

BAK - EM50 blimp drone

Peter Lobner, updated 10 March 2022

The Research and Development Center “BAK and Technologies” (BAK) is part of the Physics Technology Institute of the National Academy of Sciences of Belarus. BAK is the only Belarus enterprise certified for the batch production of unmanned aerial vehicles of its own design.

In 2014, BAK developed the small, non-rigid, conventional BAK EM50 as a remote-controlled, general purpose, surveillance drone airship. Yuri Yatsyna, Head of BAK, reported that the airship can be equipped with integrated surveillance packages that can include gyro-stabilized video, photo, infrared and multispectral camera, or integrated video and infrared modules. Potential applications include state border control, oil and pipeline inspection, mapping surveys, forestry and other ecological monitoring, agricultural monitoring, military aerial reconnaissance, and monitoring the progress of military exercises.

Flight tests of the unmanned BAK EM50 were completed in Belarus in mid-2014.



BAK EM50. Source: TopWar

BAK EM50 Technical Characteristics

Parameters	BAK EM50 drone
Hull length	8.7 m (28.5 ft)
Hull diameter	2.6 m (8.5 ft)
Maximum take-off weight	23 to 30 kg (51 to 66 lb)
Maximum payload weight	up to 1.5 kg (3.3 lb)
Propulsion	2 electric motors driving vectorable shrouded propellers
Flight speed range	0 to 40 kph (0 to 25 mph)
Maximum wind gusts	14 m/s (31.3 mph)
Maximum flight altitude	up to 500 m (1,640 ft)
Flight range, km (radio line-of-sight)	up to 50 km (31 miles)
Flight endurance (air speed up to 3.7 m/s)	up to 4 hours



The gondola and shrouded, electric motor driven vectorable propulsors attached to hard points on the bottom of the envelope.

Source: Top War

In September 2014, BAK delivered the first EM50 airship to Russia for trials as a surveillance drone. Joint tests of the unmanned airship were successfully completed later in the year. Further orders from Russia were expected at the time. Yuri Yatsyna reported that BAK can manufacture and supply at least five BAK EM50 drones within six months and as many as ten if the demand existed.

For more information

- “Belarus ready to supply recon dirigibles to Russia,” Republic of Belarus (business news), 23 October 2014: https://www.belarus.by/en/business/business-news/belarus-ready-to-supply-recon-dirigibles-to-russia_i_16334.html
- “Unmanned Aerial Systems for Ecological Monitoring (UAS EM) Based on Airship,” BelvneshpromService: <https://www.bvpservice.by/en/catalog/unmanned-aerial-systems-ecological-monitoring-uas-em-based-airship>
- “Russia purchased from Belarus an unmanned airship “BAK EM,” Top War, 23 October 2014: <https://en.topwar.ru/61036-rossiya-priobrela-u-belorussii-bespilotnyy-dirizhabl-bak-em.html>

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