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FABRICATION OF PLYWOOD BICYCLE

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Abstract - *Bicycle frames on the market are generally made up of a pipe connected by welding process. Bicycles are made by big companies, because it requires forming technology of raw materials for the pipe production and sophisticated welding technologies. So as to scale back the dependence on raw materials and pipe welding processes, an alternate technology for bicycle frame manufacturing process is investigated. To realize these objectives, it's necessary to revamp the bicycle frame suitable bicycle is formed from Stanislaw Plowsky's Bono Cycle, which is curved and laminated. The frame is formed of plywood. The plywood cover bicycle is lighter in weight than the steel cover bicycle, features a visual appearance, is environmentally friendly, and is really cheaper than a steel casing bicycle. This document reports our efforts towards the planning and manufacture of plywood bicycles. The joining process must be specially developed to attach the plywood columns. Tested bicycle, it can withstand various uncertain road and smooth travel*

Key Words: wooden frame, Bonobo, plywood, Stainslaw

1. INTRODUCTION

The main objective of this foremost eligibility development is to design and manufacture plywood bicycles in developing countries and assemble them in the shortest possible time. The plywood bicycle is not identical to the old-style bicycle, but the main modification is that the traditional bicycle setting is substituted with plywood, which is light, flexible and easy to perceive. Well, Polish designer Stanislav Plosky used that Flex Petition and it used to be bicycles for each other. Called Bonobo, the frame of this bike is made of curved, laminated layers of plywood. Bosobo's "Plowsky said," in addition to the style, it is well-suited for urban cyclists who work toward the movement. "The press uses the common property of timber - it is lightweight, built around and vibrates densely. The bike geometry is a riding area agreed with the buyer who understands the joy of the cyclist. Guarantees." The bike is equipped with a speed drive train and pressure-drive conservative circle brakes, though Stanislav says it can run an internal rigging center.

2. METHODOLOGY

Selection of materials

Plywood sheet thicknesses range from 0.06" to 3.0". Mainly normal thicknesses range from 0.25" to 0.75". The typical size of plywood sheets worn during home construction is 4ft wide and 8ft long. Additional regular widths are 3ft and 5ft. Length in 1ft increments ranges from 8ft to 12ft. Large sheets may be required, especially for the equivalent application of shipbuilding.

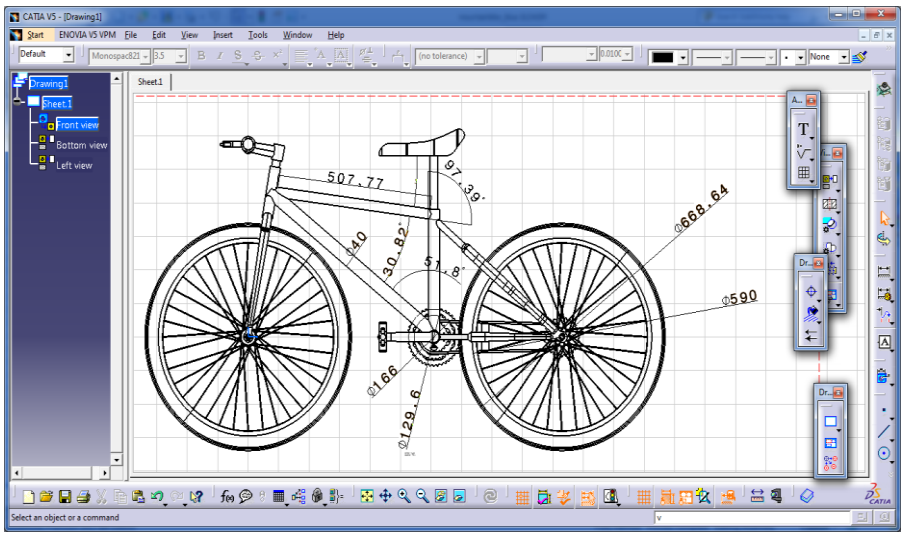

Fig1: 2D drawing of plywood bicycle

Manufacturing method

Trees are used for small diameter plywood. In most cases, they arise within the plant and plant and are affected by the plywood business and reduce the impairment from tree insects or fire. The usual arrangement of trees for plywood sheets is 4 feet by 8ft or 1.2 by 2.4 meters.

Dimensions

From figure 1, it is a virtuous bicycle and an on-road bicycle from Roberts Cycle, the design is done by CATIA V5 and analyzed by ANSYS.

Fabrication

Corner countertops are used to create curved chains that have a long cut, similar to those that cut and backsplash. On the countertop a sink is installed to cut the front and both sides using blade deflection and sharp circular saws. There is no wide circular shoe between the sink cutting line and the backsplash, but the narrow shoe of most narrow body jogs is a complete steal

Fig 2: Mild steel joints with plywood

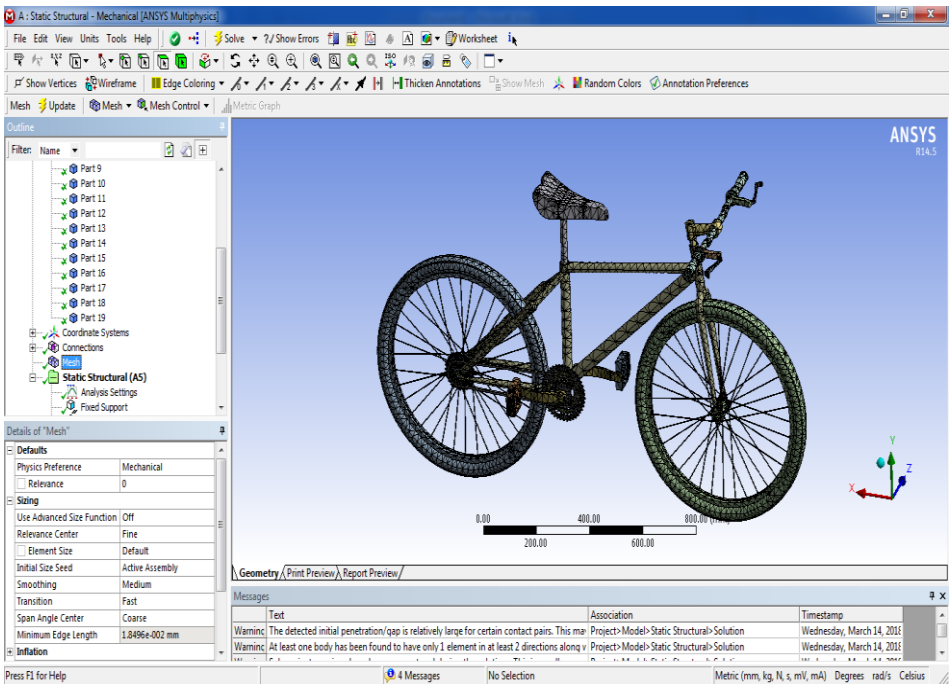

Fig 3: 3D model Mesh of bicycle

Fig 4: Final bicycle Fabricated

The packaging is removed as they have purchased additional parts, for example, tires, front handles, paddles and more from the commercial center. For packaging for parts. Concerns and strains are determined by the physical properties of the reduced steel, as indicated by the bike copy, that physical properties are given in the investigation.

Stainless steel

Table 1: Material properties of Stainless steel

Property	Value	Units
Elastic Modulus in X	207000	N/mm^2
Poisson's Ration in XY	0.27	N/A
Shear Modulus in XY		N/mm^2
Mass Density	7860	kg/m^3
Tensile Strength in X	685	N/mm^2
Compressive Strength in X		N/mm^2
Yield Strength	292	N/mm^2
Thermal Expansion Coefficient in X	1.7e-005	/K
Thermal Conductivity in X	16.3	W/(m·K)
Specific Heat	502	J/(kg·K)
Material Damping Ratio		N/A

Plywood

Table 2: Material properties of plywood

Property	Value	Units
Elastic Modulus	3000	N/mm^2
Poissons Ratio	0.29	N/A
Shear Modulus	300	N/mm^2
Density	159.99	kg/m^3
Tensile Strength in X		N/mm^2
Compressive Strength in X		N/mm^2
Yield Strength	20	N/mm^2
Thermal Expansion Coefficient in X		/K
Thermal Conductivity	0.05	W/(m·K)
Specific Heat		J/(kg·K)
Material Damping Ratio		N/A

Rubber

Table 3: Material properties of Rubber

Property	Value	Units
Elastic Modulus in X	2620	N/mm^2
Poisson's Ration in XY	0.34	N/A
Shear Modulus in XY	970.4	N/mm^2
Mass Density	1120	kg/m^3
Tensile Strength in X	90	N/mm^2
Compressive Strength in X		N/mm^2
Yield Strength	103.65	N/mm^2
Thermal Expansion Coefficient in X		/K
Thermal Conductivity in X	0.233	W/(m·K)
Specific Heat	1601	J/(kg·K)
Material Damping Ratio		N/A

Results and Discussion

The load and physical properties of the deformation = 0.024327 mm and the pressure = 8.8949MPa, the pressure = 4.5403e-5 and the weight of the bicycle is reduced and it can stand up to 100 kg and is completely corrosive. Resistant and water proof.

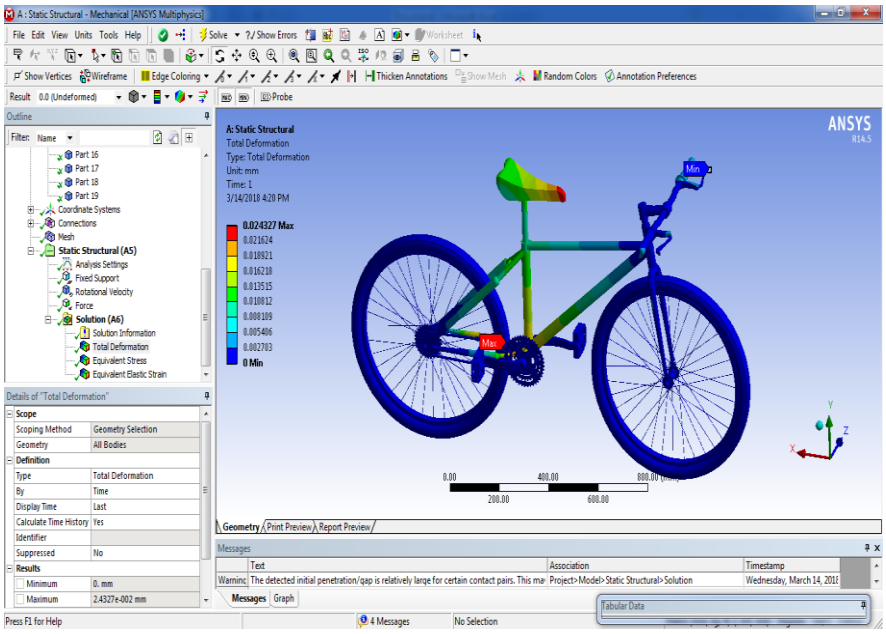

Fig 5: load calculations

3. CONCLUSION

A low-weight, low-priced plywood bicycle use Indian plywood tested also it will be likely to develop it advance and bring it in the Indian marketplace. A walk towards a better future with green surroundings. Analysis results showed that the minimum safety factor occured in the starting condition, that was equal to 3.70

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