SANIBRUN

MODULAR
HOUSING SYSTEM

Contents

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1 A SANIBRUN profile

SANIBRUN, founded in 1968, is a Spanish company specialising in engineering, designing and manufacturing of logistical solutions such as modular housing, mobile units, and field and modular hospitals, etc. **SANIBRUN** is widely represented internationally with a customer base in more than 30 countries.

SANIBRUN collaborates with the customer (public/private organisations and NGOs) providing all designing, planning, manufacturing, installing and training requirements for any turn-key projects. In this regard, **SANIBRUN** thus provides an integral service and best practice that suitably complies with the end-user's unique specifications.

SANIBRUN's new headquarters and factory, inaugurated in 2002, is situated on a 20,000 m2 site in Zaragoza, Spain, incorporating state-of-the-art technology ensuring that the quality and control assurance of our design and production is ISO 9001:2000 certified.
SANIBRUN employs around 130 employees and had an annual turnover of over US$ 20 million in 2003. More than 50% of present turnover corresponds to SANIBRUN's international activity.

The following is a list of some of **SANIBRUN's** international projects:

* **ANGOLA**: The engineering, manufacturing and installation of modular school dormitories and dining rooms in various provinces in 1999.
* **VIETNAM**: The design, manufacturing and installation of modular housing in 1997.
* **ALGERIA**: The design, manufacturing and installation of lodging and sanitary solutions in 1997.

2 SANIBRUN's unique modular housing concept

Mission Statement: To provide a meaningful solution to the critical challenges facing many countries in the delivery of permanent affordable low-cost housing - houses constructed in compliance with the stringent international norms and standards requirements.

Various barriers exist in the sustainable delivery of houses in many countries: inadequate land requirements; high demographical growth and urbanisation; financing and budget constraints; ineffective housing sector; lack in delivery of appropriate and acceptable aesthetical design homes providing comfortable and dignified living; construction of poor quality houses; housing supply slow with little monitoring; complex and lengthy planning process; and the lengthy time-scale of actual construction. This results in slower urban development while the need for housing is constantly rising.
SANIBRUN has, following research over many years, found that new construction materials make it possible to

build a house much easier than with traditional materials while at the same time guaranteeing an aesthetic and work smart quality level never seen before.

SANIBRUN's solution to affordable housing delivery is based on:

* The quality and performance of its materials, which is equal or better than traditional materials.
* The **SANIBRUN** standard production method is constant and free of traditional production method imperfections.
* The **SANIBRUN** construction method is fast and is considerably less time consuming than the traditional construction method.

The result is that the lower cost frees up resources required to improve other aspects of community development and basic services: water sanitation; electricity network; health and education services; public spaces; economic opportunities; safety and security; and public transport. This improves the overall life quality of a social housing development and community spirit.

The **SANIBRUN** unique modular house concept is the result of years of intense planning, investigation and testing of designs, materials, installation requirements and restrictions in collaboration with customer needs and preferences.

SANIBRUN's houses are being erected for a wide-range of end-users due to the easy adaptability of the product to suit the demands and specific needs of the customer. The **SANIBRUN** house is presently also being marketed in Europe as a 'second home' for holiday purposes.
The basic design, floor finishing, wall covering (wood or stone imitation), wood panelling, wall papering, and general finishing (air conditioning, etc) can be tailored according to the customer's wishes or be customised.
To specifically suit the American, African and Asian market and climate, front or back porches are available at the same cost level.

3 The SANIBRUN modular house concept

3.1. General features

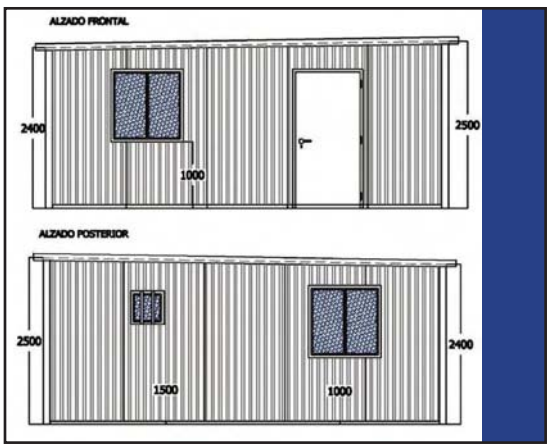
The following text contains an explanation about the general characteristics of a house building system in a modular way. It consists on a square sole that contains three rooms (49 m2) and a toilet-bathroom. Its most remarkable attribute is the easiness of its assembling and transportation of the modular materials.
Depending on the costumer requirements it can fit any design of distribution and surface.

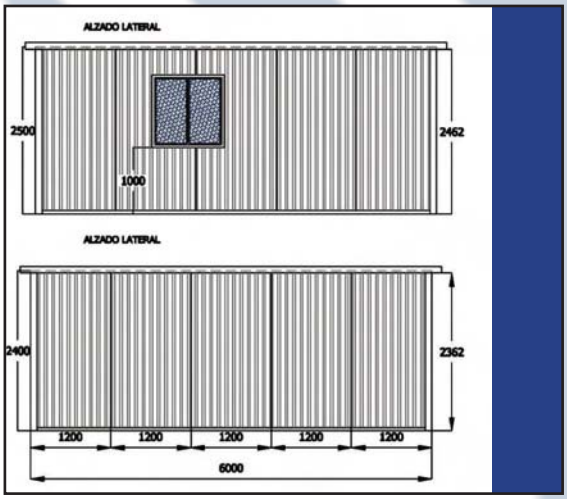
SURFACES DISTRIBUTION

The Distribution, in case of 49, 64 and 72 m2, are done having in mind the idea of a kitchen-living room that works as an entrance to the house. In this room we find the access to each of the two bedrooms and also to the room that will work as a bathroom-toilet. In other distribution the kitchen is at the rear porch of the house reached by a rear door.

3.2. Description of the material

The wall sandwich panel 40mm thick is composed of two 0,4 mm galvanized and white prelacquered sheet with an embossed surface that confers greater rigidity to the assembly. The space between the sheets is filled with injected expanded polyurethane foam 40 mm thick.





Its functional characteristics, based on the design of its groove and tongue joint, allow it to be rapidly assembled or disassembled and all the materials to be completely recovered. It is a self supporting panel that does not require any additional structure for its assembly.

Average polyurethane density.	**40 Kg./m3 .**
Heat resistance coefficient.	**0,44 Kcal./m2 h C**
Useful panel width	**1.200 mm.**
Panel height Between	**2400 y 2500 mm.**
Panel weight	**10,7 Kg./m2**

ROOF CLADING

The roof sandwich panel 40 mm thick is specific for the roof and has the same finish as the walls. The 0,4 mm thick skins are red prelacquered on the outside and white on the inside. They have an embossed surface that confers greater rigidity.

The skins are filled with injected expanded polyurethane foam 40 mm thick.

The joints between panels are protected by a cover plate that guarantees the water tightness and protects the fastenings against corrosion.

Average polyurethane density	**40 Kg./m3 .**
Heat resistance coefficient	**0,44 Kcal./m2 h C°**
Useful panel width	**900 mm.**
Panel length	**6300mm.**
Panel weight	**12 Kg./m2**

INTERIOR CARPENTRY

Interior door with aluminum frame and door made of a white lacquered sheet

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Interior partition made of the same 40 mm sandwich panels as the exterior walls

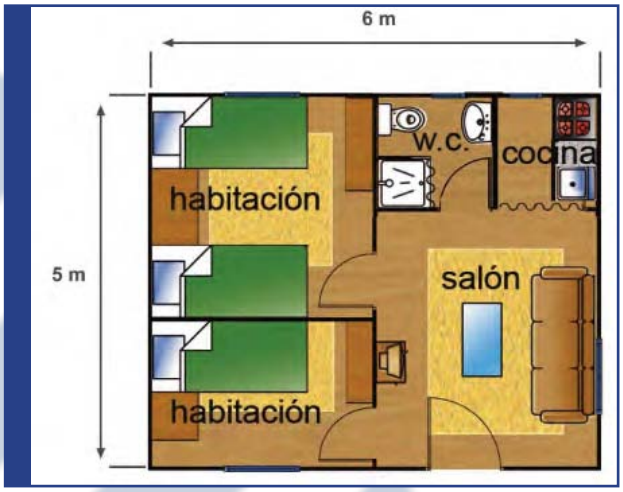
Finishing and corner pieces on white prelacquered steel sheet.

EXTERIOR CARPENTRY

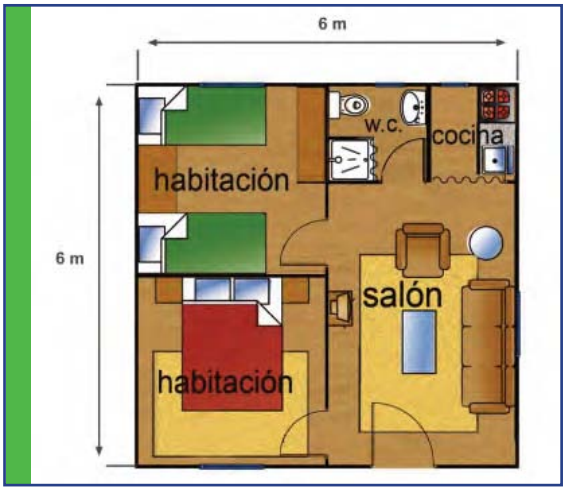
Windows with sliding window shutters, of white lacquered aluminium and with security grilles. Windows with abatable window shutters of lacquered aluminium for bathrooms, and security grille.
Exterior doors with aluminium frame and door made of a white lacquered sheet

3.3. INSIDE VIEWS

3.4. RANGE OF MODULAR HOUSE SIZES



DISTRIBUTION PLAN 30 M²



DISTRIBUTION PLAN 36 M²

DISTRIBUTION PLAN 49 M²

DISTRIBUTION PLAN 64 M²

EXAMPLE OF MEDICAL SERVICES CENTRE IN 144 M2

DISTRIBUTION PLAN 72 M²

3.5. ASSEMBLY PROCESS

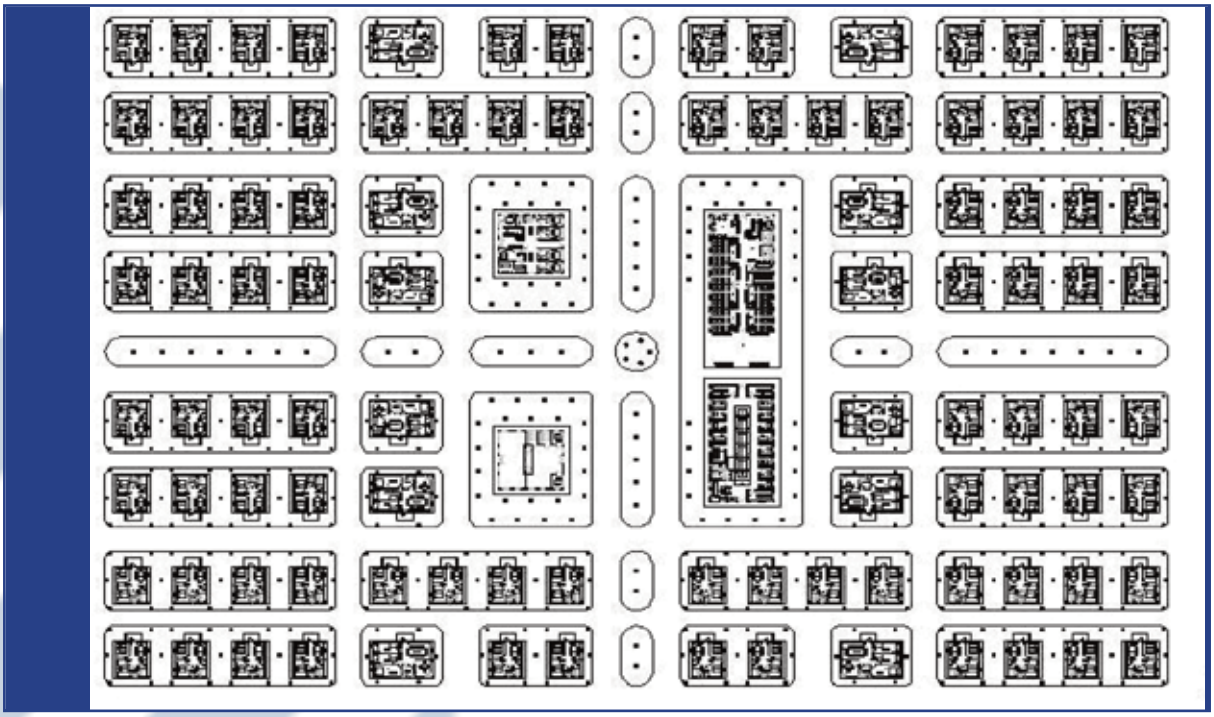
1. On a levelled concrete foundation the sections supporting the wall panels are installed.
2. These sections are made of "U" shaped galvanized panels to prevent corrosion and are mechanically anchored to the basement.
3. After the sections have been installed, the self-supporting wall panels are then assembled.
4. The inner-wall panels that separate each of the rooms are then assembled.
5. The roof perimeter is finished with a gutter/section made of pre-lacquered steel sheets.
6. The four vertical corners of the structure are finished in the same way which not only strengthens the core of the corner and has an esthetical purpose.
7. Finally, the doors made of white pre-lacquered aluminum carpentry are installed in the corresponding frames.
8. The white pre-lacquered window frames as per required measurements are installed.
9. Once the assembly phase has been completed, the sealing phase is started using specific products for optimal strength. All the above mentioned elements are then sealed together to the foundation, guaranteeing complete isolation of the structure.

3.6. QUALITY ASSURANCE

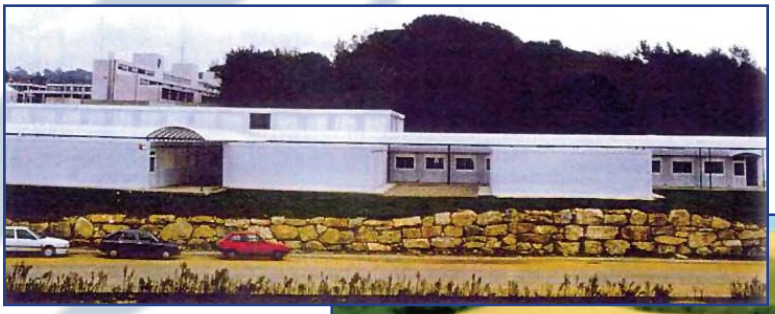
The quality of this product is guaranteed by its unique panels and is ISO 9002 certified.

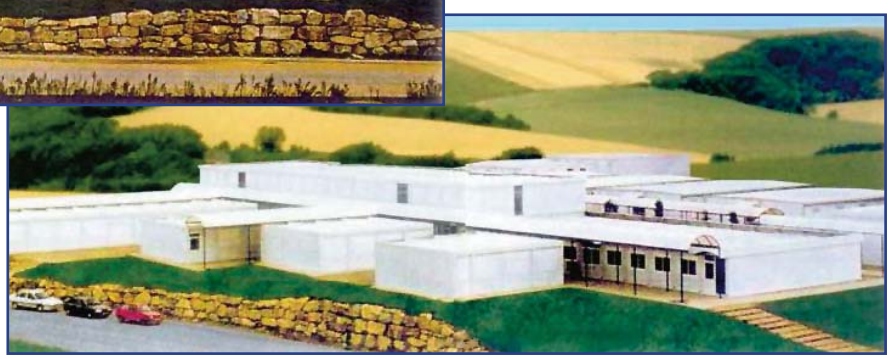
3.7 INTEGRAL MODULAR COMMUNITY PROJECT

100 houses + 4 social services centers. Lay out



4 Other modular CONSTRUCTIONS





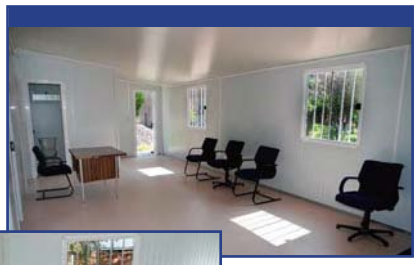
Haití Warehouse and Beddromms.

120 m² House in Madrid University

Mental Hospital in Guinea

Resort in Amara, Irak

Health Centre in Queretaro, México

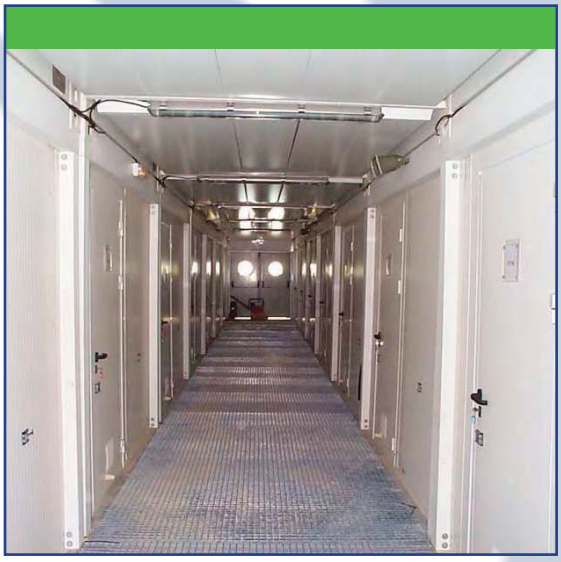


University

Village whith 100 Houses in Mexico

Canteen

Lodging in Kosovo



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