

LiDAR

From approaching ISS to removing space debris – our RVS serves a wide range of applications

With our RVS[®] portfolio we are the worldwide leading company in the area of rendezvous- and docking operations in space. Our major advantage is that we are able to support the different missions with just one hardware platform.

The beginnings of the Rendezvous- and Docking Sensors (short: RVS) go back to first experiments in the frame of the missions STS-84 and STS-86. In 1997, the prototype version of today's RVS had been used for the docking between Space Shuttle Atlantis and the MIR space station.

Since 2010, the RVS – and later on the RVS3000 as well – have established themselves as the standard sensor for autonomous approaches of unmanned space transporters with the International Space Station ISS.

In addition to the past missions ATV and HTV of the European Space Agency ESA and the Japanese Space Agency JAXA, Jena-Optronik's RVS 3000(-3D) is flying today on the American Cygnus cargo spacecraft by Northrop Grumman, as well as on Sierra Space's Dream Chaser in the future. The US start up Axiom Space builds its commercial space station also with support of the RVS 3000.

With the beginning of this decade, the fields of application of the RVS 3000 has been increased significantly with the possibility to approach also non-cooperative targets (like satellites). In the frame of the MEV-1 and MEV-2 conducted by US space company Northrop Grumman, the lifetime of the IS-901 and IS-1002 satellites could be extended for several years – thanks to our sensors and the given possibility to perform a docking with these spacecraft. Along such servicing missions for lifetime extension, the RVS3000-3D will be also used to clean up space debris, e.g. in the frame of Astroscale's ELSA-m mission.

But also in the area of space exploration, Jena-Optronik's RVS portfolio is in great demand. In addition, to catching a probe with Mars material in orbit in the frame of the MSR ERO mission (Mars Sample Return – Earth Return Orbiter), astronauts will be guided by a Jena-Optronik sensor on their way to the moon when they approach and dock with the Lunar Gateway (the planned space station in the moon orbit) or the

Human Landing System to go down to the moon's surface

The possibilities to use the RVS portfolio are manifold and it is planned to extend the RVS capabilities towards a landing application in order to enable a safe landing of spacecraft on other celestial bodies, like Moon and Mars, in the future.

Moreover, we are already working on a miniaturized of our RVS, the so-called μ RVS, which shall enable Rendezvous- & Docking operations that are conducted by smaller satellites and spacecraft.