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Yapı Sistemleri
Hafif Çelik Prefabrik Yapı Sistemleri

LIGHT STEEL STRUCTURE

Presentation

- *Why Steel ?*
- *Manufacturing Process*
- *Selected References*

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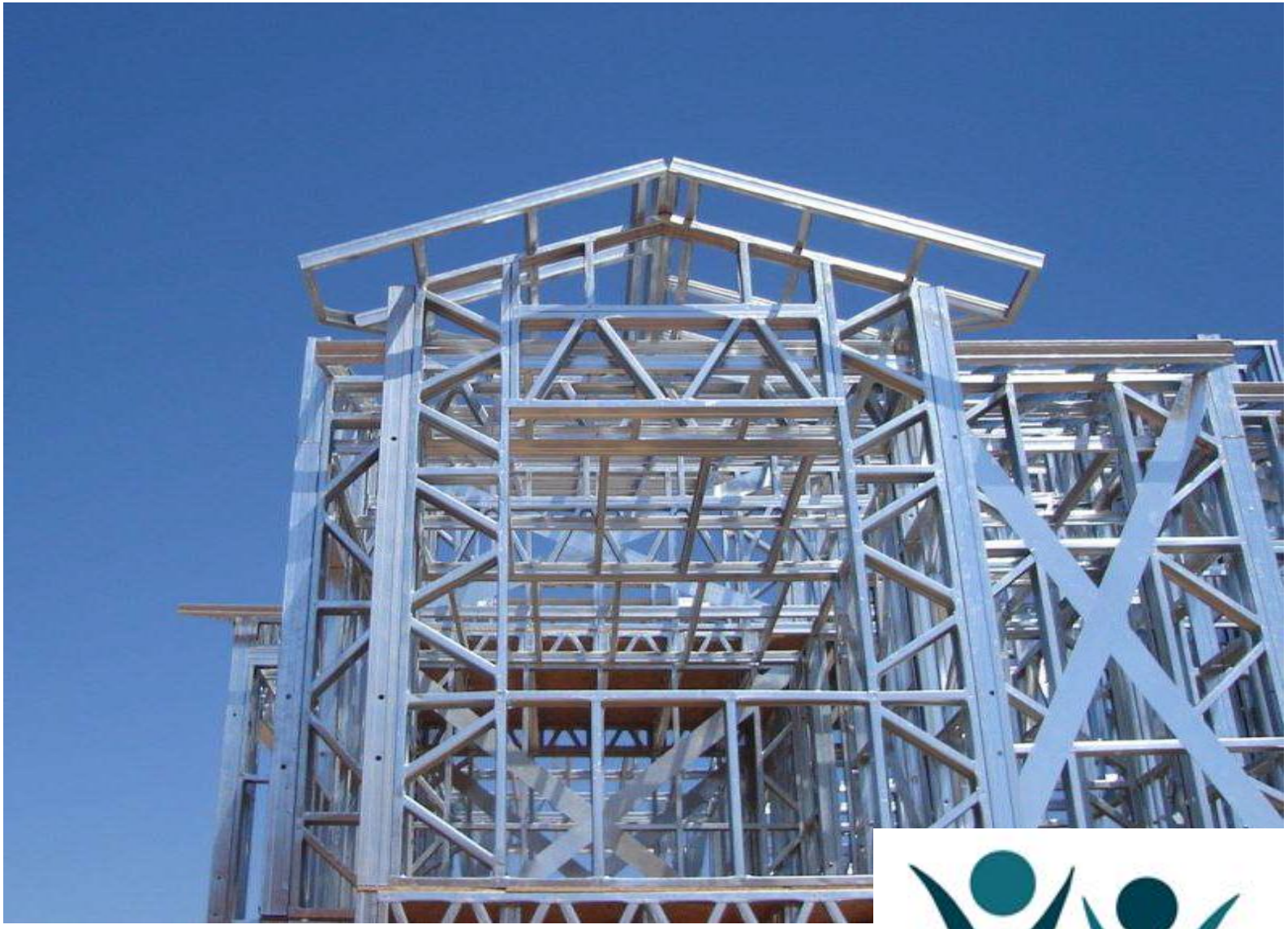

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WHY STEEL?

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- *Steel is the leading material…*
  The leading material of the industrial developments of 19th and 20th centuries is "Steel".

- *Steel is the most common material…*
  Steel is globally the most common material which can be recycled and this re-utilizable characteristic of the steel provides saving from resources and energy.

- *Steel has high usage ratio…*
  Steel is used in the construction of the large buildings such as bridges, office buildings, shopping centers, exhibition buildings and stadiums. In United States of America, Canada, Australia and Japan, intense usage of steel is incommensurably high. Also the usage of steel in construction is about 50% in Europe.

- *Steel is environmentalist…*
  Steel is a resistant and re-usable material. Steel obtained from disassemble of a steel construction is recoverable. Light steel frame of a house could be obtained from 7-8 junk automobiles.

- *Steel is economical…*
  In steel construction, dimensions of the bearing elements are smaller than wood and concrete, which enables more usage area and as a result provides the construction area to be used more efficiently. Reasonable prices and the short time period required to complete construction also increases efficiency.

- *Steel is earthquake resistant…*
  Steel has high strength, ductility and low weight. Steel constructions are 10 times lighter than the reinforced-concrete ones thus the earthquake strength enforced to the steel construction will be 10 times reduced.

- *Steel construction is fast…*
  Since there is no need for concrete except for the foundation and basement, erection of the steel construction can be made rapidly without depending on the weather conditions. Installation of a 200 sq/meter house can be completed 5 days.

MANUFACTURING PROCESS

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- *Architectural Design*
- *Structural Design*
- *Shop Drawings*
- *Production*
- *Assembly*
- *Foundation*
- *Erection of Frames*
- *Clading and Insulatıon*
- *Plumbing and Electricity*
- *Interior Finishing*

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MANUFACTURING PROCESS

Architectural Design

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MANUFACTURING PROCESS

Structural Design

- *Dead loads are determined according to architectural details.*
- *Live load, snow load and wind loads are calculated according to related specifications.*
- *Earthquake loads are calculated according to related specifications for proper zone.*
- *Critical roof purlin, ceiling beam, wall stud and floor joist are checked against imposed loads in order to prevent member forces to exceed the capacity.*
- *Floor joists are analysed and designed by SAP 2000 software.*
- *According to the analysis results, additional screws are used together with rivets where necessary.*

- *All calculated lateral loads are carried by flat strap Xtype bracings and diagonal struds to minimize loads.*

- *Special anchorage details are used to transfer the bracing tension to foundation.*

Specifications and Regulations :

- *AISI Specification For the Design of Cold-Formed Steel Structural Members, 2007 Edition*
- *ASCE-7 "Minimum Design Loads for Structures"*
- *International Building Code 2009*
- *International Residential Code 2003*
- *Prescriptive Method For Residential Cold-Formed Steel*
- *Framing, North American Steel Framing Alliance*
- *Design of Cold-Formed Loadbearing Steel Systems*
- *Technical Instructions, US Army Corps of Engineers*

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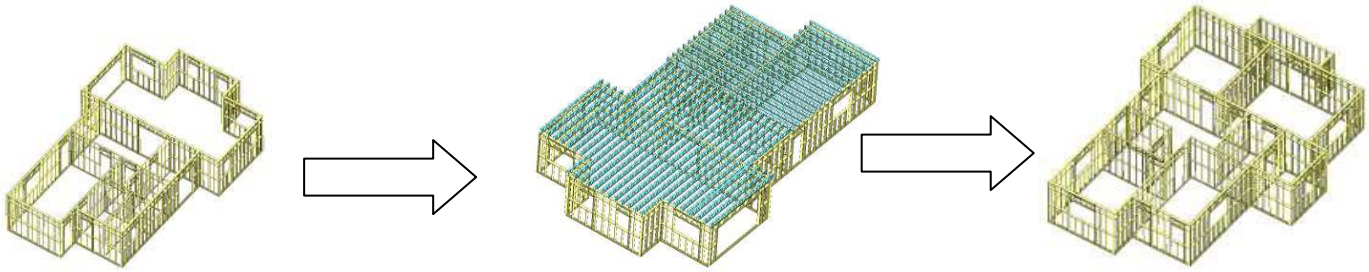
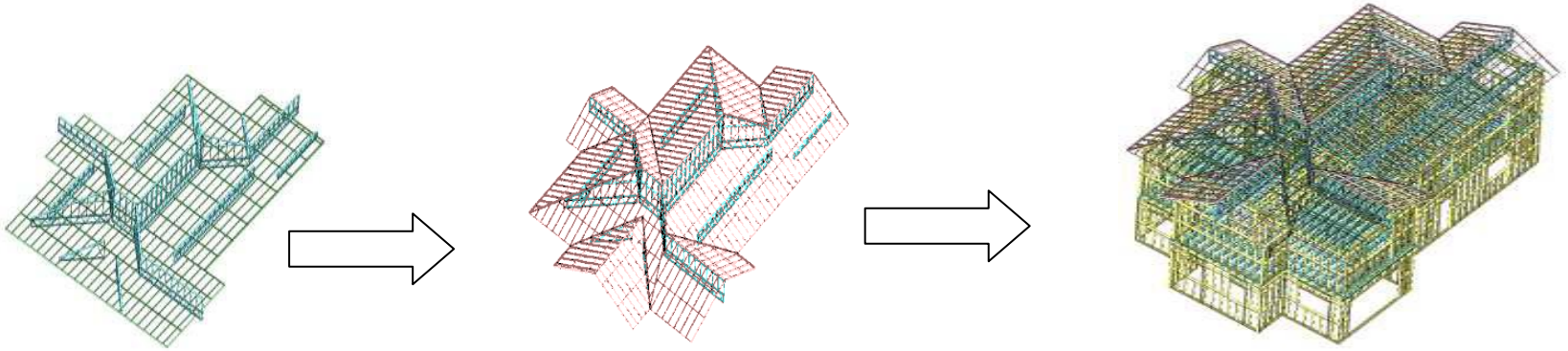
Design Parameters	D(mm)	B(mm)	L(mm)	R(mm)	T(mm)	A(mm2)
5_140_080_S220	140	47	12	3	0,8	199,1703
5_140_120_S220	140	47	12	3	1,2	296,4234
5_90_080_S220	90	47	12	3	0,8	159,1703
5_90_120_S220	90	47	12	3	1,2	236,4234

MANUFACTURING PROCESS

Shop Drawings





MANUFACTURING PROCESS

Cladding/Insulation

Tyvek Cladding

Plaster Cladding

MANUFACTURING PROCESS

Cladding/Insulation

XPS Cladding

Fibercement Cladding

MANUFACTURING PROCESS

Cladding/Insulation

OSB+EPS Cladding

Shingle Cladding

MANUFACTURING PROCESS

Plumbing / Electricity

- *Plumbing and installation requirements are applied through wall and joist spaces.*

MANUFACTURING PROCESS

Interior Finishing

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SELECTED REFERENCES

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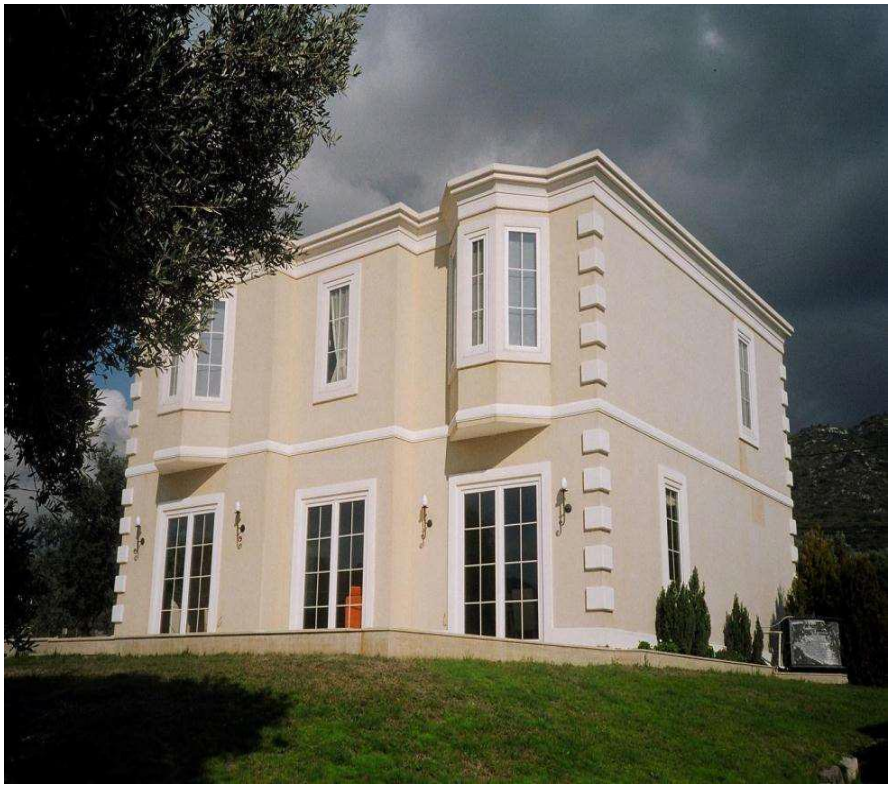

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Presentation

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