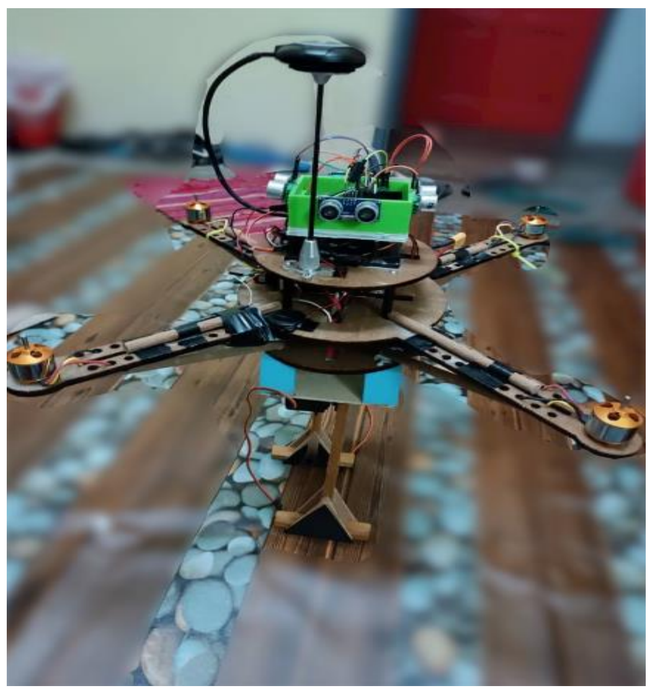
PUTRA UAV 2.0 : INSPECTION DRONE FRAMEKIT
MADE UP OF BIO-DEGRADABLE NATURAL FIBRE COMPOSITE MATERIAL



INVENTION

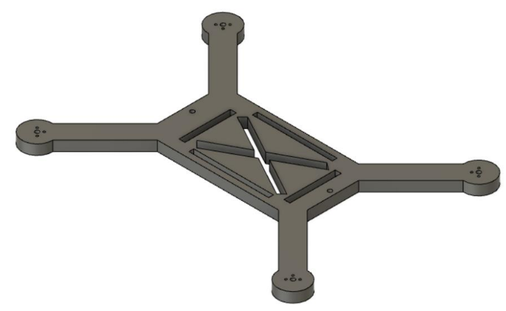
The main project, is develop an inspection drone. The structural and design of the drone had been developed. Few designs of drone frame kit had been designed and will be built. The static structural analysis of the frame kit was analyzed in Ansys and will be decided to built the frame from the Pineapple Leaf Fibre(PALF) or Kenaf Fibre.

- The drone frame are made from Kenaf composites. The unique aspects of this drone is that it is lightweight, biodegradable, and low electrical conductivity. In addition, when the frames fractured, it can be fixed by depositing a layer of kenaf coated with epoxy on the fractured part.
- The problems with the current drones is that it is non-biodegradable, not cost-effective and the frames are frequently damaged.
- the disposal of drones promotes the accumulation plastics and metals in the landfill. Therefore, unlike other drones, this innovation made use of green material, which could degrade when it is disposed.

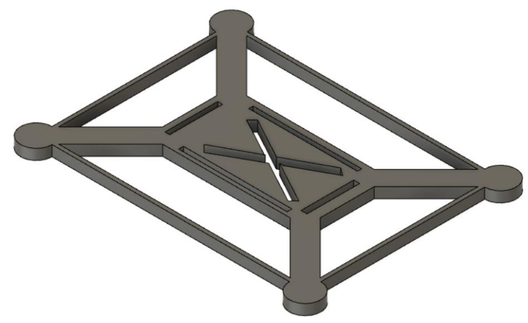
ADVANTAGES

- The Putra UAV 2.0 drone has low electrical conductivity, light frame, and its structure cannot be detected by radar.,
- it is also biodegradable and could be easily maintained or replaced.

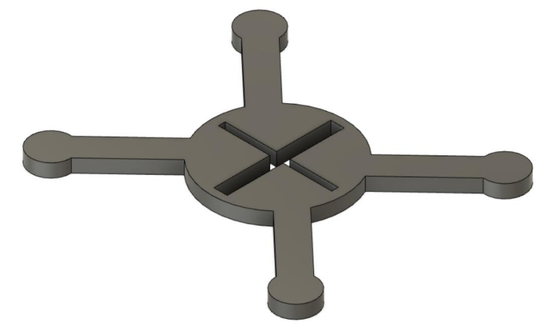
DESIGNS FOR FRAME KIT



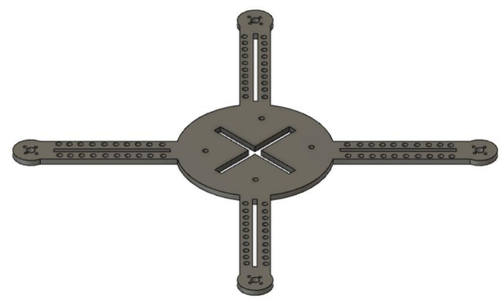
Design 1



Design 2



Design 3



Final Design Based on Design 3

RESULT

Designs	Material	Total Deformation	Maximum Elastic Strain	Maximum Equivalent Stress(Pa)
Design-1	PALF	$3.5759e^{-4}$	$5.9654e^{-4}$	$2.552e^{6}$
Design-1	KENAF	$1.227e^{-2}$	$2.0102e^{-2}$	$2.5377e^{6}$
Design-2	PALF	$3.264e^{-4}$	$1.810e^{-2}$	$2.3082e^{6}$
Design-2	KENAF	$1.121e^{-2}$	$1.810e^{-2}$	$2.284e^{6}$
Design-3	PALF	$2.145e^{-4}$	$4.663e^{-4}$	$1.987e^{6}$
Design-3	KENAF	$7.373e^{-3}$	$1.596e^{-2}$	$2.005e^{6}$

MARKET POTENTIAL

Currently, the market size of the drone has begun to increase significantly in several industries such as aerial photography, emergency management, remote sensing & mapping, agriculture, inspection & monitoring, wildlife research & preservation, and others

TRL 4

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