Testing is an inseparable element for software or robotics development. The aerial robotics has obtained much attention recently and being used in military, commercial, medical, film making, and agricultural sectors. The aerial robots have a wide variety of purposes based on their involvement sectors. The design of a robotics system is very challenging and error prone task. The major amount of time normally spent for the verification of the desired product. Generally, the verification and testing take place as a post implementation process, which increase the development iterations. In this thesis work we present our approach for incorporating the agile technique, Behavior Driven Development (BDD) in component based software engineering for aerial robotics. We use the gazebo simulator with TUM package and Robot Operating Systems to ensure the standard technology used in this domain. BDD offers an unique way of describing features and allows the testing and development hand to hand. We intend to verify the applicability of this BDD approach for aerial robotics application development considering the variety facilities offered by BDD and to cover the various aerial robotic features.