



Masat-1 will be launched by ESA's Vega

Hungary's first satellite, Masat-1 obtained a unique opportunity to take part in the European Space Agency's (ESA's) Vega maiden flight campaign. The agency's new rocket will be launched from Kourou (French Guiana) at the end of January 2012. Of course the first launch of a new series of rockets is not without any risk, therefore we still reserve the possibility for a secondary launch option, for which the financial support is still to be obtained.

The possibility to take part in the launch campaign of Vega, ESA's new, low orbit launcher came in October 2011. This opportunity enables Masat-1 to reach orbit ahead of schedule, possibly at the end of January 2012. The new launcher and the tight schedule imposed various extra tasks on us, as many tests and a significant amount of documentation had to be modified or prepared again in less than a month. The tests and required documentation were successfully completed on time, therefore we got the chance to get on-board Vega altogether with the satellites of various other European countries. Of course the first launch of a new series of rockets is not without any risk, therefore we still reserve the possibility for a secondary launch option, for which the financial support is still to be obtained. The reserve copy of Masat-1 might be launched by the Russian Soyuz during the autumn of 2012 if necessary.

Masat-1 was shipped to ESTEC, the technology centre of ESA in the Netherlands at the beginning of November. ESA specialists examined if the satellite complies with the specifications of the launch vehicle and those of the CubeSat standard. The integration of the satellite came next. It was performed in Toulouse during the previous week. Final tests were carried out with success, therefore Masat-1 can be shipped to the launch facilities in Kourou together with picosatellites from 5 other countries.

The first Hungarian satellite, Masat-1 – the name of the satellite is an acronym of "*Hungarian Satellite*" in Hungarian – is a small sized picosatellite. The development has started 4 years ago at the Budapest University of Technology and Economics Faculty of Electrical Engineering and Informatics. The satellite, which complies with the *CubeSat* standard, is a cube having a size of 10x10x10 cm and a mass of less than 1 kg. It was developed within the cooperation of two university departments, the Department of Electron Devices and the Department of Broadband Infocommunications and Electromagnetic Theory.

The development of Masat-1 is a pilot project, with the main focus on education. After Masat-1 is deployed to orbit, the satellite starts to collect information on its operation and on the environment. The collected data is to be transmitted to the ground station for processing. A semi-active magnetic stabilizer is installed on-board, which is capable of changing the satellite's orientation. The required orientation can be commanded from the ground.

The Masat-1 project has multiple aims. The first aim is to promote high quality engineering education to create a reliable basis for the growth of the Hungarian space-related sector. Another important aim is to obtain design and development experience and also to have a reference in the field of space devices, demonstrating the capabilities of Hungarian talents. The project aims to provide the basis of a new technology baseline which will enable the acceptance and launch into space of our and other professional domestic laboratories' scientific experiments.

The work shall not stop after Masat-1. Possessing all required competence and having an internationally acknowledged board of engineers we can provide professional advance for students and a well-educated new generation of engineers for our industrial partners. We have established an extensive connection network with domestic and foreign designers and manufacturers, giving us the capabilities to participate in international space projects.

We target a segment of space industry, where – with adequate support – we can be competitive even on an international level. We can provide a well-formulated strategy for educational, research and industrial development projects. To continue along this path and to reach sustainability it is important for Hungary to be a member of ESA. This would provide a possible area of breakthrough, not just by the high amount of the membership fee which can be tendered but also by opening new possibilities to participate in international projects which are only available to ESA members. We would also like to maintain a continuous evolution prior to our ESA membership to have a well-educated team of engineers capable of representing Hungary in the European space industry on the highest level. This would also enable to maintain jobs and to create even more jobs in a technology sector where the added value is the highest. Space-related applications (GPS systems, weather forecast, Earth observation, remote sensing and monitoring) are vital for modern countries. In compliance with the neighbouring countries we support the idea that space industry should be considered as a matter of strategic importance in Hungary.

Additional information:

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<http://cubesat.bme.hu/sajto>

Cubesat intergration at ESA:

http://www.esa.int/SPECIALS/Education/SEM3L0WWVUG_0.html

Vega launch campaign:

http://www.esa.int/esaCP/SEMC2OTWLUG_index_0.html
