the following pages was organized to stimulate research. It has given a push to developments by the teamwork it has produced, and by the volume of suggestions, general and specific, contained in the thousands of plans it has brought in. As will be seen from this account, though the change in approach is not yet complete, a variety of new avenues have been opened up, both in technology and in design proper, towards the desired end.

I

THE ORGANIZATION OF THE COMPETITION

AIMS AND OBJECTS

The first E.C.S.C. Steel Congress in 1964, on the subject of Progress in Steel Building, brought out clearly two general truths: first, only by industrializing in a big way as well as operating on its traditional lines can the building trade hope to meet present and future residential needs effectively, and secondly, steel is by reason of certain of its technical properties one of the most suitable materials for industrialized building.

Given these two facts, it was obvious how best to go about tackling one of the great problems of our time, the problem of housing a steadily-growing population anxious that its higher standard of living should include correspondingly improved accommodation. It was further obvious that this would open up a hitherto largely unexploited field of activity for the steelmaking and some of the steel-processing industries.

The High Authority, being vested with responsibility both for the steel industry and for the encouragement of economic expansion and social betterment generally, therefore naturally felt it should take practical action to follow up the Congress's findings. In deciding that this action should take the form of a Housing Design Competition, the High Authority was also desirous of drawing attention to the particular need in the sphere of housing for new thinking and freshness of approach.

The Competition Rules¹⁾ are sufficiently indicative of the High Authority's conception of industrialized building:

- (a) the components must be industrially mass-producible and must be suitable equally for detached, terrace and multi-storey houses;
- (b) at least the load-bearing and floor structures and the door and window frames must be of steel;
- (c) there be plenty of scope for variation of the interiors;
- (d) the dwelling must provide adequate accommodation for a family of five;
- (e) it must allow of production and erection at the rate of 10,000 a year.

The High Authority in addition made it a requirement that competitors should work in teams, and arranged for its Panel of Judges to include architects, researchers, town planners, industrialists and sociologists, in order to underline the fact that industrialized building involves right from the very start not work by individuals on their own but close co-operation among a number of quite separate and indeed diverse professions.

To ensure that the first of the two stages into which the Competition was divided should achieve as fully as possible its object of stimulating new ideas, the Judges, in accordance with the Rules, allowed the entrants the maximum of latitude, merely reminding them that they were expected to produce "an architectural style stemming from the

¹⁾ See pp. 45 ff. below.

GENERAL REMARKS

industrialized employment of steel” and that considerable importance would be attached to “the forward-looking character of the techniques submitted.”

And indeed, quite a number of the 500-odd entries were based on entirely original and even daring ideas, or at any rate incorporated original features of design or technology, here or there.

The ten designs short-listed for Stage II were finally selected because they were deemed to be architecturally the best suited for execution in steel by industrialized processes of fabrication and assembly.

Since the specific object of Stage II was to get the Stage I ideas licked into industrially usable shape, it was felt that the ten finalists must be given much more explicit guidance. The Judges therefore drew up a set of general instructions, together with notes concerning each individual entry. Both of course emphasized that the final design must be suitable for mass production, allow of maximum ease and speed of assembly, and be material- and labour-saving. At the same time it was stressed that the design should exploit steel's lightness and elegance, and that “while the use of steel in architecture in no way implies that other kinds of material are not to be employed, the combination of different materials in the structure must not produce a hotchpotch of techniques and methods whereby all the advantages of using steel components are liable to be lost.”

In a word, “in designing the dwelling competitors must make the most of the special characteristics of steel building and steel technology.”

NOTABLE DATES

October 4, 1965	International Housing Design Competition advertised in the <i>Journal Officiel des Communautés Européennes</i> , 8th year, No. 163. ¹⁾
December 31, 1965	Deadline for registration. Total number of registrations, by individuals and teams, 3,128, from 53 countries.
January 31, 1966	Last date for requesting additional particulars concerning the Competition Rules.
March 1, 1966	First meeting of the Panel of Judges. Method to be used in assessing Stage I entries finalized, and the 180 answers, covering all queries, approved.
March 15, 1966	Judges' statement of March 1 and answers to queries sent to competitors.
July 6, 1966	Prize money and appropriation for defrayment of competitors' expenses fixed by the High Authority at 120,000 dollar units of account.
July 10, 1966	Deadline for submission of entries postponed at the request of the International Union of Architects to July 31, 2400 hours.
August 16-27, 1966	Preliminary examination. Entries received by this date, 478; final total (with subsequent additions), 487, comprising in all some 5,400 plans. Preliminary sifting and appraisal by six of the Judges.
October 10, 1966	Judges' meeting, 1st day. <i>Modus operandi</i> agreed and Judges' reports on preliminary examination of entries as to technological side and conformity with the Rules adopted. 113 entries rejected as not in conformity with the Rules.
October 11, 1966	2nd day. Entries weeded down to 56.
October 12, 1966	3rd day. Entries weeded down to 13.
October 13, 1966	4th day. 10 entries out of the 17 still under consideration short-listed (by qualified majority) for Stage II.
October 14, 1966	5th day. Judges' comments for Stage II competitors finalized.
November 2, 1966	Judges' general directives and individual notes for Stage II competitors drawn up.
December 31, 1966	Replies received from the ten short-listed teams, agreeing to proceed to Stage II.

¹⁾ See pp. 45 ff. below.

GENERAL REMARKS

- May 15, 1967 The ten Stage II entries received by the Competition Organizers.
- June 12-16, 1967 Four days devoted to examination of the Stage II entries, upon conclusion of which the Judges decided to award the prize to Design 15,404.
- June 16, 1967 Press conference given by the Judges, with the Stage II competitors in attendance.
- September 14, 1967 Judges' final meeting. Report to the Governments approved.
- do. Prize-giving ceremony and opening of six-day exhibition (September 14-19) of all Stage I and Stage II entries at the Hall des Expositions, Luxembourg.
- September-October 1967 Stage II entries on display in the European Communities Pavilion at the Montreal World Fair.

II

WINNING DESIGN AND RUNNERS-UP (in numerical order)

BEST ENTRY SUBMITTED

DESIGN No. 15,404

Designer: Architekt Dipl.Ing. Jochen BRANDI,
 Rohnsweg 52, Gottingen, Germany

Associates: Bau-Ing. Peter SCHWANITZ, Gottingen
 Dipl.Ing. Durt DUWE, Gottingen
 Dipl.Ing. Hans GLADISCHEFSKI, Dusseldorf
 Dipl.Ing. Gerhard MIETZNER, Gottingen
 Dipl.Ing. Gebhard SCHRAMM, Duisburg
 E. LUTZ, Munich
 W. STEINER, Kassell
 H. RUETER STAHLBAU, Langehagen, Hanover



Judges' Comments on Design No. 15,404

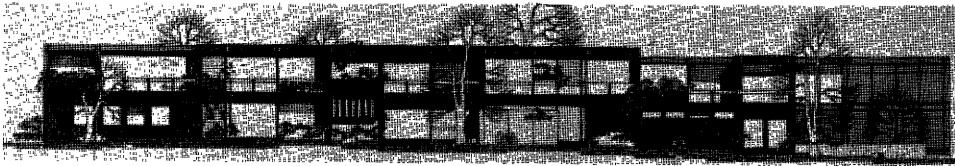
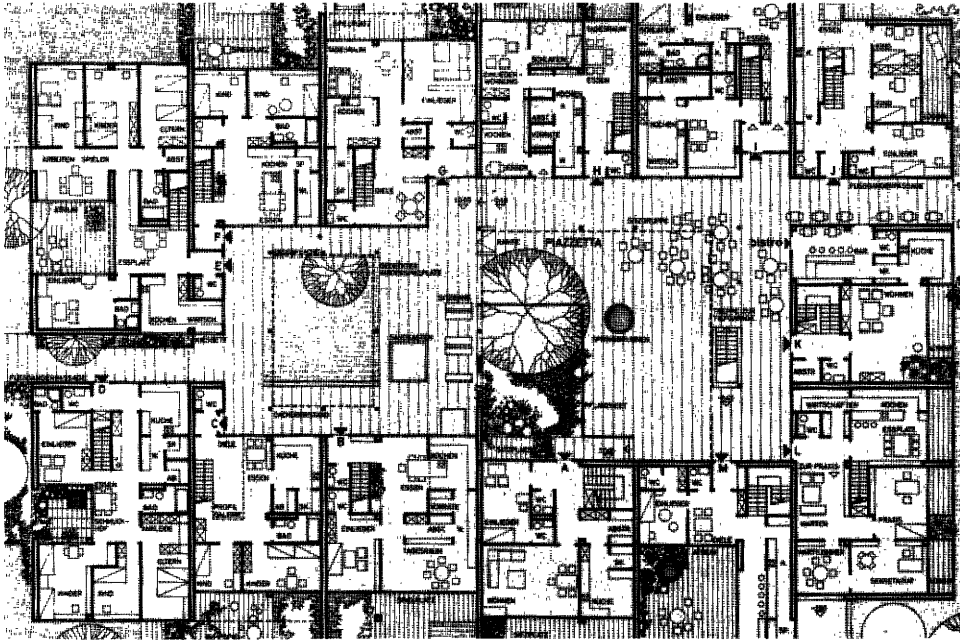
I Planning and Style

1. The basic plan of the one-family house is on traditional lines, but the arrangement is good and the parts well proportioned. In particular, the space allocation is appropriate to the function of the room or area concerned, and care has been taken to ensure that the external areas line up with, and are related to, the different parts of the dwelling.
2. The design is, in addition, highly flexible: the system of construction and assembly offers a wide range of possibilities for variation, and the designer has submitted a series of 13 dwellings, all quite different.
3. The outer walls, thanks to the use of prefabricated components, give an effect of lightness despite the variety in the plans and elevations.
4. Although there is nothing revolutionary or even particularly new about it, the design is undoubtedly a very sound piece of work.

II Construction

1. The amount of steel used may be regarded as the optimum.
2. The steel sections are well chosen, namely IPE and U sections for the columns, cold-reduced C sections for the ceilings, and cruciform hollow drawn steel for the jointing of the partition walls, all three products in quality St. 37.2.
3. The method adopted for sealing joints should enable any variations in dimensional tolerances to be compensated, while affording adequate weathertightness, but the designer himself notes that further experimentation and testing will be needed for its successful development. It consists of plastic or rubber tubes which can be separately filled with fluid or inflated.
4. Plastic-coated steel sheet is used for corrosion resistance. No indication is given, however, as to the protection of the load-bearing members.
5. The thermal and sound insulation are good.
6. The services are inside two partitions, so that there is plenty of choice as regards the positioning of the installations themselves.

This is an excellent arrangement.
7. The standardization of the building components is as complete as possible, making for the fullest efficiency in fabrication, transport and assembly.



8. The designer suggests that further research be devoted to his method of providing weathertightness.
9. Apart from one or two doubtful points with regard to the ageing and fire resistance of the sealing method, this is a very good and well-thought-out design.

DESIGN No. 23,547

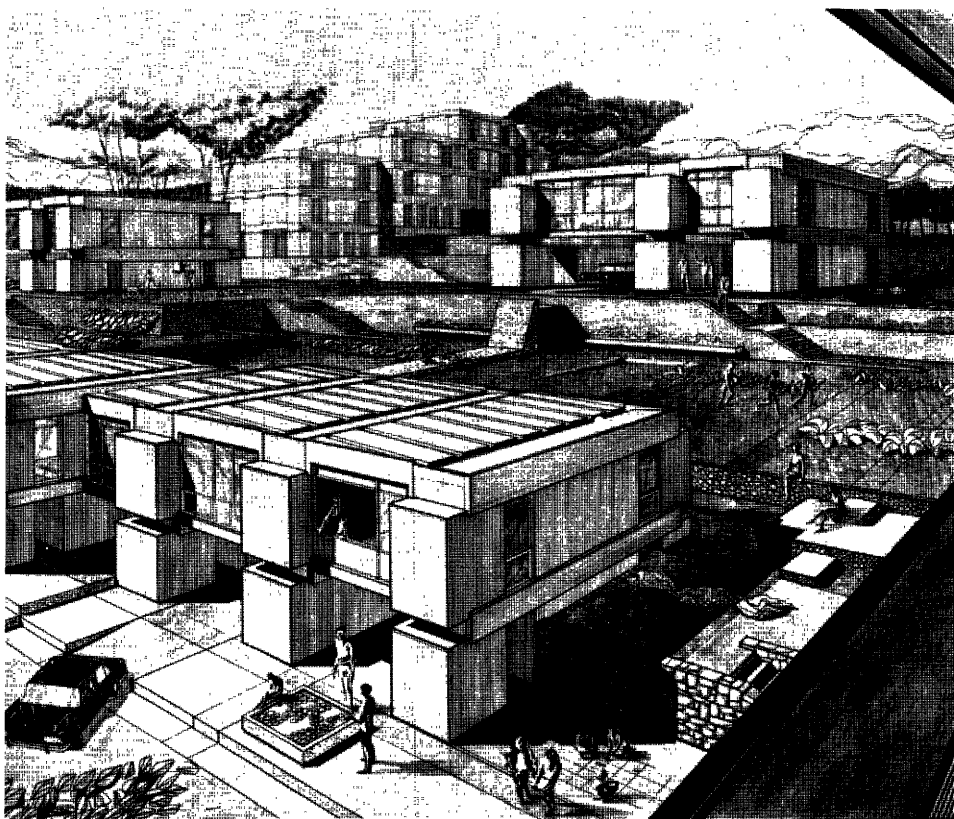
Designers: Dr. Arch. Gianni CELANDA
Corso di Porta Romana 122, Milan, Italy

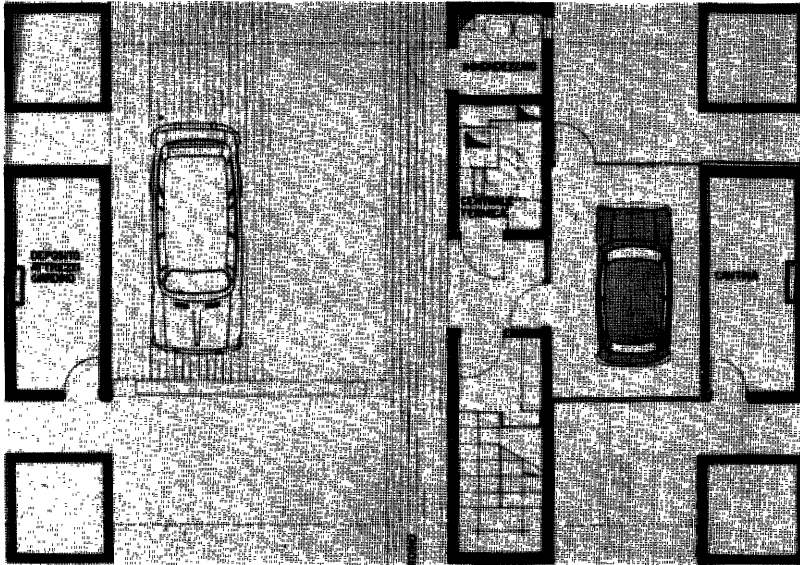
Dr. Arch. Roberto MENGHI,
Via Marchiondi 7, Milan

Dr. Arch. Luciano PATETTA,
Via Foppa 4, Milan

Dr. Ing. Giuseppe PESTALOZZA,
Via Foppa 4, Milan

Associates: Dr. Ing. Egone CEGNAR, Milan
Dr. Ing. Mario del MORO, Milan
Dr. Nello MORRESI, Milan
Società PREFABBRICATI FINSIDER, Rome





Judges' Comments on Design No. 23,547

1 Planning and style

1. The plan is based on built-up load-bearing elements, which, though they rather cramp the layout, at the same time give it a not unattractive symmetry and severity.

The design suffers, however, from certain weaknesses:

- (a) the unduly systematized positioning of the elements results in space-wasting;
- (b) the kitchens are too small;
- (c) the dividing-off of the lesser bedrooms from the sitting-room merely by a curtain is an inconvenience and an interference with privacy;
- (d) since all the bedrooms are reached through the sitting-room this becomes something of a corridor.

2. The style is clean and correct.

The layout is sufficiently uncluttered as regards distribution of occupied and unoccupied space.

Suitably disposed, the dwellings and grounds could form an architecturally very pleasing whole.

3. It is a pity the potentialities of the design have not been more fully developed: the general idea might reasonably have been expected to produce a better end result.

There is a certain novelty in the use of the load-bearing elements not only for constructional purposes but also to serve as fully-functioning and adaptable sanitary and heating installations. This idea is well brought out by correct design.

II Construction

1. The amount of steel used may be considered to be the maximum.
2. Ribbed sheet is specified for the partition walls, and cold-formed sections. Nothing is said as to the quality of steel to be used, the only mention being of yield points of 16 and 26 kg/mm².
3. The load-bearing frame is of box units.
4. The question of dimensional tolerances is not gone into in any detail, nor is that of fitting cover plates to the joints.
5. Corrosion-resistance is given by plastic-coated sheet.
6. The thermal and sound insulation are indifferent.
7. Industrial fabrication appears feasible enough. Though transport may prove to be difficult because of the large size of the elements, assembly should present no problems.
8. The designer makes no suggestions for future research.
9. The design is satisfactory industrially, and introduces a novel feature in the use of cellular built-up beams and load-bearing elements produced entirely in the factory.

DESIGN No. 23,670

Designers: Dr. Ing. Franco SIRONI,
Piazza Bernini 6, Milan, Italy
Dr. Arch. Lorenzo MARTINOIA,
Piazza Bernini 6, Milan
Dr. Arch. Piotr SOBOTTA,
Via Longhi 9, Milan
Dr. Arch. Jacek SOKALSKY,
Via Longhi 9, Milan

Associates: Ulisse BULGARELLI, Milan
Società INNOCENTI S.p.A., Milan

Judges' Comments on Design No. 23,670

1 Planning and style

1. The one-family detached house is planned on three levels each set half a storey above the last, thus clearly differentiating the three purposes a home is supposed to serve. This arrangement seems likely, however, to complicate the housework.

The plan for the dwelling to be built as one of a block of four, on the other hand, is on one level only. It fails to make the most of the fact that it is possible for each dwelling to have openings on three sides: all that has been done here is to enlarge the windows, which is not particularly useful.

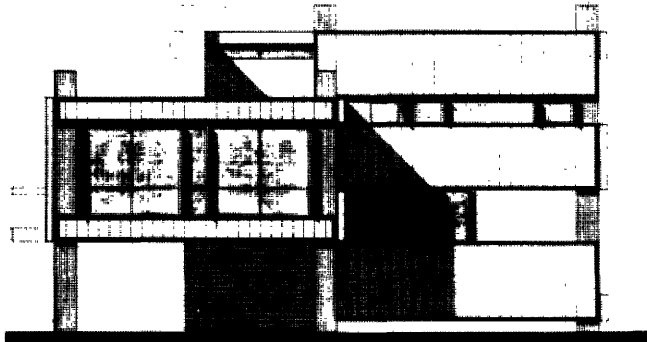
2. The system does allow different layouts for the various dwellings.

The hollow load-bearing columns, however, are inconveniently large (60 × 60cm.) and space-wasting, when it is not even structurally necessary to have them such a size.

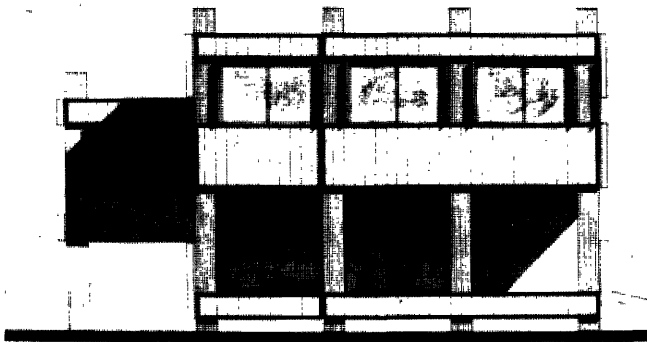
WINNING DESIGN AND RUNNERS-UP



PROSPETTO NORD



PROSPETTO SUD



PROSPETTO EST

This disadvantage is partly offset by the fact that all the services are inside the columns, and that they project inwards about as far as would cupboards and other household furnishings: consequently it would be easy to have the latter built-in.

3. The gap between the ground and part of the building does not seem justified, as it is too low to be used as a covered space. Consequently it is hard to see the point of having a load-bearing floor and ramp for the car port.
4. The amended Stage II design differs substantially from the version entered for Stage I, in both planning and style.

In the latter respect, though a good deal of work has evidently been done, the design cannot be said to suggest any new potentialities for industrialized building in steel.

II. Construction

1. The amount of steel used is adequate.
2. The choice of IPE beams calls for no particular comment. The cruciform hollow sections, on the other hand, would certainly be exceedingly complicated to produce. Three qualities of steel are employed, St 37, St 42 and St 52.
3. The load-bearing members (hollow square columns) consist of four steel angles assembled and reinforced with sheet, the joints being with drawn sections inserted and bolted
4. Any deviations in dimensional tolerances would be difficult to compensate.
5. Corrosion resistance is not indicated.
6. The thermal and sound insulation arrangements are not satisfactory.
7. The services are inside the columns, a conventional device.
8. The system proposed does not seem suitable for industrialized production.
Furthermore, the erection of the posts for raising the floors attached to the storeys by means of swivelling angles would be a very tricky operation.
9. No suggestions are appended for future research.
10. The final design is no improvement on the Stage I version.

DESIGN No. 31,313

Designers:

Mgr. inż. arch. Leszek LESNIAK,
Broederplein 9, Zeist, Netherlands

Mgr. inż. arch. Zbigniew OTTO,
ul. Nowowiejska 31B, Cracow, Poland

Mgr. inż. arch. Barbara SROKA,
SARP, Cracow

Associates:

inż. Henryk SCHOEN, Cracow

inż. Bogusław BRAGIEL, Cracow

inż. Zbigniew KLEWAR, Cracow

Mgr. inż. arch. Krystyna HOLEKSA-LESNIAK, Cracow

Mgr. inż. arch. Jerzy KOWAL, Cracow

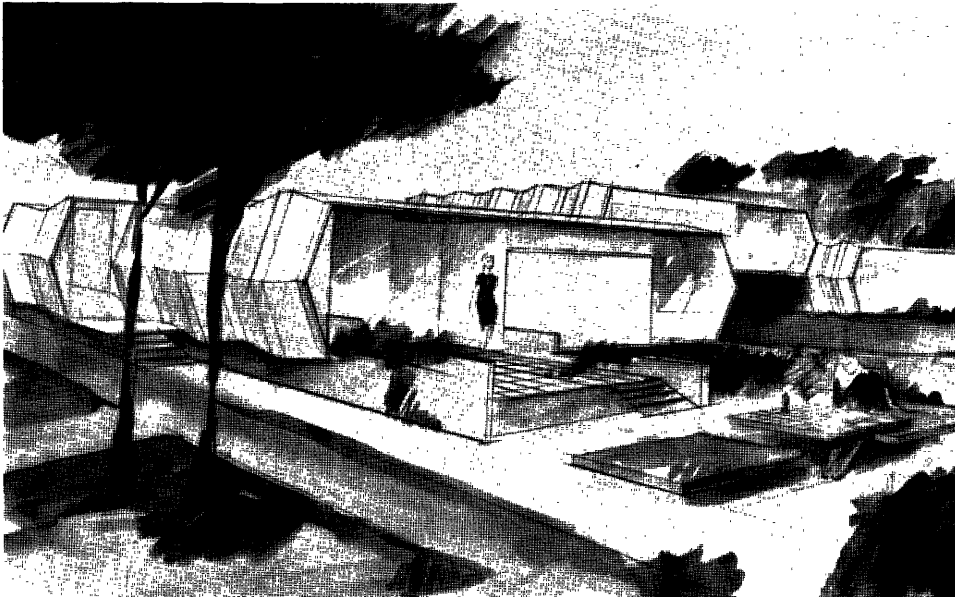
Mgr. inż. arch. Sławomir LEWCZUK, Cracow

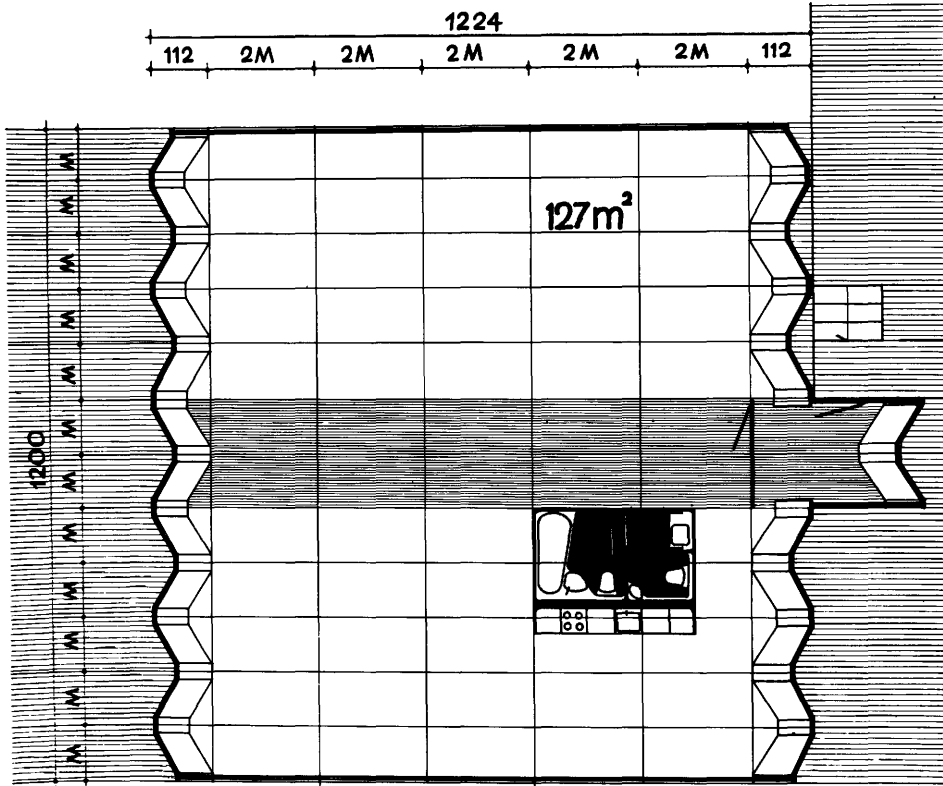
Mgr. inż. arch. Hanna SIENIAWSKA, Cracow

Techn. Bud. Jan HOLEKSA, Cieszyn

Stud. Jan KRAWCZYK, Cracow

METAL-PROFIL, Liège, Belgium





Judges' Comments on Design No. 31,313

1 Planning and style

1. The basic unit is designed to a $1 \times 2\text{m}$. module (1.12m. for the trapezoidal portion protruding from the rectangular module). Whether intended for detached, terrace or multi-storey building the dwellings consist of concertina-shaped assemblies of deep-drawn steel sheet shells.

Despite the variants indicated as evidence of flexibility it is not clearly established that the design really is a flexible one, and the problems in this connection do not appear to have been overcome.

The design can be faulted on the following points:

- (a) The circulation areas are excessive;
- (b) the reception rooms can only be reached through the kitchen;
- (c) the sanitary core (the same in all versions) is definitely too small.

2. The external appearance is governed by the juxtaposition of the shells both longitudinally and vertically, and by the window frames, the positioning of which is in its turn governed by the internal partitions.

This does not allow for much architectural variation. Similarly, in town-planning there would necessarily be a great deal of sameness and monotony in the environment.

3. The designer has adhered to his Stage I idea: he has improved on it, but the final product is not altogether satisfactory.

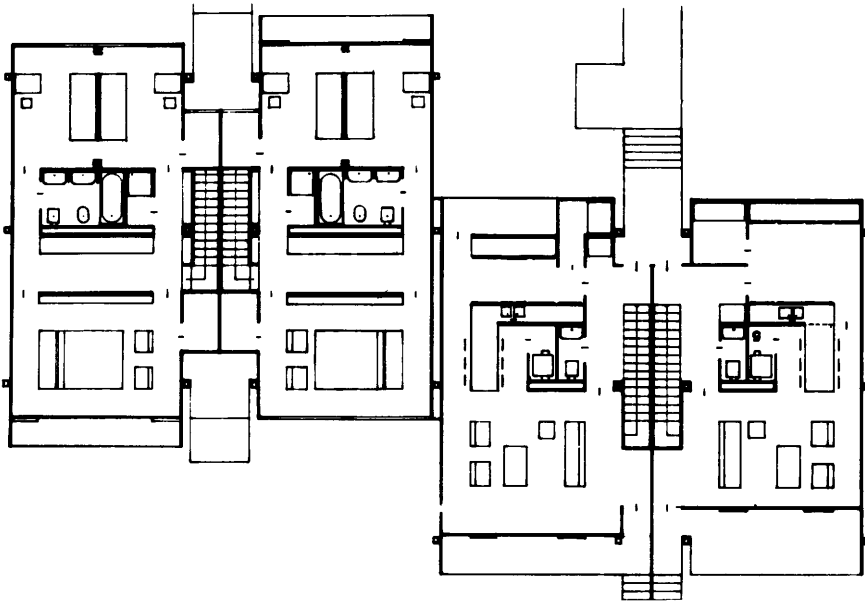
II Construction

1. The amount of steel used is an optimum.
2. The material suggested is steel sheet in the form of hinged trapezia, quality unspecified.
3. The load-bearing components are of bending quality sheet, with complicated jointing and fixing arrangements.
4. The low dimensional tolerances required are difficult to obtain in production. Also the practical problems in the matter of weathertightness have not been satisfactorily dealt with.
5. The corrosion resistance appears dubious.
6. Careful attention has been given to the thermal and sound insulation, but nevertheless these seem inadequate for the system envisaged.
7. With regard the fittings and equipment, notwithstanding the particulars in the covering notes the data supplied are insufficiently clear as the drawing relating to the services are missing. The fume dispersal and ventilation arrangements are highly original in some respects, but would be difficult to construct in practice. The sanitary and electrical installations call for no particular comment.
8. Standardization would be perfectly practicable, as would industrial fabrication. Transport, on the other hand, would be a problem, in view of the length of the components, and assembly extremely complicated, more especially because of the danger of the sheet becoming irremediably buckled.
9. The candidate does not suggest any further research.
10. All in all, the design embodies a number of most original ideas. To judge by the competitor's notes, however, it would seem to be a somewhat uncertain project at this stage, and only practical experiment could establish whether it was feasible and likely to be profitable.

DESIGN No. 45,556

Designers: Bert MAECKER,
Guthersburgallee 93, Frankfurt-am-Main, Germany
Marc EWEN,
36 rue Victor-Hugo, Esch-sur-Alzette, Luxembourg
Paul KAYSER,
26 boulevard Royal, Luxembourg
Leonard KNAFF,
33 boulevard de Verdun, Luxembourg
Jean LANNERS,
95 avenue du 10-Septembre, Luxembourg

Associates: Stephane DU CHATEAU, Paris, France
Vladimir MINICH, Paris
SCHROEDER-HELDENSTEIN, Luxembourg
COMPAGNIE FRANCAISE DE CONSTRUCTION
METALLIQUE, Paris



Judges' Comments on Design No. 45,556

I Planning and style

1. The basic one-family dwelling is a juxtaposition of units which can be disposed according to individual needs, the "day," "night" and "service" units being arranged around the central water and heating unit as the occupants prefer.

In addition, the dwelling can be enlarged simply by building on extra units. Where this is done to any considerable extent, however, the water and heating unit becomes too small.

2. The block of flats is based on the same principle, and the same comments therefore apply. A further point here is that forward and rearward displacement of units does not offer sufficient flexibility for town-planning purposes.

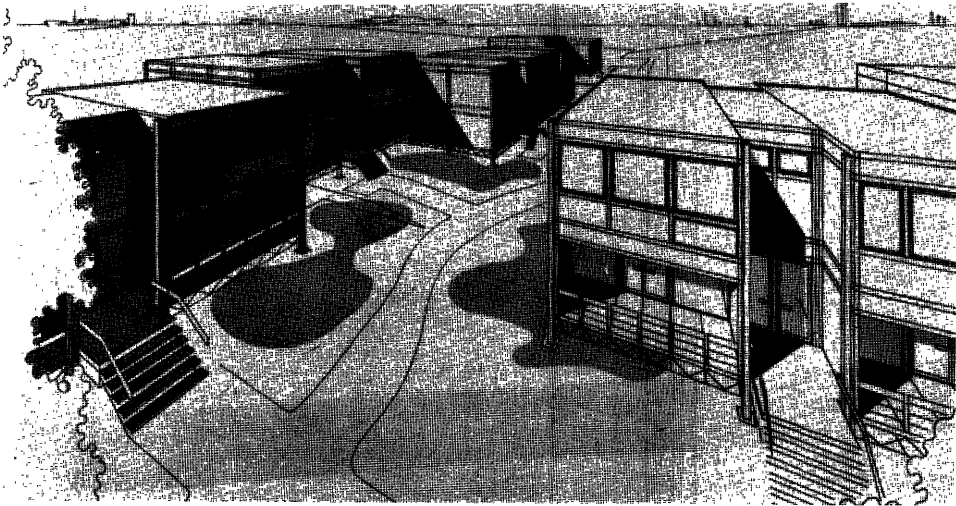
3. The fact that each unit is of a fixed size considerably restricts the field for varying the interiors, and so makes the houses less attractive to live in.

Moreover, the design of the units is somewhat superficial and generally rather unoriginal.

II Construction

1. The amount of steel used is practically the maximum.
2. The materials are angles, rounds and U sections, plus galvanized plastic-coated sheet for the exterior, which consists of a double wall with plastic foam infill. Mild steels are employed throughout, except for the columns, which are of tubes with a yield point of 30 kg/mm².
3. The load-bearing structure is three-dimensional. It consists of tubes, though other sections may be used instead.

The structure is obtained by very heavy localized welding in the cantilevers, so that it is necessary to select a steel not liable to embrittlement by low temperatures.



4. With the method chosen, any deviations in dimensional tolerances can be compensated. Adequate weatertightness is also ensured, except possibly between the columns and the wall cladding.
5. Corrosion resistance is satisfactory, the load-bearing members being galvanized and the sheet both galvanized and plastic-coated.
6. The thermal and sound insulation are satisfactory.
7. The installations call for no particular remarks, except that the ventilation appears inadequate, being simply by opening the windows.
8. Standardization of the load-bearing components and partition walls is quite practicable. So, for the most part, is industrialized production, but too much is left to be done on site, which would make assembly a somewhat labour-intensive operation.
9. No suggestion is made concerning follow-up by research.
10. The structure envisaged certainly makes the building very light, but at the same time rather large.

The design as a whole is well conceived, but too complicated to lend itself to prefabrication to the desired extent.

DESIGN No. 45,761

Designers:

Dott. Arch. Maurizio CLERICI,
Viale Carso 63, Rome, Italy

Dott. Arch. Giancarlo DE SANCTIS,
Via Angelo Brofferio 3, Rome

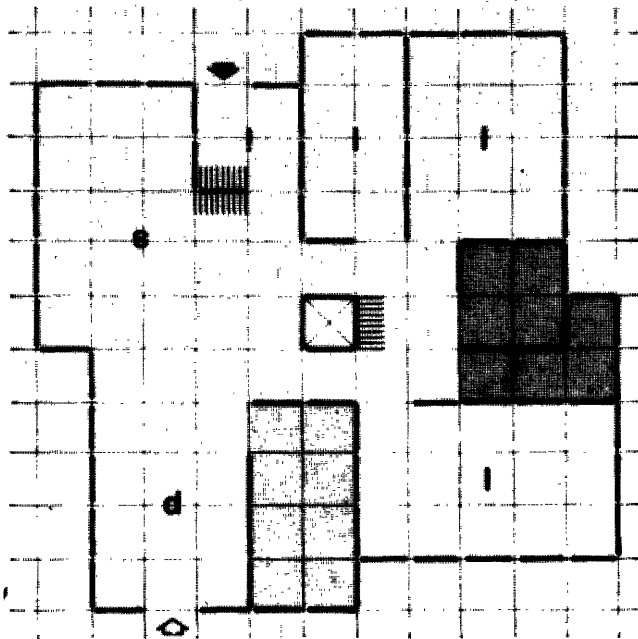
Dott. Arch. Elio MORBIDUCCI,
Via Angelo Brofferio 3, Rome

Dott. Ing. Giulio PERUCCHINI,
Via Angelo Brofferio 3, Rome

Dott. Arch. Mauro RIDOLFI,
Via Angelo Brofferio 3, Rome

Associates:

Impresa ELIGIO PAGANI, Costruzioni Metalliche, Rome





Judges' Comments on Design No. 45,761

1 Planning and style

1. The key plan, which is based on a 1×1 m. module and consists of 5×5 m. squares each recessed one metre in relation to the next, tends to monotony.

While there is nothing inherently objectionable in having the sitting-room in the middle, the idea is not well brought out here, as regards either form or function.

It is also doubtful:

- (a) whether the fourth room can be properly separated from the others so as to serve adequately as a spare bedroom;
 - (b) whether the bathroom is well placed;
 - (c) whether the amount of storage space is not too small.
2. The style is not up to standard. In particular,
 - (a) the designer's effort to take advantage of certain necessary technical devices, such as the outside stiffening elements, to improve the look of the façade, is not a success;
 - (b) there seems no particular reason for the fussy skirting and cornice.

3. By and large, only minor improvements have been made to the version entered for Stage I.

II Construction

1. The amount of steel used may be regarded as the maximum.
2. The structure consists of built-up girders and L sections, with the ceilings of cold formed sheet. It is not stated what quality of steel is to be employed, only that the yield point should be 24 kg/mm².
3. The load-bearing components are in the form of a central shaft composed of L sections.
4. The waterproofing system is both inadequate and complicated to carry out.
5. Corrosion resistance is afforded by plastic-coated galvanized panels and by the use of sections treated with chromic acid.
6. The thermal and sound insulation arrangements are satisfactory but complicated to construct.
7. There is nothing special to say about the installations, except that the sanitation consists of prefabricated units.
8. Standardization is feasible; so too is industrial production, though there is greater scope with regard to the panels than to the load-bearing members.

The shaft would be difficult to assemble, and the utmost care would be needed in putting up the ceilings.
9. No suggestion is offered for future research.
10. To sum up:
 - (a) it is not clear why, when preformed sheet is obtainable, the competitor should elect to have his ceilings of ordinary sections needing to be formed and assembled;
 - (b) the shaft arrangement would be difficult to execute;
 - (c) the design presents no really new features.

DESIGN No. 74,813

Designers: Dipl. Bauingenieur E.T.H. Mathias LUCHSINGER,
 Gibraltarstrasse 24, Lucerne, Switzerland

 Dipl. Arch. E.T.H. Hans U. GUBELIN,
 Gibraltarstrasse 24, Lucerne

Associates: Michael SCHWEIFERT, Lucerne
 Karl BOESCH, Zurich
 Hans BLAETTLER, Lucerne
 Firma Josef MEYER Eisenbau AG, Lucerne
 Firma SCHMID AMRHEIN AG, Lucerne
 Firma BAUMANN KOELLIKER AG, Zurich

Judges' Comments on Design No. 74,813

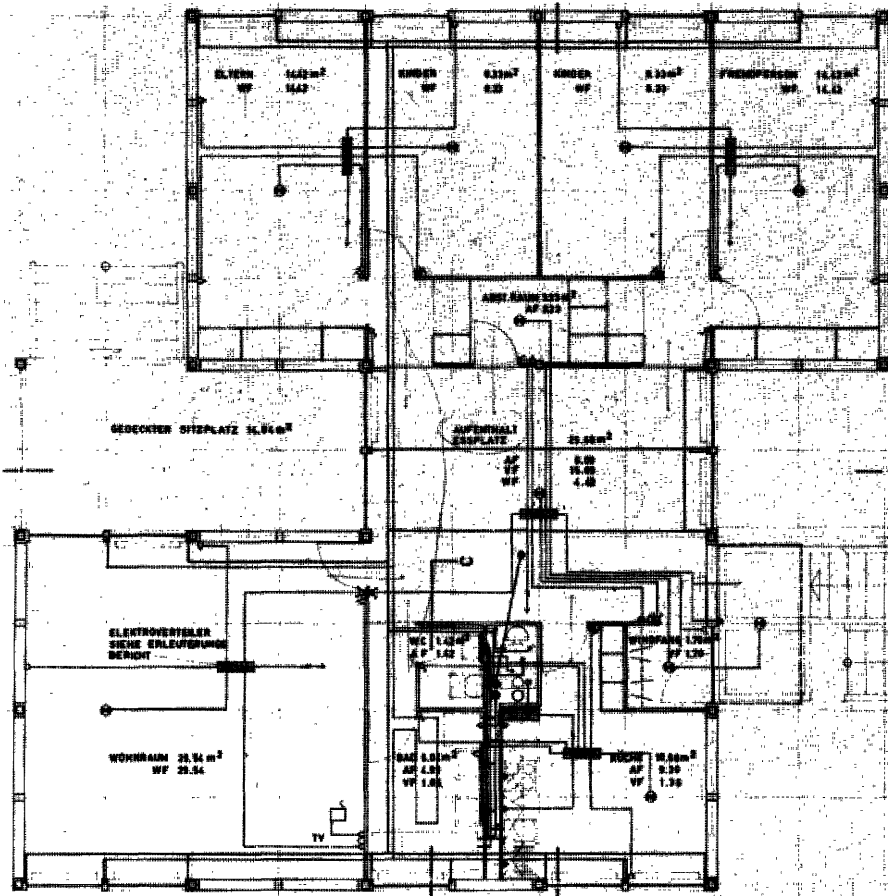
I Planning and style

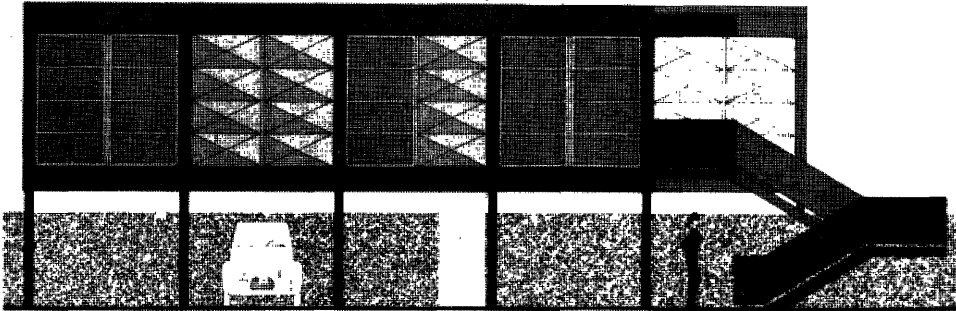
1. The plan, based on a module of 1.40× 1.40m., lacks flexibility.
In addition, it has several serious weaknesses:
 - (a) the single sanitary core is badly positioned, making it an unnecessarily long way from the bathroom and lavatory to the bedrooms and from the sitting-room to the kitchen (*e.g.* the lobby has to be crossed to get from the bedroom to the bathroom);
 - (b) it would be difficult to put any furniture in the lobby owing to the number of doors opening into it, so that it could not be used as anything but a circulation area;
 - (c) the space left beneath one part of the house is too low to serve any useful purpose, and so would be better dispensed with.
2. Though an attempt has been made to brighten up the outside by having the panels coloured, the general effect is architecturally rather monotonous. It should be added, however, that the simplicity seems to be deliberate.
3. It is unfortunate that the competitor has not managed to obviate these defects, which detract from an otherwise praiseworthy attempt to produce the kind of design the organizers of the Competition were after.

II Construction

1. The amount of steel used is adequate.
2. The materials specified are drawn, rectangular and Z sections and IPE and perforated parallel-flanged beams, with the ceilings in Holorib; all the steels are quality St. 37.2.
3. Deviations in dimensional tolerances can be compensated in the load-bearing structure, but not in the outside wall facings and the partitions, which accordingly require very close tolerances.

Weathertightness will be assured only if the materials are guaranteed to be durable.



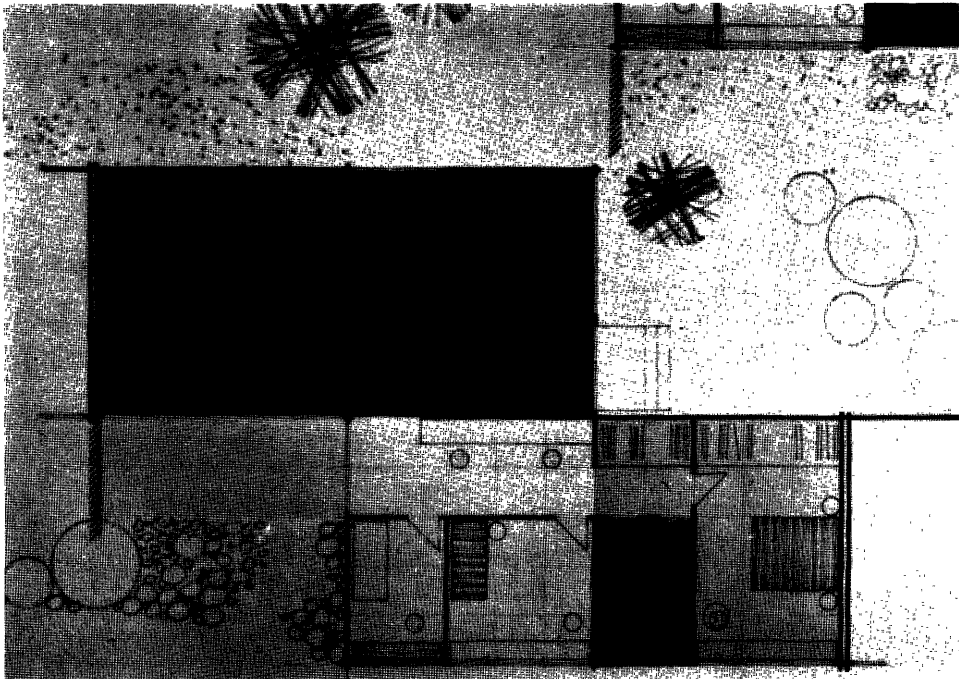


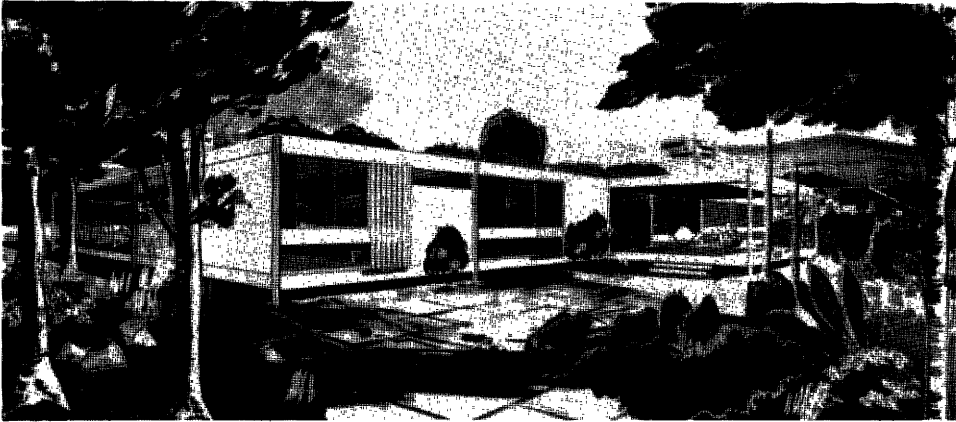
4. The designer gives a whole list of possible methods of corrosion-proofing, but does not state his preference.
5. The thermal and sound insulation systems are cleverly designed, but the former would be difficult to construct.
6. There are several good ideas with regard to the installations;
 - (a) ventilation is by air circulation as well as by opening windows;
 - (b) the sanitation is inside the partition walls;
 - (c) the wiring is readily adaptable and easy to install, in consequence of the mode of construction of the ceiling.
7. Standardization would be a simple matter. Industrial fabrication, transport and assembly would likewise present no problems, provided that the necessary low tolerances were obtained for assembly.
8. The designer makes no suggestions as to research.
9. In total concept and in constructional methods, the design cannot be said to present any really original features, but is a good, honest job.

DESIGN No. 79,610

Designer: Bernard MURISIER, Architecte F.S.A.I.,
Rue du Tunnel, Lausanne, Switzerland

Associates: Henri TAUXE, Lausanne
Hans J. GOLDMANN, Lausanne
Jacques BOSS, Renens
Robert HEDIGER, Lausanne
FORSTER S.A., Arbon
KOLLER S.A., Basle
GUMMI-MAAG S.A., Zurich
HOLORIB & PROFIL-NORM, Geneva and Paris, France
B.B.R.V. (STAHLTON S.A.), Lausanne
TECHNOCALOR S.A., Geneva
BUCHER S.A., Basle and Lausanne
Andre FELIX, Constructions Metalliques, Bussigny
COLLEGE D'ARCHITECTES S.A., Lausanne





Judges' Comments on Design No. 79,610

1 Planning and style

1. The plan is well thought out, though the one sitting-room is too small and too much space is devoted to circulation areas.

The system envisaged offers some variety, by its combinations of four basic units of 6×6 , and some flexibility, by the opportunities for altering the partitioning of the different dwellings.

However the disadvantage of employing a comparatively large basic unit (over 76 cubic metres) is that it reduces adaptability. Where the module, and groupings of the module, are large, strict adherence to the modular system generally results in inefficient utilization of the total volume. In any further development of the project, therefore, it would be necessary to consider introducing a sub-module, to be applied, within limits, to ensure a more reasonable allocation of space without impairing the economy achieved by simplicity.

2. The exterior walls are made up of a small number of intelligently designed basic components, assembled to form patterns which, although the competitor has not managed to suggest very many possible combinations, are pleasing and elegant. The addition of a balcony is an advantage to the scheme, both functionally and architecturally.

The gap left under the ground floor is quite justified, since it could be put to use in view of the small number of supports. If not wanted for any particular purpose, however, it should be closed off, as otherwise it would soon fill up with rubbish.

3. All in all, the design is a good piece of work and could well have quite a future provided that the over-strict adherence to regular grouping in the modular system is modified.

II Construction

1. The amount of steel used may be regarded as a maximum.
2. 4mm. sheet (quality unspecified) is employed throughout, except for the floors, which are of 1mm. thickness.
3. The load-bearing structure is of cruciform steel sheet pillars connected by ring beams to the floors and ceilings.

Structural joints are by mechanical locks, without screws or bolts, the beam being post-stressed by means of dynamometric jacks.

4. Dimensional tolerance depends very much on the quality of the prefabrication. In the case of very long components accuracy in this respect would be most difficult to ensure in otherwise unprocessed drawn steel, and almost impossible to obtain by welding standard sections.

Moreover, post-stressing the beams would subject the columns to considerable loads which would not be easy to anticipate or compensate.

The vertical weather proofing appears satisfactory, but horizontally in the elevations and roof, the system presents a number of problems.

5. The corrosion resistance seems good. It depends a good deal, however, on how the paint is applied, so that precoated sheet would really be preferable.
6. The thermal and sound insulation are good, but as regards the former some items of the jointing of the outer walls would be difficult to fix, and experimental results would have to be verified by intensive testing.
7. The services do not call for any remarks, except to note that no particulars are given concerning the laying of the sanitation, and that the electrical installation is not standardized.
8. Standardization would be to the module of the 6m. square units, but there are too many joints.

Industrial prefabrication throughout would be possible, but ought to be more complete in the case of the floors and joints.

Transport would raise no problem.

Assembly, according to the designer, should take very little time, but it seems doubtful whether it could be effected as quickly as he claims by unskilled workmen, considering the delicate adjustments involved.

9. The designer suggests that research might be undertaken into the screw- and bolt-free jointing between the beams and columns.
10. The design is of interest, but would be difficult to execute industrially because of the principle adopted for the fixing and construction of the main beams, and also the doubtful weatherproofing of the horizontal jointing.

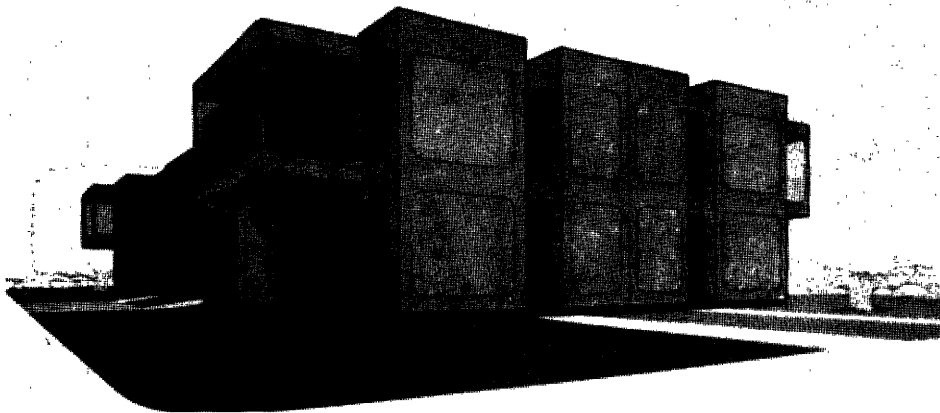
DESIGN No. 84,195

Designers: Arch. Renato SEVERINO,
c/o Compagnia Tecnica di Progettazione,
Via Brenta 9, Rome, Italy

Ing. Bruno CONTI,
c/o Compagnia Tecnica di Progettazione,
Via Brenta 9, Rome

Ing. Marcello INDIATI,
c/o Compagnia Tecnica di Progettazione,
Via Brenta 9, Rome

Associates: Arch. Roberto DE RUBERTIS, Rome
Arch. Fabrizio VESCOVO, Rome
Arch. Eleonora MASI, Rome
Arch. Manlio SALVIA, Rome
Arch. Nanni PAZZI, Rome
Arch. Alberto SPREAFICO, Rome
Ing. Lorenzo LANARI, Rome
Ing. Mario DESIDERI, Rome
Ing. Fernando CONTI, Rome
Ing. Lucio SABBADINI, Rome
Ing. Angelo BERARDI, Rome
Arch. degli interni Chiara BRIGANTI, Rome
Arch. Francesco CORRENTI, Rome
Arch. Osamu SHIOZAKI, Rome
Società TERNI, Rome
Società MONTEDISON, Rome
GEXCO Italia S.p.A., Rome



Judges' Comments on Design No. 84,195

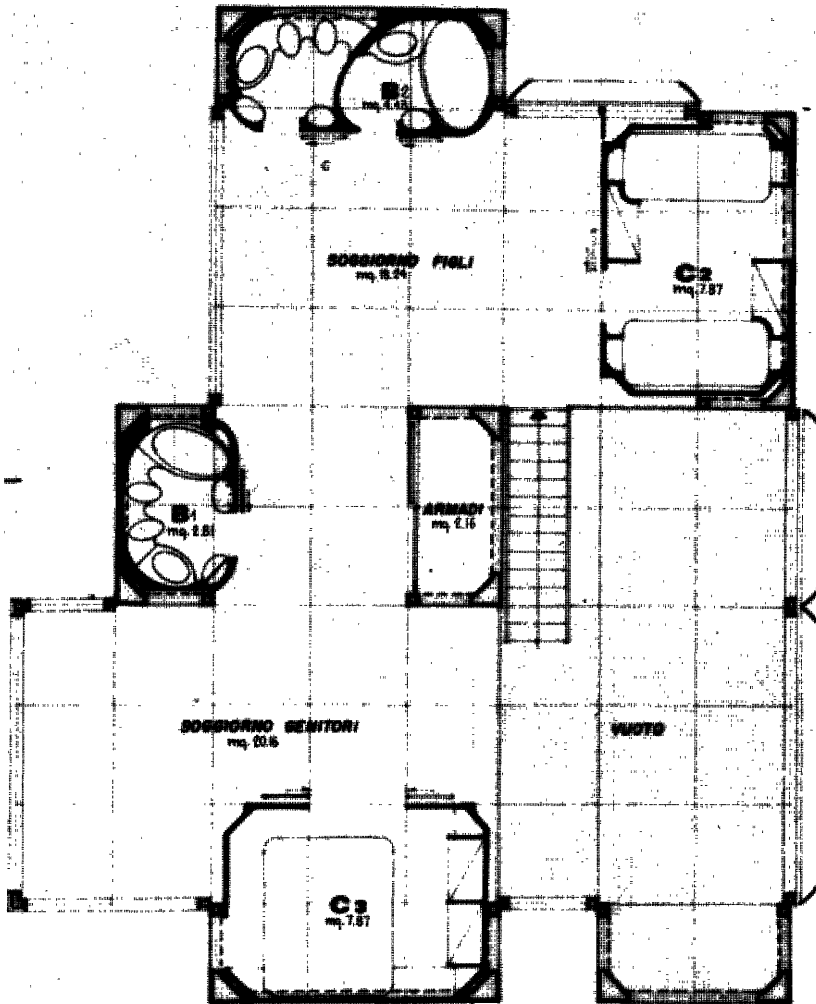
I Planning and style

1. The final design for the different dwellings is a distinct improvement on the Stage I entry regarding the occupants' comfort and convenience.

The steel shells containing built-in bathroom, lavatory and kitchen fittings are, however, decidedly complicated in shape, and the curvatures would make them awkward to use and to keep things in.
2. The homogeneity of style sought in the Stage I version by the juxtaposition of the shells has been completely abandoned, the present entry consisting of a mixture of curves and straights illogically forced into a rigid modular system.
3. Substantial further research would be needed to produce a viable basis for building in steel along the lines envisaged.

II Construction

1. The amount of steel used could be considered to be the maximum, were it not doubtful whether the curved steel components could be economically manufactured on an industrial scale.
2. As his materials the designer has selected a great many different small welded sections of cold rolled steel.
3. The load-bearing frame, consisting of angle bars assembled to form rounded pillars, is extremely intricate.
4. Whether deviations in dimensional tolerances could be compensated is hard to say. Weatherproofing is by means of locking screws and neoprene gaskets in the joints.
5. Corrosion resistance is not shown.
6. The thermal and sound insulation are good.
7. The indications as to the heating, steam and fume dispersal, ventilation and electrical installations are not clear. The sanitary arrangements, consisting of prefabricated shells with the actual appliances built in, are quite a good idea, though the shape proposed for the shells is debatable.
8. Standardization, and hence industrial fabrication, would be possible only for the shells making up the functional units; moreover, they are so shaped that complicated and expensive machinery would be needed to produce them.



Their bulk would make them difficult to transport.

In erection, the shells would need very little assembling, but the load-bearing members would require a great amount.

9. The competitor offers no suggestions concerning future research.
10. Overall, the design is a meritorious effort to plan dwellings made up with prefabricated functional units which contain all the necessary equipment.

However, it still requires a lot of development.

DESIGN No. 90,213,01

Designer: Dipl. Ing. Arch. Herbert OHL,
Dozent AKBW, DWB, VDID,
Postfach 202, Ulm, Germany

Associates: Arch. Dipl. HfG Bernd MEURER, Ulm
Horst STUMPP, Ulm
Arch. Gino VALLE, Milan, Italy
Dipl. Ing. Reinhold HAGMANN, Ulm
Bauing. Sebastian BLAUE, Ulm
CONTRAVES AG, Zurich, Switzerland
HOESCH AG Technische Entwicklung, Dortmund, Germany

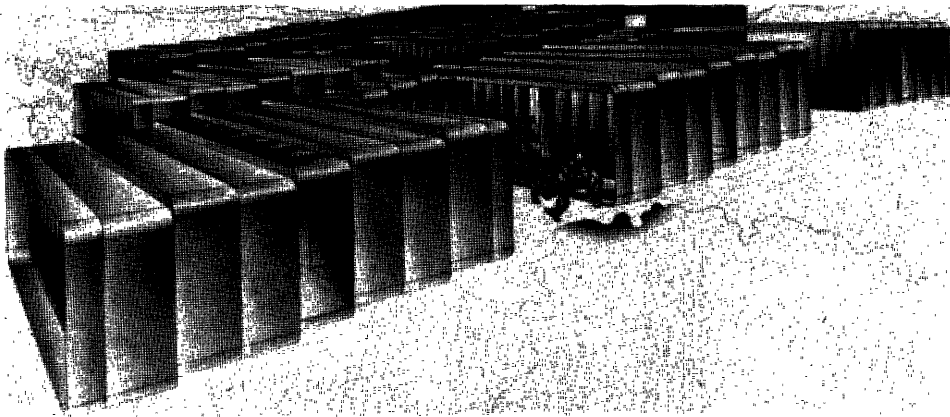
Judges' Comments on Design No. 90,213,01

I Planning and style

1. Taken as a whole the plans have a certain monotony, due to the mode of construction and dimensions employed. Moreover, the dwellings look a little like temporary hutments, and the whole approach makes it extraordinarily difficult to allot the space efficiently.
2. The design is based on the combination of large prefabricated parts together with a number of additional elements. The large parts, which are divided up internally by a system of partitioning with built-in installations (bath, shower, lavatories, cupboards), can be juxtaposed and fitted up in quite a variety of ways.

II. Construction

1. The amount of steel used may be considered to be the maximum.
2. St. 52 sheet is employed throughout.
3. There are no load-bearing members, the structure being of self-supporting units of steel sheet with rounded corners, partly bolted and partly bonded. The stability and impact resistance of the bonding would require checking.



4. The jointing would afford due allowance for deviations in dimensional tolerances, but the weatherproofing does not appear altogether adequate, especially with regard to the gaps left by the rounded partitions of the units.
5. Corrosion resistance is properly ensured in the case of the steel itself (the sheet being galvanized and if necessary plastic-coated), but the behaviour of the bonding materials does not seem to have been fully established.
6. Thermal and sound insulation are by means of plastic foam.
7. All the electrical installations could easily be housed in the empty spaces of the floors and ceilings, but the design gives insufficient details concerning the circuit layout. Otherwise the installations call for no particular comment.
8. Standardization and industrial fabrication of the components would be feasible.
On the other hand, transport would be troublesome, the units being bulky and so liable to get damaged.
Assembly would be a very simple matter.
9. The designer suggests research for the purpose of manufacturing sheet of greater width than normal, to enable the surface of the double walls to be increased.
10. The design has interesting possibilities as regards the round-cornered units, but the method of joining them would need to be improved.

In addition, the whole conception of the units restricts the scope for allocating the useful interior space.

III. RELATED DOCUMENTS

1. JUDGES' REMARKS ON COMPLETION OF STAGE I

The panel set up to judge the entries for the International Housing Design Competition which is being organized by the High Authority of the European Coal and Steel Community met in plenary session on October 10-15 and November 2, 1966, to pronounce on the results of the first stage.

Ten designs were selected as qualifying for the second stage which is to precede the making of the final award. The Panel in addition agreed the conditions to be satisfied by the Stage II competitors, and fixed May 15, 1967, as the deadline for the submission of the latter's amended designs and June 9, 1967, as the date for the announcement of the findings.

The Panel noted the very considerable response evoked by the Competition, close on 500 entries being received. This, it is felt, clearly evidences continuing lively interest in the industrialization of residential building and in steel as a very necessary material for this purpose.

The Panel were also impressed by the variety and originality of the concepts embodied in many entries. From these too there can be no doubt that the Competition has fulfilled the High Authority's expectations.

Further research and development will of course be needed to work up these concepts into practicable blueprints for dwellings that can be economically produced industrially and are in line with market requirements. To be thoroughly effective, this work should not be done in isolation by small individual groups, but should be based on the pooling of research results and knowledge from professional quarters of all kinds and from as many countries as possible.

The Panel are accordingly of the opinion that the Competition could well serve the High Authority as a point of departure for research in the field of industrialized building in steel. Given its position *vis-à-vis* the steel industry, and its general aims and objects with respect to economic and social progress, the High Authority would appear to be a most suitable body to undertake the sponsorship of such research.

Paris, November 2, 1966.

(signed)

F. HELLWIG	A. O. SCHUIL
P. VAGO	M. BAESCHLER
I. GARDELLA	J. BENDER
R. LENTZ	G. T. WUPPERMANN
L. M. J. R. STIJNEN	A. PALAZZI
W. HENN	G. MEYER-EHLERS

2. JUDGES' FINAL REPORT

1. The Panel congratulate the High Authority of the European Coal and Steel Community on its initiative in organizing an International Competition for the best-designed prefabricated dwelling. The gesture showed awareness of one of the basic problems of our time, how to house a steadily growing population desirous of better living conditions, and also awareness that that problem needs to be dealt with by way of industrialization.

To bring out the underlying idea of the Competition (the Rules of which were published in the *Official Gazette of the Communities* on October 4, 1965), the Panel felt it necessary to specify that the aim was "to seek an architectural style stemming from the industrialized employment of steel" and that they would "attach great importance to the forward-looking character of the techniques submitted."

2. In all, 3,128 intending entrants in 53 countries registered for the Competition. 487 designs, totalling some 5,400 plans, were submitted for Stage I.

These figures are evidence of the strong interest being taken in the industrialization of building and the notable response to the High Authority's invitation, notwithstanding the complexity of the task assigned, which involved co-operation among experts in such different fields as technology, architecture, town planning, sociology and economics.

3. Having regard to the number of designs received, the Panel were obliged to be extremely strict in the short-listing of entries for Stage II, in accordance with a procedure which they worked out at their meeting on March 2, 1966: one of their number supervised the checking of these by staff members of the High Authority for conformity with the Rules, while five others made a preliminary technical appraisal of those which had passed this scrutiny, both thereupon reporting to the full Panel.

The Panel met in October 1966, and weeded down the number of entries to ten. At a further meeting on November 2, they officially confirmed this selection, and settled on the fresh requirements to be fulfilled by the finalists. The latter were then invited by the High Authority to proceed to Stage II and, after studying the Panel's new directives, accepted.

4. The Panel find that no Stage I entrant offered a design which they could rate as both wholly new and, with additional touches, a practical proposition. This was, they feel, understandable in view of the extremely ambitious nature of the work competitors were expected to produce.

They are, however, pleased to note that a number of the designs incorporate genuinely original features, some, they consider, well worth working up further. All those selected for Stage II were of this kind. Certain of them depart considerably from the traditional canons, and were short-listed by the Panel to enable the entrants to give fuller expression to their ideas and show how far these were in fact suitable for industrialized building.

5. Since the specific object of Stage II was to get the Stage I ideas licked into industrially usable shape, the Panel felt the ten finalists must be given much more explicit guidance. They accordingly drew up a set of general instructions, together with notes concerning each individual entry.

Both of course emphasized that the final design must be suitable for mass production, allow of maximum ease and speed of assembly, and be material- and labour-saving. At the same time it was stressed that the design should exploit steel's lightness and elegance, and that "while the use of steel in architecture in no way implies that other kinds of material are not to be employed, the combination of different materials in the structure must not produce a hotchpotch of techniques and methods whereby all the advantages of using steel components are liable to be lost."

In short, "in designing the dwelling competitors must make the most of the special characteristics of steel building and steel technology."

6. The Panel recognize that all the finalists have had to put in a very great deal of work, the more so as, unquestionably, they were required to tackle a whole host of problems of very recent development. It is, however, felt to be a pity that some of them did not build up more consistently their Stage I ideas, the end result being in a number of cases somewhat disappointing.

The completed designs do indicate numerous possibilities—taken to different lengths—for furthering the industrialization of residential building largely based on the use of steel: to this extent they fulfil the aims of the Competition. At the same time, they all, in varying degrees, require to be further developed before they can be said to offer the "forward-looking character" and "architectural style stemming from the industrialized employment of steel" sought by the Panel.

7. The Panel voted unanimously in favour of awarding the Prize, and seven to four in favour of awarding it undivided.

The Prize accordingly goes to the deviser of Design 15,404, by eight votes and three abstentions.

8. Both stages of the Competition served to underscore the tremendous potentialities of industrialized building in steel.

On the other hand, they brought to light widespread ignorance of the requirements of mass production, and also inadequate information and inadequate practice in team work in the professions concerned, to which the more serious errors noted are to be attributed.

The Panel reserve the right to prepare practical suggestions in this connection.

Venice, June 16, 1967.

(signed)

F. HELLWIG	A. O. SCHUIL
P. VAGO	M. BAESCHLIN
I. GARDELLA	J. BENDER
R. LENTZ	G. T. WUPPERMANN
L. M. J. K. STIJNEN	A. PALAZZI
W. HENN	L. CECCARELLI-BALBO

**INTERNATIONAL COMPETITION
FOR THE DESIGN OF AN INDUSTRIALLY
FABRICATED DWELLING**

RULES AND CONDITIONS OF THE COMPETITION ¹⁾

1. Organizers

The Competition is organized by the High Authority of the European Coal and Steel Community, hereinafter referred to as "the Organizers."

2. Object of the Competition

2.1. The object of the Competition is the design of a dwelling to accommodate a family consisting of husband and wife, two children and one other adult (*e.g.* an elderly relative).

Competitors may make the rooms any size they wish, as to surface area and height of walls. The premises must be suited to the needs and habits of the population, and to the climate, of any country of the European Community.

2.2. Steel is to be used at least for the load-bearing and floor structures and the door and window frames.

2.3. Lightweight construction from prefabricated parts, suitable for detached houses, terrace houses and houses for several families, must be adopted. It must be possible to construct a dwelling from a number of standard basic components (*e.g.* the load-bearing frame, walls and floors), which, when combined with additional elements such as different types of roofs, balconies, loggias, etc., can be built in any of the following variations:

- (1) detached one-family house;
- (2) one-family terrace house;
- (3) two-storey house for four families;
- (4) if desired, also multi-storey house to accommodate several families.

This method of construction is adopted so that all the basic components for each dwelling, whether for a detached or a terrace house or a flatted block, can be mass-produced without being usable for building only one type of house; moreover, it should be possible to cater for varying consumer requirements by means of different combinations of the basic components and the additional elements, so that the dwelling can be commercially supplied in line with demand.

The basic components of the dwelling also include a standardized kitchen and sanitary core unit, and the floor-plate and staircase. Roofs, loggias, balconies and so on, on the other hand, rate as additional elements. The additional elements

¹⁾ Published in the *Official Gazette of the Communities* No. 163/65; text here given incorporates subsequent amendments published in Nos. 126 and 150/66.

required for finishing the dwelling in the form of a detached house must not increase the cost of the basic components by more than approximately 25%.

- 2.4. All the basic components and additional elements must be suitable for industrial prefabrication. Transport considerations must be taken into account in determining the size and weight of any preassembled units.

Industrial-scale production of the basic elements for the dwelling must presuppose a series of at least 10,000 dwellings a year. The number of individual building components produced (such as wall sections, windows, roofs, etc.) may, however, be such that the reduction in costs achieved by mass production justifies the production of, for example, windows in batches of only 2,000. In such cases Competitors are not obliged to plan every window in the 10,000 dwellings in a single standard size on grounds of cost. They should rather plan for as many variations of a building component as are architecturally desirable within the range of batch sizes where the costs are most favourable.

- 2.5. Since all the building components are to be prefabricated industrially, it is essential that the design should provide solely for the employment of components lending themselves to modern methods of manufacture as practised in large industrial concerns. Individual small-scale workshop fabrication of whatever kind is therefore not permissible.

The use of a unified basic measure (module for example 10 cm. or the product of 10 cm. and any integer) is also essential. The Competitor has, however, free choice of the unit.

- 2.6. Design should offer the maximum scope for variety in the dwelling constructed, by the use of different combinations of standardized components.

3. Programme

- 3.1. The Competition will be divided into two stages.

3.2. Stage I

Stage I will be purely a competition of ideas, for all entrants. The designs submitted should be technically and economically viable; they should have reasonable prospects of selling well, and warrant further development. One criterion will therefore be whether the design is readily adaptable to the building regulations of one Community country. The design should be just detailed enough for the general construction of the basic units and additional elements, the possibilities of combining them and the particular construction of the joints and connections between the building components (*e.g.* walls, floors and windows) to be recognizable.

3.3. Stage II

- 3.3.1. Those judged to have entered the best Stage I designs will be asked in Stage II to develop these further and to elaborate their technical details. They will also be expected to indicate the aspects to which they consider definite research in the field of industrialized house building should be devoted following the Competition.
- 3.3.2. The Panel of Judges will indicate exactly which points should be worked up by the Stage II Competitors from their Stage I ideas.
- 3.3.3. Generally speaking, these points must be in line with the aims and objects of the Competition.

In Stage II, competitors will be required to elaborate jointing techniques permitting easy and rapid assembly, in addition to ensuring good sound and thermal insulation, proper windproofing and satisfactory dispersal of steam and fumes.

The weight and size of the preassembled unit must represent the optimum compromise between the requirements of transportation and of prefabricated erection. The production of the individual components must be thoroughly planned together with the corresponding materials and labour requirements, *e.g.* from the standpoints of weight and man-hours per unit volume (t/m^3 , h/m^3).

Efforts should be made to enable post-assembly lining operations (partition walls, painting, floors) to be kept to a minimum by appropriate preparation in the industrial-production stage.

Lastly, the dwelling should need little maintenance.

4. Competitors

- 4.1. Participation in the Competition is open to all architects, engineers and others anywhere in the world whose professional qualifications are certified by the appropriate professional body or the competent authorities.
- 4.2. Stage I Competitors
 - 4.2.1. In order to determine at the outset the static calculations and erection techniques which will be needed in Stage II, Competitors are advised to prepare their designs in co-operation with a constructional-steelwork engineer or independent consulting engineer's office of their choice.
 - 4.2.2. When sending in their entries, Competitors should give the names and addresses of their associates under 4.2.1.

4.3. Stage II Competitors

4.3.1. Not fewer than 10 and not more than 16 Competitors, selected by the Panel as having submitted the best Stage I entries, will be admitted to Stage II.

4.3.2. Each Stage II Competitor must form a team, which may consist of the same persons as, or different persons from, his associates in Stage I, but must include a representative of a firm of structural-steelwork engineers or of a general contractor.

4.4. No official of a Community Institution and no member of the Panel or professional associate of such member may enter for the Competition.

5. General Obligations

5.1. These Rules and Conditions are binding on both the Organizers and the Competitors.

5.2. In submitting their entries, Competitors undertake to be bound thereby.

6. Prizes

6.1. The Panel will award prizes and compensation for expenses to a total value of 120,000 Units of Account.¹⁾

6.2. Of the sum named in 6.1., the Panel will allot 100,000 Units of Account among the short-listed Stage I Competitors proceeding to Stage II, in defrayment of their expenses.

6.3. Of the sum named in 6.1., the Panel will award 20,000 Units of Account to the winner of Stage II. They may also award Honourable Mentions. The Organizers in addition draw Competitors' attention to the provision for possible future money grants in 7.1.

6.4. The Prize will be presented within four weeks of the Panel's final award.

Following the Panel's decision as to admission to Stage II, the Competitors concerned will be paid one-third of their compensation for expenses immediately upon their giving the assurance that they will proceed to Stage II, and the remaining two-thirds during the development work in Stage II itself.

7. Follow-Up Arrangements

7.1. One of the objects of the Organizers in holding the Competition is to obtain some guidance as to the research still needed with respect to industrialized residential building.

¹⁾ 120,000 Units of Account = £42,857; DM.480,000; Bfr./Lfr.6,000,000; Ffr.592,440; Lit.75,000,000; Hfl.434,400; \$120,000.

On the basis of the points developed by the Stage II Competitors, the Organizers may subsequently plan practical research projects on aspects calling for more detailed study. If so, in accordance with Article 55 of the Treaty establishing the European Coal and Steel Community, they will, upon the recommendation of the Panel and in agreement with the Competitors concerned, duly sponsor and finance the relevant pure or applied research, after first hearing the views of the Consultative Committee and securing the consent of the Special Council of Ministers.

- 7.2. For a period of three years from the date of the Prizegiving, prizewinning entries and entries rated as entitling the Competitor to compensation of expenses may not be assigned, in whole or in part, to Governments of non-Community countries or to enterprises not located or operating within the territory of the Community unless an option has first been offered to Community Governments and enterprises. First assignors are required to see that the same obligation extends to all further assignees.

The full text of all such contracts of assignment must be submitted to the Organizers forthwith. The Organizers will notify the Community parties concerned: if within three months of the notice of the assignment or licence agreement reaching the Organizers neither they, acting on behalf of a party having right of pre-emption, nor such party acting on his own behalf, declare accession to the contract, the right of pre-emption will be deemed for the purposes of the transaction to have lapsed.

The Organizers will be responsible for all necessary contacts between such parties and the entrants concerned.

- 7.3. The Organizers reserve the right to publish prizewinning entries and entries rated as entitling the Competitor to compensation of expenses.

- 7.4. An Exhibition of all the entries admitted will be held after the Prizegiving.

8. Panel of Judges

- 8.1. The Panel will start work early in 1966, and will select not fewer than 10 and not more than 16 entries. At the same time they will fix the date for their final award and the date for the Prizegiving.

- 8.2. The Panel will be made up as follows.

Chairman: A Member of the High Authority

Deputy Chairman: The Director-General of the High Authority's
Directorate-General for Steel

Judges

1. Representative of the International Union of Architects

P. Vago,
Secrétaire Général de l'Union Internationale
des Architectes,
Paris

RELATED DOCUMENTS

or

J. Balladour,
Architecte diplômé,
Professeur à l'Ecole Nationale des Ponts
et Chaussées,
Architecte-conseil auprès du Ministre de
la Construction,
Paris

2. Architect

I. Gardella,
Architetto,
Milano

or

J. P. Kloos,
Architect,
Heemstede

3. Architect

R. Lentz,
Architect diplômé,
Président de l'Ordre des Architectes,
Luxembourg

or

H. van Kuyck,
Architect,
Antwerpen

4. Town Planner

L. M. J. R. Stijnen,
Architecte,
Anvers

or

Prof. J. B. Bakema,
Rotterdam

5. Representative of a building
research centre

Prof. Dr. Ing. W. Henn,
Leiter des Instituts für Industriebau,
Braunschweig

or

G. Blachère,
Directeur du Centre scientifique et technique
du bâtiment,
Paris

RELATED DOCUMENTS

6. Representative of an appropriate Ministry (Health, Housing, Family Affairs)
- Ir. A. O. Schuil,
Hoofdingenieur-Directeur,
Hoofd van de Afdeling Technisch Onderzoek, Centrale Directie van de Volkshuisvesting en de Bouwnijverheid,
's-Gravenhage
- or*
- Dipl.Ing. F. Hallauer,
Ministerialrat,
Düsseldorf
7. Engineer
- Dipl.Ing. ETH Dr. M. Baeschlin,
Generalsekretär der Europäischen Konvention der Stahlverbände,
Zürich
- or*
- Dipl.Ing. ETH H. F. Ritter,
Präsident des Europäischen Verbandes für Fertigungsbau,
Zürich
8. Representative of a constructional-steelwork company
- J. Bender,
Président Directeur général,
Société française de Préfabrication,
Paris
- or*
- I. Potenza,
Direttore Generale,
Costruzioni Metalliche Finsider,
Milano
9. Representative of the steel industry
- Dipl.Ing. G. T. Wuppermann,
Geschäftsführender Gesellschafter der Theo Wuppermann G.m.b.H.,
Leverkusen
- or*
- H. Welter,
Directeur,
Administration Centrale, ARBED,
Luxembourg

10. Representative of a steel
research centre

P. Coheur,
Administrateur-Gérant,
Centre National de Recherches Métallur-
giques,
Liège

or

Prof. A. Palazzi,
Vice-Direttore del Centro Sperimentale Me-
ta'urgico,
Genova

11. Sociologist

Dott. L. Ceccarelli Balbo,
Forte dei Marmi,
Milano

or

Prof. G. Meyer-Ehlers,
Berlin

- 8.3. The Chairman and Deputy Chairman will be appointed by the Organizers. Meetings will be convened by the Chairman or Deputy Chairman, who will preside but will not have a vote.
- 8.4. The Panel will appoint a Rapporteur.
- 8.5. A report setting forth the Panel's reasons for their award will be laid before the Governments of the member States of the European Communities.
- 8.6. The Panel's decisions will be final and legally binding.
- 8.7. If one of the Panel is unable to attend, he will be represented by his alternate.
- 8.8. The Organizers will appoint one or more preliminary examiners, who will scrutinize the entries for conformity with the Rules and Conditions before submitting them to the Panel.
9. Deadlines, etc.
- 9.1.1. Registration for Stage I of the Competition will be from October 10, 1965. Applications should be addressed to
- High Authority of the European
Coal and Steel Community,
Luxembourg.
- 9.1.2. The closing date for registration will be December 31, 1965.

- 9.1.3. Stage I entries must be dispatched by 12 midnight on July 31, 1966, the postmark to be conclusive evidence in the event of dispute. They should be addressed to

"Competition,"
High Authority of the European
Coal and Steel Community,
Luxembourg.

Entries dispatched after this date will be disqualified.

- 9.1.4. No Competitor may submit more than one entry. He may, however, assist other Competitors as an associate as provided in 4.2 and 4.3.2.
- 9.2.1. Stage II of the Competition will open on November 15, 1966. Entries will be invited by the Organizers from Competitors recommended by the Panel.
- 9.2.2. The closing date for acceptance of the invitation and formation of the Competitor's team will be December 31, 1966.
- 9.2.3. The time allowed for completion and submission of Stage II entries will probably be eight months. Details will be announced on November 15, 1966.

10. Additional Particulars

- 10.1. Competitors desiring further information or particulars concerning the Competition must apply in writing by January 31, 1966, to

High Authority of the European
Coal and Steel Community,
Luxembourg.

- 10.2. All Competitors registered by December 31, 1965, will be sent the full text of all the inquiries and replies by March 15, 1966.

11. Documents to be Issued to Competitors

The following will be sent to all intending Competitors registered under 9.1.1:

- (a) the Rules and Conditions of the Competition;
(b) answers to inquiries made by January 31, 1966.

12. Documents to be Furnished by Competitors

12.1. Form of the entries

- 12.1.1. Entries must be submitted anonymously. The Competitor must mark each document in the bottom right-hand corner with an identical seven-digit figure, size 10 × 15 mm., and must enclose in a sealed envelope bearing the same number his own and his associates' names and addresses and evidence of his professional admissibility.

12.1.2. Entries will be accepted in the following languages: English, French, German, Italian and Dutch. The metric system should be used for measurements and E.M.A. Units of Account for money calculations.¹⁾

12.2. Entries must be sent rolled, on 75 × 106-cm. sheets, which must not be folded.

As regards presentation, Competitors may for the most part please themselves, though they must keep to the requirements stated in 12.3 and 12.4 concerning plans. They should try to make the presentation as clear as possible, and are accordingly asked not to include too many captions on their drawings but to use numbers explained by a key.

12.3. Stage I Competitors

Stage I Competitors must supply:

- (a) evidence of professional admissibility under 4.1;
- (b) the names and addresses of their associates;
- (c) plan view, front elevation and sectional view of each type of dwelling to a scale of 1 : 50; for complexes of dwellings scale 1 : 100;
- (d) sketches of the main building components (basic components and additional elements) using the conventional technical symbols, each to a scale (construction 1 : 20, details 1 : 5 or 1 : 1) which will enable the Panel to assess them accurately. The drawing should illustrate the construction of the load-bearing and floor structures, possible combinations of the components, and the joints and connections between the components;
- (e) explanatory notes not exceeding five pages of typescript;
- (f) calculation of the living floor space and cubic building volume.

12.4. Stage II Competitors

Stage II Competitor must supply:

- (a) the names and addresses of their associates;
- (b) plan view, front elevation and sectional view of each type of dwelling to a scale of 1 : 20;
- (c) precise technical symbolic representation of the building components indicated by the Panel as requiring further elaboration, in particular sections through floors, roof connections, corner pillars and joints, to a scale of 1 : 1;
- (d) calculation of the most economic length of production runs, consumption of materials and time taken, weight of the components, and erection and movement times for pre-assembly and final assembly;

¹⁾ Unit of Account = £0.35,714; \$1.00; DM.4.00; Bfr./Lfr.50.00; Ffr.4.937; Lit.625; Hfl.3.62.

(e) explanatory material, consisting of not more than 20 pages of typescript and as many drawing and plans as necessary;

(f) mock-ups, if requested by the Panel.

12.5. The Panel may request further documents from Stage II Competitors if the drawing and texts submitted offer insufficient basis for a completely accurate assessment.

12.6. Entries not fulfilling the above requirements will be disqualified.

13. Return of Entries

13.1. Entries not awarded prizes or rated as entitling the Competitor to compensation of expenses will be returned at the Organizers' expense.

13.2. Entries will be insured by the Organizers against loss, damage and unauthorized use from the time of arrival to the time of return for a sum not exceeding 500 Units of Account.

14. Ownership

14.1. Subject to the Organizers' rights under 7.3, Competitors retain sole copyright in their entries.

14.2. Prizewinners and Competitors granted compensation of expenses may request the Organizers to abstain from publishing portions of their entries in respect of which they have applied for industrial patent rights.

14.3. Prizewinning entries and entries rated as entitling the Competitor to compensation of expenses remain the physical property of the Organizers and cannot be returned to the sender.

15. Special Provisions

15.1. The prize award rules of the International Union of Architects, 15 quai Malaquais, Paris VIe, are to apply in all cases not specifically covered by the present Rules and Conditions.

15.2. Copies of the present Rules and Conditions will be lodged at the headquarters of the International Union of Architects and with the Union's national sections in the Community countries.

16. Arbitration

16.1. All disputes not relating to the Panel's award will be referred by the Organizers and Competitors to the International Union of Architects.

16.2. Should the Union be unable to bring about an amicable settlement of the dispute, the decision will lie with the Court of Justice of the European Communities in Luxembourg, pursuant to Article 42 of the Treaty establishing the European Coal and Steel Community.

