ENERGY AND COST SAVING

CONSTRUCTION BUILDING

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IHRC

IHRC acting in accordance with its statutory tasks, bearing in mind the tragic living conditions in many countries of the world and in particular in African countries and related to it, among other things, a huge wave of refugees to Europe, as part of the BARRIER campaign we want to introduce a program for building cheap and healthy residential buildings.
This program will mostly solve the tragic state of housing in African countries but it will also create a huge number of workplaces, which can stop the refugees pressure to EU countries.

This project will be based on technology developed by Polish Technologist consisting of construction of spherical houses made of structural foam concrete called QUANTRON®PBS by wet pouring in special formworks.

Spherical houses, due to their self-supporting structure and shape and that they are practically made of one type of material, which is the special structural foam concrete QUANTRON®PBS, characterized by high durability and a very low thermal conductivity coefficient (below 0,11 W/mK), are one of the cheapest solutions when it comes to housing construction.
The cost of 1 sq.m. of developer status starts already from ca. 300 €/sq.m. with utility values unremitting traditional architecture.

The whole price mystery lies in a special, durable and well insulated lightweight concrete from which practically the whole building is made (including the floor) as well as in a special technology of realization and assembly. Patent applications have been submitted for these solutions.
In addition, the dome requires the smallest amount of material (the smallest surface to volume ratio).
Living under the dome is much better. People do not loose their own energy, both heating as well as cooling is half cheaper and maintenance costs are low.
The dome is resistant to earthquakes, storms and tornadoes.
You can also build systemically traditional buildings with simple walls from this concrete, however, the cost of a sq.m. of living space will increase by ca. 40% (more wall area and roof, structural reinforcement, expensive roof and above all you have to invest in a factory in which prefabricates are produced and in road transport and assembly equipment elements).

An additional element enhancing the quality of life in these apartments will be that the structural foamed concrete QUANTRON®PBS will contain patented “walking silver iodides” that are gradually released from the walls. Four billion people suffer from iodine deficiency and they will find it in our walls. Moreover, silver released with iodine works biocidally on all pathogens (bacteria, viruses, fungi, protozoa, mites), which is very important in Asia and Africa.

This technology does not require the construction of house factories because buildings are poured directly on the construction site and the cost of the entire technological installation allowing for the construction of one dome building per day with a living area of 50 sq.m. is only about 200,000 €.

These prices do not include the cost of equipment transport, formwork and materials for the production of QUANTRON®PBS on site.

The mix made according to the reserved recipe, from which the dome is made, will be produced in Poland and then sent in accordance with the order to a given place for construction in Africa or another country, which will make possible to avoid mistakes in the rather complicated technology of its production.
The domes can be made for every size or a combination (eg. one for the living room with kitchen and dining room and the other for bedrooms with a connector in the middle).
The great advantage of this method of building is that employees, except supervision, do not have to own any construction profession. Just two weeks of training in the field of assembly of formwork and very simple operation of equipment and devices is enough. It is extremely important in countries where there is no possibility of professional preparation of employees.
An example of a house with an area of 35 sq.m. has approximately 29 sq.m. of floor space of residential area plus a mezzanine of about 20 sq.m. where you can make two bedrooms. Total is about 50 sq.m. and the cost of the developer status in Poland is ca. 60,000 PLN (300 €/sq.m.).

To sum up the advantages of the project:

- low cost of construction of 300 €/sq.m. with excellent utility values (insulation, strength),
- speed of construction allowing (in some cases with good logistics and organization) even for capital turnover of several times during one year.
- high quality - the whole building is poured from one type of material, no thermal bridges, dimensional accuracy, which is determined by precise formwork,
- there is no need to employ highly qualified staff, equipment service workers and formwork can be learned within two weeks of training,
- no waste,
- a small number of employees,
- lack of investment outlays related to the construction of the prefabricated factory,
- ease of transport,
- long durability of the structure,
- simple control of the construction process,
- low operating costs of the building (heating costs twice lower, in such a building there is practically nothing to brake, there is no roof, no gutters, all the benches, nothing that needs to be supplemented and maintained, the building is covered with a special heat-insulating paint and fire protection for many years).
- limited impact on the environment and emissions, low CO2 from the production process, very short production time.
- the solutions used in the production process also allow the production of prefabricated concrete products.
- up to 90% energy savings compared to standard production processes of autoclaved concrete.
- water reduction, water-cement ratio (W/C) lower by 8 to 10%.
- very high resistance to atmospheric and chemical corrosion.
- low specific weight from 300 kg/m3.
- good thermal capacity of walls, which allows to maintain a stable temperature level in the building.
- high paro permeability of external walls.

The applied solutions significantly reducing construction and use costs as well as very much simplifying its implementation constitute a huge potential that will be used under the IHRC patronage to solve the lack of housing in the poorest countries in the world.

The advantages of dome houses...

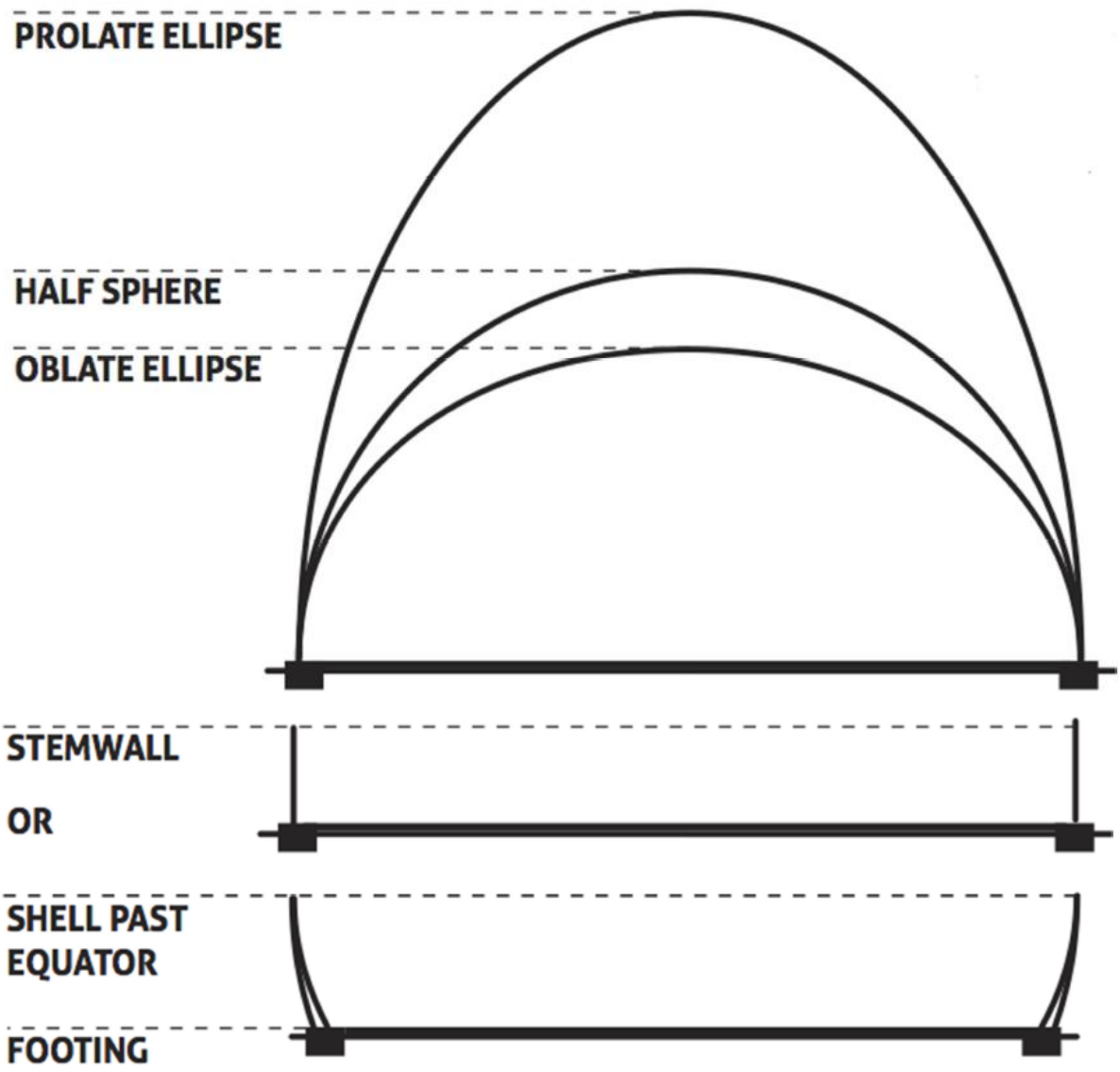
The building in the form of half-sphere has many advantages, ranging from the best possible volume to ratio surface - with the minimum material consumption, maximum cubic volume is obtained. This in turn makes it possible to build a dome using fewer building materials than in for typical houses. The smaller surface of external walls also reduces losses warm. A properly constructed canopy meets the standards of an energy-efficient house.

Even distribution of forces and low center of gravity make it possible to use the construction light materials, and the construction will be durable. This last argument has a huge impact the popularity of domes, for example in Japan. The hollow shape is resistant to hurricane winds and earthquake. In Europe, the threat of seismic shocks is not very real, but storms they regularly break and damage the roofs. In a domed house it is impossible, if only because that there is no roof as such. The entire outer surface can be finished in the same way, there is no need to make expensive covers. There is no snow on the canopy and water is on the couch it flows quickly.

A small dome can be quickly built from prefabricated elements. They are not needed internal load-bearing walls, so the whole interior can be arranged freely, if necessary change the arrangement.

Dome houses blend in every landscape and thanks to their shape everywhere they look ecologically;

Dome constructions maintain an ideal energy balance, which positively affects energy efficiency of such a building;
They have simple and natural ventilation;
They enable reduction of heating and cooling costs by 50%;
They enable material costs to be reduced because the surface of a ball is smaller than the surface of a cube. In addition, the structure is self-supporting and does not require reinforcement;



- When building dome houses there are no restrictions on planning the construction, as the dome itself is a supporting structure and the space inside the house can be arranged according to your own preferences;
- The materials used are not heavy and have high durability - 1m3 of the external wall is only 300-600 kg/m3, which makes it possible to lay a light foundation slab, moreover, their roofs withstand approx. 650kg snow load per 1 sq.m.;
- Walls can be made using a monolithic method of sprayed concrete, prefabrication shells or prefabricated system blocks.
- The basic building material is QUANTRON® PBS lightweight concrete (Structural Foam Concrete).
- With the use of the QUANTRON® PBS and SBC technology walls can be made in such configurations as:

1. Lime - clay - hay;
2. Lime - clay - straw (cane, rice, hemp, etc.)
3. Cement – sawdust

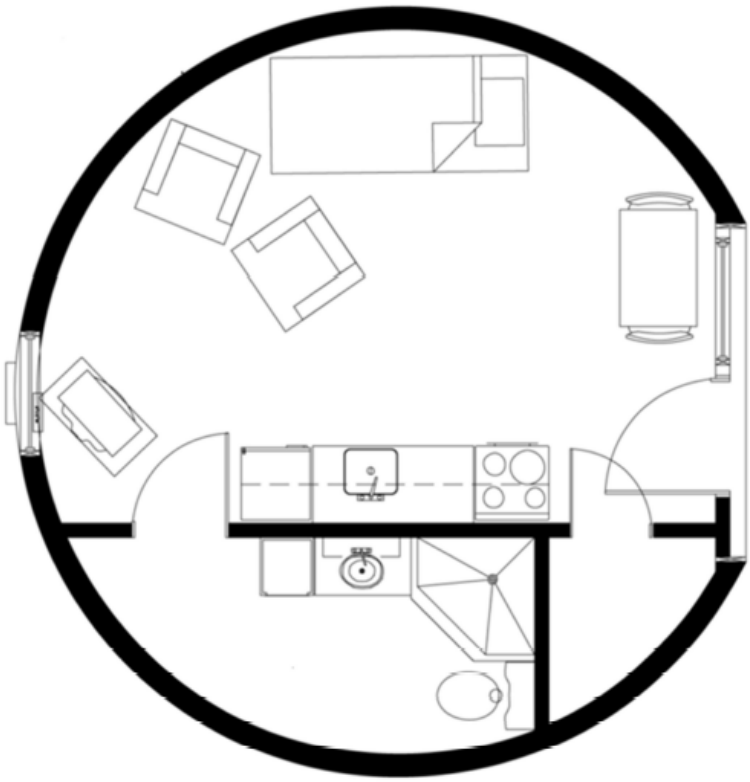
The main idea of the project is to create a social housing estate that is close to people and facilitates neighborly contacts.

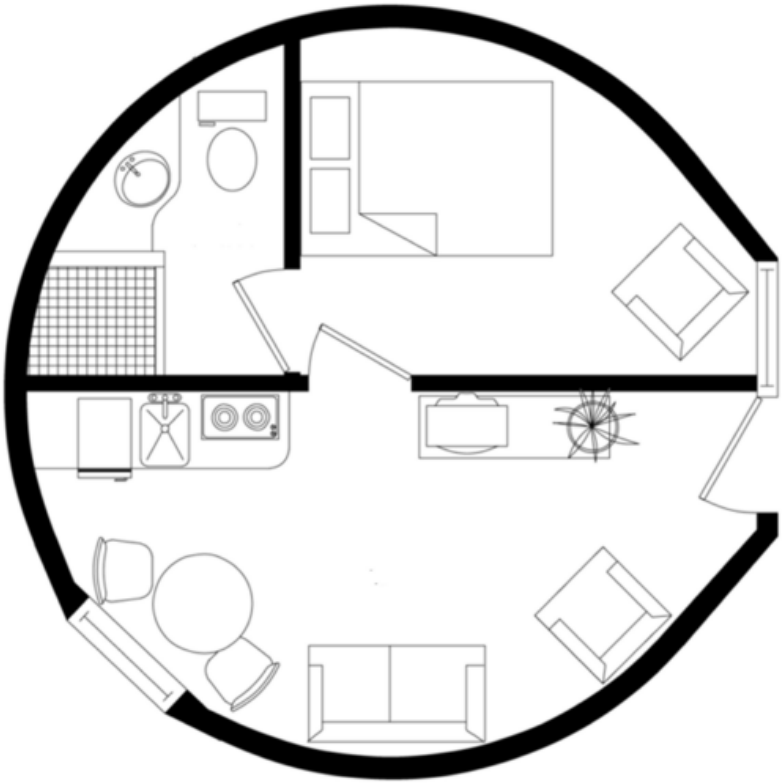
The housing estate is designed for ecologically aware people who are close to the idea of sustainable development and who want to minimize their impact on the environment and their own heating bills. The cars have been pushed into the background creating space for living for people. The free layout allows you to improve views from behind the window.

The diversity of the size of plots belonging to individual buildings allows satisfying the needs of individual residents. The estate consists of houses in the identical proportions, individual buildings differ only in the colors of the façade. Thanks to this residents stay in a harmonious environment. For this very diverse character they have gardens adjacent to the buildings. This gives us great opportunities in creating space belonging to a given building - if several people from the community have such a dream they can give up a typical garden and create a common space for yourself and for your children equipped with, for example, a swimming pool - the number of individual solutions is practically infinite.

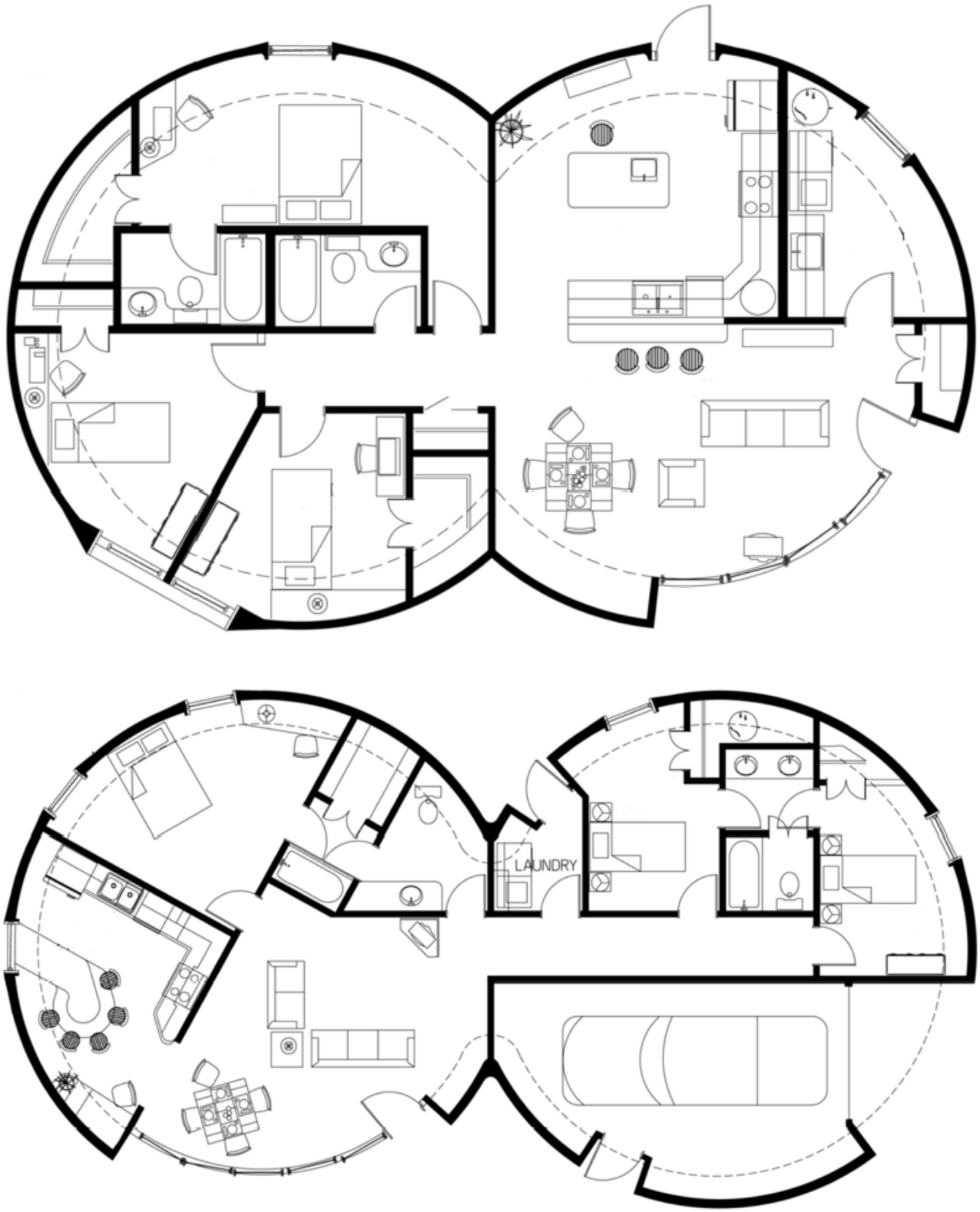
Sample arrangement of premises:

1. The arrangement of a single apartment.





2. Double layout of premises.



3. Three-room layout.