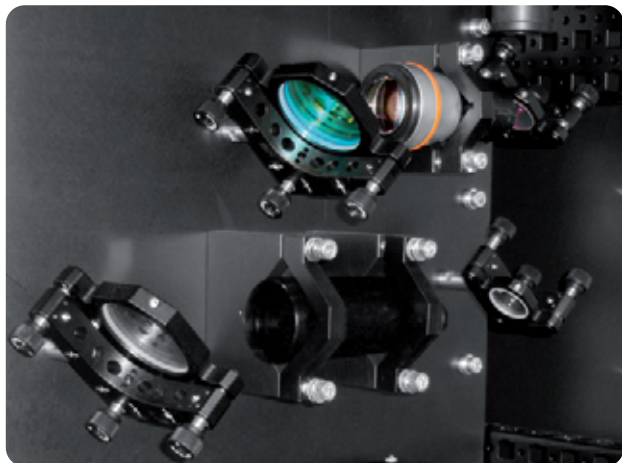


# Raman Lidar for Ground Truthing ESA/ESTEC Satellite Data

Kipp & Zonen has supplied an advanced Raman Lidar system, designed and manufactured by Raymetrics of Athens, to the European Space Research and Technology Centre of the European Space Agency (ESA/ESTEC). At ESA/ESTEC more than 2000 specialists work on the development and management of projects including Earth observation, human spaceflight, telecoms and satellite navigation.

Lidar (Light Detection and Ranging) is an active remote sensing technique for monitoring atmospheric processes and properties with high temporal and spatial resolution and it is a key part of the ADM-Aeolus mission. This space program makes observations of global wind profiles, vertical aerosol and cloud profiles, using a space-borne Lidar. Its main goal is to improve the quality of weather forecasts and to gain a better understanding of atmospheric and climatological processes.



*Inside the Raman Lidar system*

A space-borne Lidar system is a powerful measurement tool but, in order to provide accurate measurement data, regular calibration of such a system is required by comparison to ground-based instruments. ESA/ESTEC now has a state of the art Raymetrics Raman Lidar system to perform 'ground-truthing' atmospheric profile measurements within the framework of the ADM-Aeolus mission. The system was installed and commissioned by our experts and ESA/ESTEC personnel received comprehensive training.

The Raman Lidar systems designed by Raymetrics provide high quality data combined with reliable turn-key outdoor operation. In addition, Raymetrics has expert engineering capabilities to provide customization of the Lidar systems at the client's request. For these reasons ESA/ESTEC chose our Lidar system to satisfy their measurement requirements. The system supplied to ESA/ESTEC is a two wavelength Raman Lidar system with depolarization detection. The system emits

simultaneous green and ultraviolet laser pulses. It derives accurate atmospheric profiles of aerosol backscatter, extinction and optical depth with a range of over 15 km. The depolarization detection provides information on the shape of the aerosols. The measurement results will be used to calibrate the data from the ADM-Aeolus satellite instruments.



Our Lidar systems incorporate the best available laser, detectors, optics, electronics and a 400 mm receiving telescope to deliver superior performance. Each system comes with a comprehensive user friendly software suite to operate the system, process and visualise the Lidar data with the click of a button.

For more information on this and other Lidar configurations, please visit [www.kippzonen.com](http://www.kippzonen.com) or contact our product manager Martin Veenstra at [Lidar@kippzonen.com](mailto:Lidar@kippzonen.com).

To learn more about the ADM-Aeolus mission, go to [www.esa.int](http://www.esa.int) ■

## SUMMARY

The ADM-Aeolus mission of ESA makes observations from space of global wind profiles, vertical aerosol and cloud profiles. The goal is to gain better understanding of atmospheric and climatological processes. Recently ESA/ESTEC acquired our Raymetrics Raman Lidar system to measure accurate atmospheric aerosol profiles with a range of over 15 km. ESA uses these measurements to calibrate the space borne Lidar on the ADM-Aeolus satellite mission ■