Saral

Wooden Technology

SARAL
since 1971

For English QR

Wood is the living material of human beings.

Sunflower

In Anatolian ancient civilizations, stone or **wood** are the materials used for housing, places of worship or shelter. Wooden carrier of frame structures, known as the **"Ottoman Frame System"** during the empire period, were replaced by reinforced concrete after the first quarter of the Republic period.
It is completely an example of black humour that the wooden system, which has been ignored for almost half a century and is now implemented especially in western countries, has come to the fore in our country due to eartquakes.

However, wood has a thousand-year adventure in this geography. There has always been a search in society due to disasters throughout history. Especially before the earthquake of August 17, 1999, as **Saral Construction Group**, we made attempts to build houses with **wooden carrier systems** in our country. During this process, personnels were trained in wood technology in terms of education and qualification. For the first time in our country, a project with a wooden system was designed and implemented. The project brand of wooden system houses are also known as **Sunflower.** The reason why these projects are preferred to be built with wooden system technology is that they are **safe against earthquakes and also they are healthy and enjoyable life and building concepts.**

This system and concept is built at a rate and density of almost 85 percent in western countries. The point of view is that **these states support the wooden system in the name of public safety and public health.** In addition to being the best example of green buildings, this system also has **sustainable and renewable** features. The vision here is the trust in wood.

Therefore, in this building system with social consciousness and belief;

-Risks are minimized with earthquake safety,

-Quality of life is also supported by healthy living spaces that are free of moisture and humidity.

The fact that the wooden system has been forgotten in our country for almost 80 years and that is not known academically today is not only sad but also a loss for our country. The old wooden buildings are considered as historical monuments and remained as nostalgic structures in need of social memory. However, our ancestors were very skillful, masterful and experienced in wooden houses and architecture for thousands of years.

"You will always be safe and happy in a wooden house."

Disasters in the historical process and the fact that structures built with concrete and steel have a maximum lifespan of 40-50 years have brought wooden technology to the country's agenda in every period.

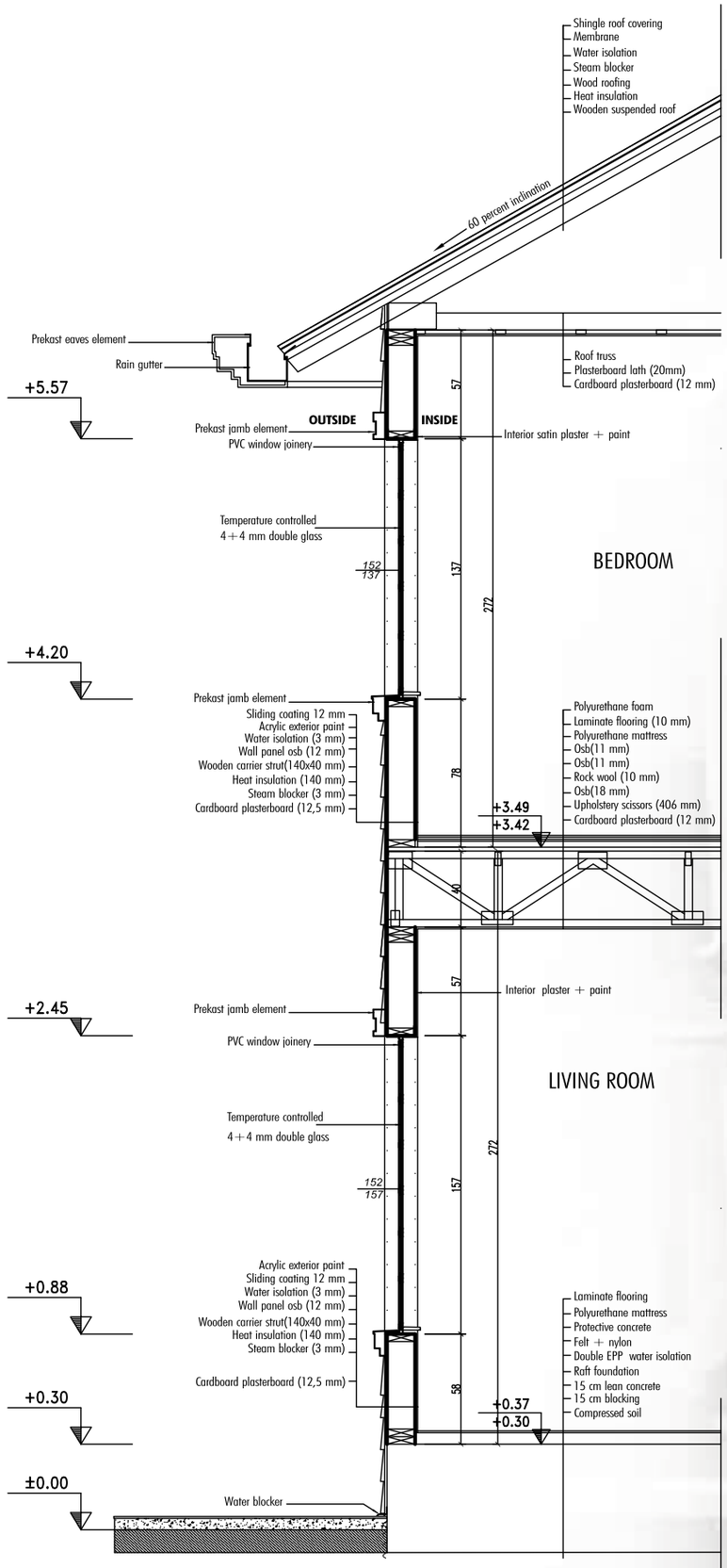
After all, reinforced concrete is subject to corrosion and produces radon gas. After a study conducted in America in 1994 found that 14 percent of those who died from lung cancer were exposed to radon gas inside buildings, it became mandatory to install radon gas evacuation aspirators in such buildings. The same practice started in England in 2000.

Statistics also reveal that people living in reinforced concrete buildings are more likely to suffer from rheumatism, kidney and asthma diseases.

As a result, you will live a healthy life and enjoy yourself in wooden houses.

Wooden System Technology

- Structures built with **Saral Wooden System Technology** and forming the system; are prodproduced as **inter-floor beams called** "Post&Beam", **Roof Trusses and Panel Walls.** Do you know that in our Saral Wood factory, it is produced from kiln-dried pine or spruce trees, with up to 16 percent of the sap removed and kiln-dried timber?
- Do you know the **static** calculations of the structures built with **Saral Wood** are made by **computers** anda re produced in accordance with the USA, Canada, Germany and **ASTM** standarts.
- Wooden system is **environmentally** friendly and ecological. All materials that make up the system are **natural** products.
- All materials used in the buildings are **of first class quality and TSE guaranteed.**
- The wooden system **provides moisture-free and humidity-free environments**, therefore it offers you **healthy** living spaces.
- The system, used around the World, protects you from **earthquake** risks in the name of **public safety and public health** and offers a **life guarantee.**
- The main subject in the buildings built with this system is to offer a **problem-free, safe and enjoyable life priority.** Customer satisfaction achieved in **Sunflower** projects confirms this situation.
- This system offers you both the homes of your dreams and a peaceful, safe and comfortable life.



“Structures built with wooden technology consist of 3 main structural materials;”

Roof Trusses

In the wooden carrier system, **roof trusses** consist of many horizontal, vertical and diagonal structural elements and **the nodes connecting these elements** to each other. Special **metal** plates are used at each component point. These plates allow for **economically costly** but statically safest designs. Wooden roof trusses, which are made of kiln-dried special timber, **are extremely reliable in terms of statics as they have a load-carrying capacity well above their own weight.** In addition, since the design of the trusses allows wide spaces between the roof, it allows the application of all kinds of **mechanical, electrical and plumbing** installations.

Wall Partitions

Walls are of great importance in the wooden load-bearing system. Building loads are transferred to the ground through **wooden walls. In addition to creating architectural sections, wooden walls also have a load-bearing feature.** Depending on the load it is exposed to, it can be called a wooden **load-bearing curtain wall** by nailing OSB to its side surfaces. Wooden walls consist of vertical elements of length depending on the floor height and horizontal elements connecting these verticals. The uprights consist of 4x14 uprights, 40 cm apart. The gaps formed between these pillars are filled with polyurethane foam +10 cm rock wool.

Interfloor Beams

Interfloor beams consist of horizontal, vertical and diagonal structural elements and nodes, just like roof trusses. Special metal plates are used to safely meet the moment and shear force occuring at those points as a result of **static calculations.** There are two types of wooden beams; **floor beams and carrier beams.** It can **safely** transfer the loads to the support areas thanks to the diagonals in it. It is placed at certain intervals depending on the loads on it. Its most important feature is that it enables **all kinds of installations** easily and economically through the gaps formed between the diagonals.

Easy Manufacturing, Easy Assembly

The wooden components that make up the system are durable. In addition to being easy to assemble and insulate, it is a lightweight construction technology that has been applied millions of times. Approximately one million wooden column and beam structures are built annually in North America.

Insulations that Increase Comfort

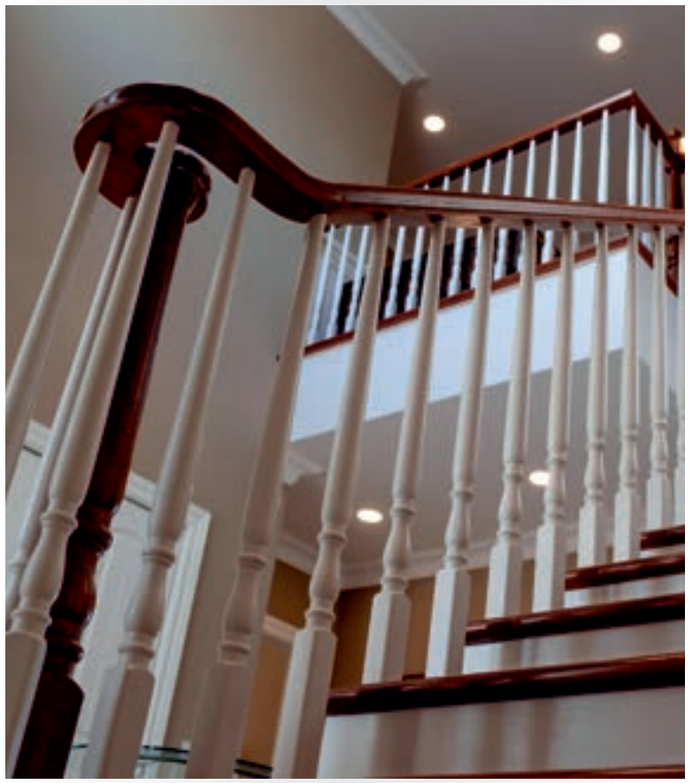
The walls and floors of buildings built with wooden systems have high heat and sound insulation. Thanks to the soundproof flooring and Wall desighns obtained as a result of many years of research on this subject, quiet spaces are offered to thse living at home.

Quality buildings

The structures built by **Saral Wooden Technology** are designed according to -40 degrees in the USA, Canada, Germany and ASTM standarts. The walls are insulated, the exteriors are covered with non-flammable, quaranteed, maintenance-free fiber-cement, and the roofs are covered with membrane and shingle. Exterior doors are steel, interior doors are optionally lacquered, MDF or American door application. Maximum safety is ensured by using foiled PPRC in water installations. Heating system can be installed with heat pump air conditions or, optionally, natural gas underfloor heating or panels. We have made life easier in the villas with a central vacuum system, indoor garage, laundry room and other ergonomic details.

Construction Gross Area Advantage

In reinforced concrete buildings, many areas such as columns, walls, parking lots, common neighbourhoods, even elevator shafts, halls, fire shafts, etc. are included in the title deed and these measurements also affect sales. For this reason, gross areas in reinforced concrete structures are evaluated between minimum 25 percent and 40 percent. In wooden structures, this rate is 15-17 percent since there are no other headings such as columns, beams and common spaces.



Ecological Life

It is important for ecological life that the energy used during the production of wooden houses is economical, that there is no harm the environment in house production, that the exterior does not require maintenance for up to 5 years, and that paint and similar substance waste is not produced during the process. The air conditioning system uses heat pump air conditioners and the heating and cooling system is provided without creating air pollution and leaving no waste. It is compatible with nature.

Healthy

Wooden technology reflects the healthy environment provided by wood to its inhabitants as a result of the system. With its moisture-free and humidity-free environment, it largely protects its inhabitants against rheumatic and respiratory diseases. This system ensures that the people living in these houses have a long life since the danger of radon gas, which is caused by carbonization in reinforced concrete structures and not known its importance in today's Turkey, and it negatively affect human health. In addition, copper electrical cables passed through the concrete create a magnetic field by triggering the iron in the concrete, which deeply affects both physical and mental health of people.

Energy-Saving

Heat insulation applied in the wooden system has the feature of not losing that energy as much as possible instead of regaining the lost energy. Since these types of structures are designed for climatic conditions up to -40 degrees, their insulations are excellent. Even in -10 degree weather, you can heat your home in a maximum of 40 minutes. It provides 65 percent energy saving compared to a reinforced concrete structure.

Time Advantage

One of the biggest features that distinguishes the wooden building system from other building systems is that it can be built in a very short time.

Aesthetical / Functionality

Wooden stairs, skirting boards and parquets in the interior, wood-looking fiber-cement and exterior motifs in the exterior create aesthetic reflections of wood. Since beams and columns are not visible in advanced wooden technology houses designed with perfect aesthetics, decoration applications are much more comfortable and ergonomic.

Fire Security

In buildings built with wooden technology, the electrical system is installed with non-flammable silicone cables and without junction boxes. For this reason, seperate cables are drawn and fused for each socket and plug. Thus, maximum protection is provided in terms of human and building safety. Since it does not have junction boxes, 5 times more cabling is required compared to reinforced concrete structures.

Earthquake Safety

The wooden system provides a much stronger performance than other structures during an earthquake. Structurally, it is 13 times lighter than steel buildings and 8 times lighter than reinforced concrete buildings. The fact that the force penetrating the building during an earthquake is affected in direct proportion to the weight of the building is proof that wooden buildings are the most earthquake-resistant construction system at all times and under all conditions. Wood is a material with a high strenght-to-weight ratio. In terms of strenght, wood is almost equal to the strength of commonly used concrete types.

-Solid anchorage to the foundation
-Strength and ductility of walls
-Strength and ductility of floors, roofs and ceilings
-Connection of carcass elements to each other
experiments carried out for these reasons also show that wooden structures are resistant to earthquakes measuring 8 on the Richter scale. Some earthquakes experienced in the past are the best examples of this.

Wood, an Engineering Material

Natural Wood

We can say that wood is the carbon masses accumulated in tree trunks as a result of the photosynthesis process, which starts with the sun, CO2 and water in nature. As you read these lines, enough wood to build a house continues to form in our forests every 15 seconds. Free and by producing oxygen.

What is structural wood?

In oder for wood to be considered structural;

- It must have characterictic, standart dimensions and physical properties for structural design.
- Strength limits must be determined according to mechanical properties.
- Must be manufactured to carry structural load.
- These features must be certified by approved institutions.

How can we reduce variation in structural timber?

- Choosing the right material for the purpose of use
- Quality classification and certification with appropriate norms
- Classification according to appearance (visual) characteristics
- Resistance classification
- Appropriate technical drying
- Engineered structural wood materials (EWPs)

Why is it a good building material?

- It does not pollute the environment
- It is recyclable, reusable
- It is aesthetic and ergonomic
- It is long lasting
- It is strong and solid
- It is ideal for building purposes
- It provides good sound and heat insulation
- It is a flexible material, provides endless usage possibilities

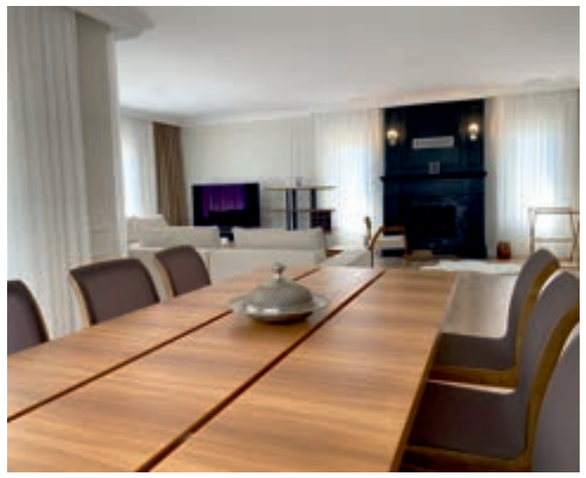
Combating Climate Change

Material	Net Carbon Emissions in Production(kgC/ton)
Structural wood	33
Brick	88
Glass	154
Recycled steel	220
Concrete	265
Concrete Block	291
Recycled aluminium	309
Steel	694
Plastic	2502
Aluminium	4532

Density

The most important advantage of wood as a building material over other materials is that it is light but has high resistance and elasticity properties.

Material	Density (kg/m^3)	Resistance (Mpa)	Resistance/ Density 10^{-3} MPa.m^3/kg
Structural steel	7800	400-1000	50-130
Aluminium	2700	100-300	40-110
Concrete (at pressure)	2300	30-120	13-50
Flawless coniferous tree wood (in tow)	400-600	40-200	100-300
Flawless coniferous tree wood(at pressure)	400-600	30-90	70-150
Building timber (in tow)	400-600	15-40	30-80
Fiberglass (in tow)	2600	3400	1307
Carbonfiber (in tow)	1750	4300	2457



Engineered structural wood products (EWP)

- Free from resistance-reducing defects
- Well dried
- Limited exposure to moisture
- Anisotropy effect reduced
- Dimensional stability provided
- High load carrying capacity provided
- Variations in technological features are minimized
- Well standardized
- Can be used in heavy constructions
- Offering unlimited size options
- Can be produced in the desired form
- High added value provided

Saral Wooden Technology, within **Saral Construction Group**, is the pioneer and leading company of the sector, which has achieved concepts with a visionary perspective.

Wooden-system structures, which are intensively built in all developed countries of the world, are preferred for the sake of public safety and public health, and are even required in risky grounds and areas.

With wooden system buildings, people are offered healthy, eartquake-safe, pleasant, comfortable and natural living spaces.

Accuracy is the basic principle in the architectural design, production and even sales and marketing of the construction activities of reinforced concrete and wooden construction systems in the companies of our group.

Quality and TSE guaranteed products are preferred in wood technology application and use of correct materials.

The main policy of our company is to ensure the participation of all personnel in the quality, environmental and occupational health and safety management system, and to monitor and continuously improve its effectiveness.

To produce static calculations by adhering to the system in all phases of our construction

To always be open to innovations without compromising on quality and to determine continuous improvement and producing perfection at every point as our basic philosophy

To understand, respond and meet customer needs and expectations in the best way possible. To submit the houses at the promised time during the sales process.

To ensure the satisfaction of our employees in the company, projects and all departments

To ensure the prevention of environmental pollution and the continuous improvement of environmental performance in all production, assembly and service stages. To minimize field risks. To continue working with minimum accidents

Saral Construction Group undertakes to convey these policies to all employees and ensure their understanding, and to constantly review and use in goal setting.

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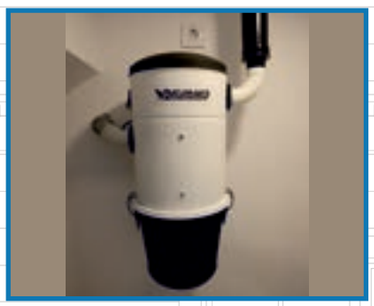
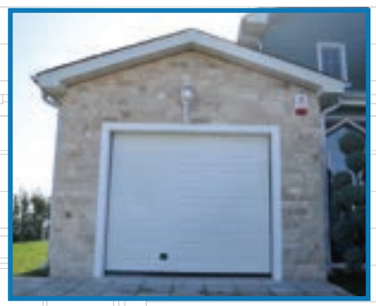

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