Meet MHI

Life with MHI

MHI's innovative technologies and outstanding products surround us,
expanding across land, sea, and air, and even into outer space.
Throughout the world, MHI is quietly supporting every aspect of people's daily lives.

Meet 09

Tanegashima Space Center, Kagoshima Prefecture

Dolly, the world's most unique dedicated rocket transporter! The real power beneath the scenes

On launch day, Dolly, the Mobile Launcher (ML) transporter, carries the launch vehicle with its satellite payload some 500 meters from the vehicle assembly building to the launch pad. Dolly raises the ML and launch vehicle, and under automatic control moves to the launch pad. Sensors continually monitor any road unevenness, and adjust the two hydraulically controlled 56-tire units. The 112 tires are thus finely tuned to maintain perfect balance and vertical level of the rocket to within ±0.2 degrees. Positioning at the launch pad is also highly accurate to within 25 millimeters on all sides. Dolly carries the approximately 290-ton, 53-meter high precision rocket at a speed of 2 kilometers per hour with no vibration; it is truly the fruit of MHI's heavy load transport technology.

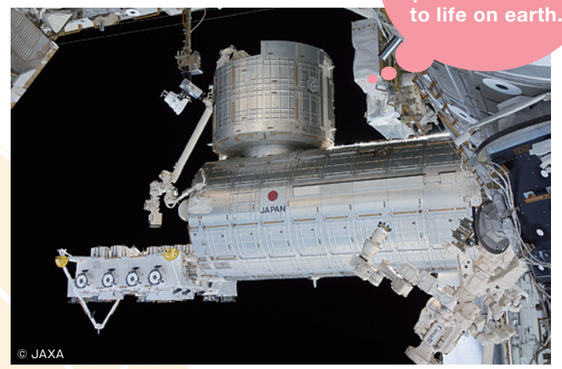
Dolly's power generation system also supplies electricity to the loaded satellite.

Meet 10

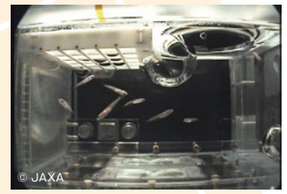
Aboard the ISS: about 400 km above the earth

Japan's first space activity base! Kibo, the Japanese Experiment Module

The International Space Station (ISS) is a space laboratory, and the U.S., Russia, Europe, and Japan have each developed their own experiment module. Kibo is Japan's first manned experiment facility and large enough to accommodate four astronauts. MHI manufactured the experiment logistics module pressurized (interior storage) section, pressurized (interior laboratory) module, and experiment equipment. Making the best use of its advanced technologies, MHI has designed the Environment Control and Life Support System (ECLSS) to provide a constant lab temperature, and a structure to protect astronauts from cosmic radiation and space debris. The module temperature, humidity, and air pressure are controlled to allow astronauts to work in a comfortable, quiet and shirt sleeve environment, dressed in casual attire. Experiments, making use of the space environment, such as cell culture or medaka breeding, are conducted daily to provide invaluable data that cannot be obtained on the ground. Before too long, the experiment results will help in the development of new drugs and in furthering our knowledge of diseases, and it is hoped that these space benefits will soon be applied on earth.



The pressurized (interior laboratory) module, 11.2 m long and 4.4 m in diameter, houses the power and transmission control systems to maintain Kibo.



Studying medaka bone density helps clarify the function of bone-making cells and will be useful in osteoporosis research.

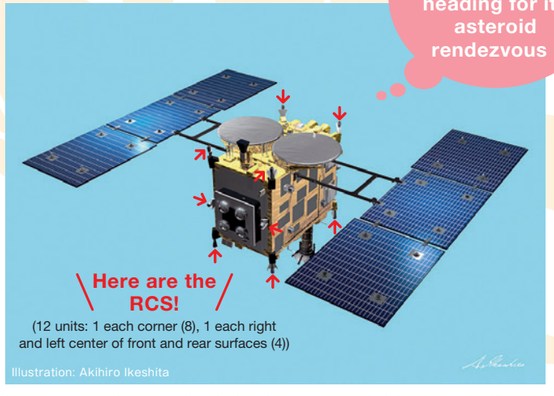
Space Systems

Meet 11

Outer space: about 300 million km from earth

Reaction Control System (small rocket engines) of the sample collector *Hayabusa*

The asteroid explorer *Hayabusa* has successfully accomplished its mission of landing on the asteroid "Itokawa" to collect ground surface samples and return to Earth. MHI manufactured the explorer's Reaction Control System (RCS) to generate thrust from chemical reactions. RCS gas jets enable attitude control used for the turning of solar cell modules toward the sun and fine orbit adjustments. When it was time for *Hayabusa* to land on Itokawa, there was a glitch in the fine attitude control device. Fortunately, the RCS acted as a substitute for the device and managed a safe landing. *Hayabusa*'s successor, *Hayabusa*2, scheduled to launch in December 2014, aims to visit the asteroid "1999JU3" and to bring new surface samples back to earth. MHI's RCS is ready and waiting to help complete this new mission.



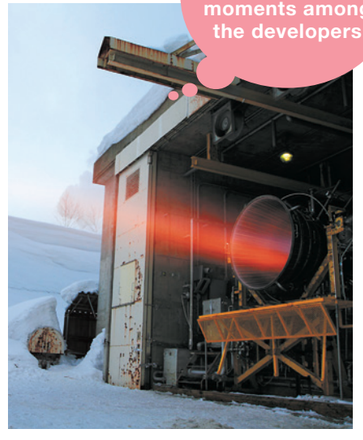
New measures for operation, fuel maintenance, and piping have significantly improved the reliability of the *Hayabusa*2' s RCS.

Meet 12

Odate City, Akita Prefecture

Final check base of engine performance! Rocket engine combustion test facility

Before installation, rocket engines undergo severe performance testing at the MHI Tashiro Field Laboratory. Since opening in 1976, the laboratory has tested seven models of engines for Japan-made launch vehicles, and has contributed invaluably to Japan's space development projects. Tests are conducted by actually igniting the engine. A typical combustion test takes about 50 seconds; a first-stage engine thrust exceeds 100 tons and per second will burn as much as 3.5 drums of propellant (fuel and oxidant). Tashiro's strict standards give the final seal of approval on all processes from the manufacture of components through to assembly. In August 2014, an engine combustion test was completed for the H-IIB launch vehicle, scheduled to load HTV5. Since last year, testing to develop engines for the new flagship launch vehicle has also been making steady progress.



Each first-stage engine combustion test for H-IIA and H-IIB launch vehicles runs about 50 seconds and produces a 3,000°C flame blast.

You can also view this on the "MHI Graph" page of MHI's website (http://www.mhi-global.com/discover/graph/index.html).

MHI graph Search