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Nasa's new plan: To make O₂ on Mars

Picks 7 Tools For Next Mission

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Mumbai: With eye on human occupation of Mars, Nasa on Thursday unveiled a selection of seven instruments which will be on board the Mars 2020 rover to conduct unprecedented science and exploration technology investigations.

One of the instrument includes the Mars Oxygen ISRU Experiment (MOXIE), an exploration technology investigation that will produce oxygen from Martian atmospheric carbon dioxide. The \$1.9 billion rover will include an experiment that will turn carbon dioxide in the Martian atmosphere into oxygen. William H Gerstenmaier, an associate administrator for Nasa, said oxygen could then be used to make rocket fuel and for future astronauts to breathe. Taking fuel to Mars for return flights would be heavy and expensive.

The device operates like an engine but in reverse, said Michael Hecht, an MIT scientist who is running the test project. It will make about three-quarters of an ounce of oxygen an hour. If it works, then a larger device — 100 times bigger — would be launched two years before astronauts go, currently scheduled for sometime in the 2030s. The bigger device would start making enough

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oxygen for the return trip before astronauts ever launch to Mars, Hecht said. The other part of rocket fuel, the propellant, can be made from light hydrogen that is brought from Earth or other chemicals mined from Martian dirt or atmosphere.

The Mars 2020 mission will be based on the design of Mars Science Laboratory rover Curiosity. The new rover will carry more sophisticated, upgraded hardware and new instruments to conduct geological assessments of the rover's landing site, determine the potential habitability of the environment, and directly search for signs of ancient Martian life.

It will help identify and select a collection of rock and soil samples that will be stored for potential return to Earth. According to Nasa, the rover will also help advance our knowledge of how future human explorers could use natural resources available on Mars.