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Stadt Rosenheim

Holztechnisches Museum Rosenheim

bezirk oberbayern

Museum of Wood Technology and Wood Processing Rosenheim

Room 1

Table 1 - Summary of exhibits

The museum covers an area of approximately 400 m^2 (4305 ft^2) demonstrating the techniques of history in primary and secondary wood processing. Many examples of wooden products are presented in the showcases.

Table 2 – Wood as a raw material

Wood is the only renewable product on the earth. One third of the land area is covered with forests, but only 8 % is utilized in the timber trade and industry. Trees are the largest and oldest living objects.

Table 3 – Biology of wood

The long-fibred cellulose and lignin as the bonding agent result in the strength of wood. Wood is also a reflection of its environment as a natural product.

Table 4 – Properties of wood

Size, shape and distribution of the various cell-wall structures are influenced by the characteristics of the raw material and its special features like weight, colour, grain, hardness, machinability, cleavability, hygroscopicity, thermal conductivity, elasticity and dimensional stability.
Mankind made use of the high strength properties especially in buildings.
Life condition of a tree: Water (H_2) linked with carbon dioxide (CO_2) generate under solar-energy sugar, which builds up cellulose and oxygen (O_2).

Table 5 – Engineered wood products and timber economics

Up to now wood is still in world's raw material no.1.
The entire German forest industry accounts for a labour force of 670.000 employees covering 5 % of the GNP. (Gross National Product)
To experience wood with all senses the new sensory castor invites to find out the different characteristics of wood with eyes, ears, nose and sense of touch.

Museum of Wood Technology and Wood Processing Rosenheim

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The Museum is a facility of the
district of Oberbayern and the city of Rosenheim

bezirk oberbayern Stadt Rosenheim

Opening hours :

Monday to Saturday:	from 10:00 to 17:00
each 2. and 4. Sonday per month:	from 13:00 to 17:00
Closed:	Monday and Holiday

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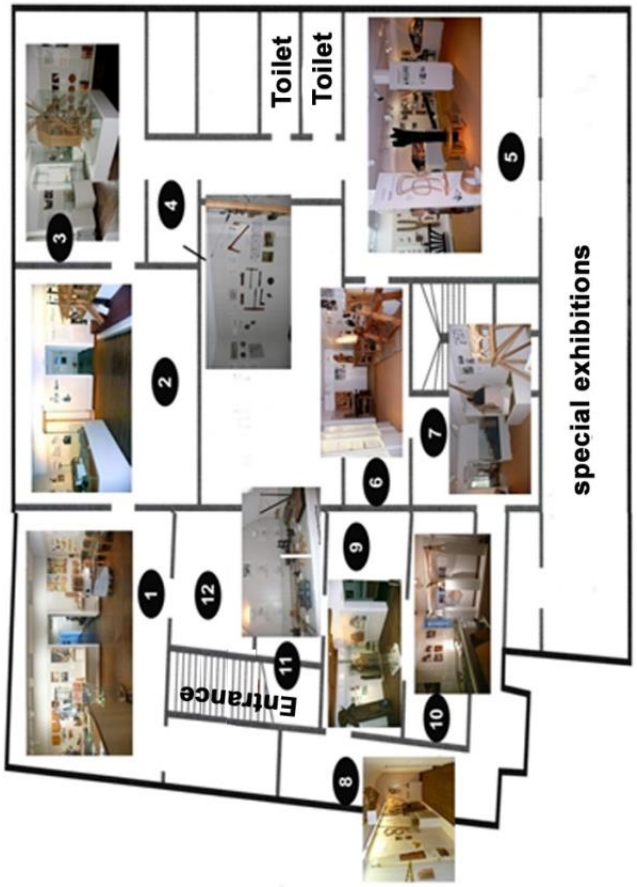

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Room 2

Table 6 – Wood harvesting

Forest authorities in Germany regulate all woodland operation to ensure the annual increment growth rate is greater than the consumption.
Harvesting, logging and hauling are closely related to the development of forest tools, equipment, harvestors and forest roads.

Table 7 – Primary wood processing

Round wood (logs) will be converted depending on species and nature of the wood into lumber, flitches or balks.
Development of powered-energy.
Mankind has always tried to replace the power consuming hand sawing operations by other energy resources like animals, water, wind or steampower.

Table 8 – Sawmills

Water-powered sawmills for log break down were already established in the 14 th century. The basic construction components for these machines were made of wood. The main wear parts of steel were not been replaced till 1850.

Table 9 - Technology of crankshaft saws

These simple saws, named as Venetian saws, were installed predominantly in the southern part of Germany. The rotating water-wheel movement was transformed over a crankshaft into a reciprocating movement. The reconstruction of the sawmill in the small village Nußdorf about 10 km south of Rosenheim and the saw mill from the Hohe Asten, rebuilt in Rohrdorf, also a small village about 8 km south of Rosenheim, demonstrate this type of sawmill.

Room 3

Table 10 - Technology of a crankshaft saw with transmission.
On small creeks or rivers with low flow human tried already in the 17th century to speed up the reciprocating saw frame movement by use of gears and belt transmission. This type of saw established in Unterkirnach (Allgäu) was driven by an overshot water-wheel.

Table 11 –Technology of knocking saw
The knocking or pounding saw was in use in the region of the Black Forest and in the north of Switzerland.
Small technical modifications were necessary to lift the saw frame by two or three cams. The gravity sawing movement was performed by dropping the frame, which generated the knocking sound.
A copy of the knocking sawmill was installed in Hinterzarten (Black Forest)
Crankshaft saws are built on the basis of cast iron and steel.
An operational mock-up of a frame saw (headrig) of 1920.
Log handling and sorting line of modern log yards.
State-of-the-art chipping headrigs can facilitate any sawing pattern.

Table 12 – State-of-the-art log converting lines
The linking of the different log break down facilities through optimising the yield of logs will be converted in the future on nearly automated production lines.
Sawn lumber has to be air-dried for quality assurance. Besides open air-drying, kiln-drying-operations are very important for all remanufacturing operations in secondary wood processing.

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Table 23 – Technology of veneering
The first industrial plant for the manufacturing of veneer was established at the turn of19th century. The German woodworkers could produce peeling machines and veneer saws so accurately that adequately thin veneer-leaves could be manufactured.
The model shows machines used in the final manufacturing of a veener plant, built between 1900 and 1910.

Training in wood processing in Rosenheim
The first college to improve the standard of training people employed in wood plants was established in 1925. From this college three institutions developed:
the training institution and college of wood technology, forestry, saw mills, wood processing and plastics technology,
the technical college for wood technology and business and
the University of Applied Sciences with the faculty of wood technology and wood processing/engineering.
These three institutes guarantee that the wood-industry has well educated employees as well trained operators and foremen, technicians, engineers.
Rosenheim is a worldwide known town in terms of wood. Representatives of industry, teachers and professors come from all over the world to Rosenheim to be informed about training options and modern wood finishing techniques available. Even special training courses are carried out for foreign employees.

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Room 10

Table 24 – Carpenters and engineered wood construction

3.000 years ago the carpenters, as wood craftsman, were employed for the building of houses, bridges and many other village properties.
The strong connexion within guilds remained until late last century.
Carpenter`s tools and devices are shown in use.
Models of old and new log homes
Models of a southern and a northern half-timbered house.
Model and original piece of the Bavarian radio transmission tower.
Designed of American pinewood.

Ancient and innovative wood-constructions

Carpenters and engineers had to rethink to repeatedly design bridges and domes to ensure their viability. Ensuring that their structure could support its own weight (difficult over large span-lengths) often led to compromise designs.
The model of the Stegener bridge is a conventional frame-work of half timbered design.
The suspension bridge across the Rhein-Main-Donau-Channel (near Essing) is a unique building. The 9 laminated beams were glued together on site to a nearly 200 m tie-beam.
The model of the "Expo Roof" in Hannover on a of scale 1:40 shows the first double curved stringers, which are glued to shells of 20 m by 20 m.

Room 4

Room 5

Table 14 – History of woodworking tools

For more than 99 % of human history only tools made out of wood, bone and stone have ensured survival.
About 4.000 years ago bronze was used for making tools. For 2.800 years iron has been used. During the last century rapid development for cutting tips has taken place from steel, alloys, stellite, carbide, mono and polycristaline diamonds (PKD, HKD) even laser or water jets are used as cutting methods.

Table 15 – The wheelwrights

The wheel is one of the most important inventions in human history. For thousand of years wood was used for all types of wheels. The wheelwright or cartwright had to have basic knowledge of the material combined with special skills for the craft. The development of motorwheels replaced this craftsmanship during the 1950. With the manufacturing of sledges (sleds), skils, ice sticks (Bavarian curler) and other sporting items, the cartwright followed the trade of sports good.

Table 16 Coopery

The manufacturing of containers like tubs, keys, casks and barrels needed skills and experience in making staves.The model demonstrates a manually operated transmission and machines for manufacturing barrels.

Table 17 – Woodcraft

Carpentry – joinery – cabinet-maker. Egyptians 3.000 B.C. as well as later on the Greeks and the Romans were skilled craftsman, who knew how to handle wooden joints, veneering and marquetry.
The joinery trade is despite industrialisation growing up.
The hand plane was replaced more and more by machine operations.
In the centre of the room a sculpture is made of bog oak of more than 7.000 years.

Room 6

Room 7

Table 18 – machine for secondary wood processing and process operations

More than one century lies between the timber manufactured products, which were partly produced with hand-powered facilities, electrically driven and CNC operated machines.

Table 19 – Technical constructions designed in wood

Mankind always tried to replace the hand-powered operations by using of animals when water or wind power was not available.
In technical constructions wood was the preferred material, which was replaced by iron at the time of railroad development.
A model treadmill driven by a bullock used as a drive for a waterpump.
Another mock-up is the harbour crane of Markbreit (Bavaria) driven by man via tread-wheels.

Table 20 – Wooden Water and Saltwater Pipe System

As a universally available material through history wood itself has been used over thousands of years in the construction as wells and pipelines.
What is specially remarkable is the saltwater pipe system connecting the towns Bad Reichenhall and Traunstein (Upper Bavaria) completed in 1617, installed by 9.000 pieces of wooden pipe units. Furthermore an 80 km long saltwater system was built in 1810 from Bad Reichenhall to Rosenheim. Up to 1958 the saltwater system with 24.000 wooden pipe units guided the saltwater to the saltworks of Rosenheim.

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Technical equipment in wooden components

Room 8

Table 21 – Construction automobile and aircraft

Since the invention of the wheels for more than 5.000 years ago, the human being has always tried to move in the countryside easier and faster. Wood enabled the development of comfortable vehicles, till to self-powered automobiles. In the first aircraft made, wood was used because of it's excellent mechanical characteristics. The low density and weight was advantageous in aviation development.
Pictures and original parts show the development of automobiles and aircrafts, as well as the construction of propellers and gliders.

Table 22 – Boat- and ship construction

Even for the transportation on rivers and lakes people tried to use wood with existing tools for better construction and even to economize on wood.The over-exploitation of forestry in neighbouring countries of the oceans, to make wood available as the important raw material to build ships, left remarkable damage.
Duc-out canoes, warships and the original wood and canvas kayaks of Klepper in Rosenheim are shown in pictures.

Table 23 – Construction of sporting goods

Knowledge of the characteristics of different species of wood, combined with the manual dexterity were most important to produce useful equipment for hunting in order to survive.
Sporting goods were developed out of hunting equipment. To day, wood dominates in producing sporting goods, even in modern skis.
Samples of old and modern sporting goods point out the development.