

Material Replacement:

# ABS Material Replacement in Drone Production

Braskem FL105PP Polypropylene (PP) Filament

Braskem FL900PP-CF Carbon Fiber Reinforced Polypropylene (PP) Filament

## CHALLENGE

XMBOTS, one of Brazil's largest drone manufacturers for industrial applications such as agriculture, livestock, energy, aerospace, security, logistics, etc. They are constantly seeking ways to improve upon the efficiency of their remotely piloted aircrafts (RPA). As part of their innovation process, they continuously research new materials that will allow them to reduce the weight of their designs without sacrificing strength and durability.

## MATERIAL REPLACEMENT

XMBOTS has adopted the use of 3D printing as a core part of their manufacturing process. They have traditionally used ABS filaments for many of their parts due to the abundant availability and familiarity with this material. In partnership with Insper and Braskem, XMBOTS performed a material replacement study of their battery connector, antenna support, and IMU supports in an RPA application. They replaced ABS with a combination of Braskem FL105PP and FL900PP-CF. The parts not only performed well, but actually outperformed the previous ABS solution for the parts in the following categories:



**Chemical  
Resistance**



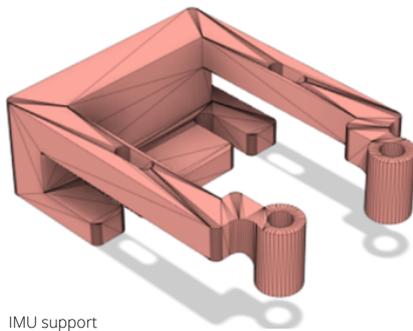
**Weight  
Reduction**



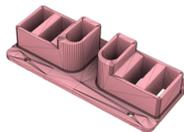
**Time to  
Manufacture**



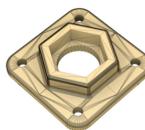
**Reduce  
Production Cost**



IMU support



Battery connector



Antenna Support

## At a glance

Introducing XMBOTS to Braskem Polypropylene filaments allowed them to increase the efficiency of existing part designs, and provided them with new materials to help drive further innovation in future designs.

## Key Results

FL105PP \* FL900PPCF  
vs. ABS Filament



**21%**  
Cost Reduction



**47%**  
Reduction in time to  
manufacture



**31%**  
Weight Reduction

*Note: Information included on this document should be used for informational purposes only. Braskem does not guarantee any results presented in these case studies. Properties may vary based on print conditions and external environment*

**Braskem**



[www.braskem.com/usa/3d-printing](http://www.braskem.com/usa/3d-printing)



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In collaboration with:

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