

# Interstellar Technologies' TENGARocket Launches Successfully, Reaches Space 3rd Time First in Japan Commercial Payload Ejection and Live Stream

TENGA Co., Ltd. (Minato, Tokyo; CEO: Koichi Matsumoto; hereafter "TENGA") and Interstellar Technologies Inc. (Taiki, Hiroo-gun, Hokkaido; CEO: Takahiro Inagawa; hereafter "Interstellar") successfully launched their "TENGA Rocket" joint project on July 31, 2021 at 17:00 JST (08:00 UTC), reaching space\* at an apogee altitude of 92km (initial estimate).

Interstellar's MOMO series sounding rocket is the only privately developed rocket in Japan to reach space. This marks the third successful flight, and the second in a row following on from the July 3 launch of "Rocket of NEJI".

The first single-sponsor flight of the MOMO series, TENGARocket succeeded at the first privately funded payload ejection and recovery and the first livestream from inside a space vehicle in Japan.

\*FAA definition



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## Documents and images related to this press release:

<https://drive.google.com/drive/folders/1XnkK4zvZ4ZaXSQI576U5efHw0ReaTa9y?usp=sharing>

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# ① TENGA Rocket Launch Results

## TENGA Rocket Launch Results (Preliminary)

Launch Time:	Saturday July 31 2021, 17:00 JST (08:00 UTC)
Apogee Altitude:	approx. 92km
Apogee Time:	Saturday July 31 2021, 17:03 JST (08:03 UTC)
Splashdown Time:	Saturday July 31 2021, 17:10 JST (08:10 UTC)
Splashdown Location:	29.54km southeast of the launch site
Payload Ejection:	Successfully ejected near apogee
Payload Recovery:	Recovered by boat 28.01km southeast at 18:55 JST

Values above are preliminary and may change on further analysis.

Video of the launch can be viewed at:

<https://drive.google.com/file/d/1NVCOUuNfYeMinf9jiOJm0ORBRRUaB3hn/view?usp=sharing>

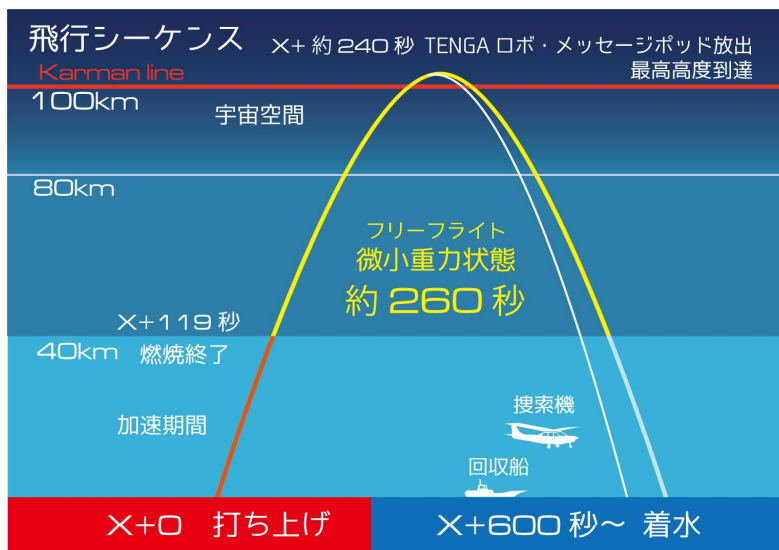
## Two Successive Successful Launches

Interstellar set the success criteria for the two launches planned this summer, Rocket of NEJI (MOMO F7) and TENGA Rocket (MOMO F6) to be operation within specification of both vehicles.

Examples of these specifications include:

“Nominal ignition of main engine and roll control system”, “Nominal liftoff from the launcher”, “Nominal burn of the main engine for the planned duration”, “Correct attitude control and splashdown within the restricted area”, “Nominal telemetry reception”.

Both Rocket of NEJI and TENGA Rocket successfully achieved all these specifications.

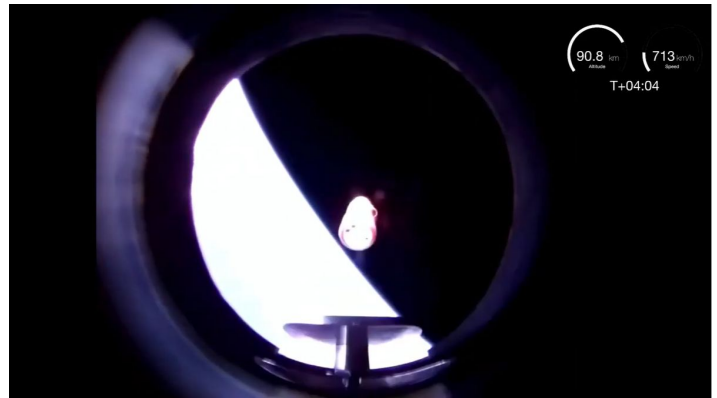


## ② TENGA Rocket Mission Results

### First Successful Commercial Payload Ejection and Recovery in Japan

TENGA and Interstellar attempted the message pod ejection mission **MISSION ① Carrying wishes of Love and Freedom from 1000 people to space** and the ejection and recovery of TENGA ROBO **MISSION ② TENGA ROBO to Space and Back** with TENGA Rocket.

Both were successfully ejected near apogee, and the splashed down TENGA ROBO was successfully recovered by boat after being spotted from the air using a sea marker.



▲ The Moment of Payload Ejection

· Message Pod	64.8mm×ø37.8mm, 51.1g
· TENGA ROBO	78.2mm×ø34.8mm, 37.6g
· Ejection Port	ø38mm

### The First Step Towards Space TENGA Development



For **MISSION ③ Space TENGA Development**, a TENGA CUP for data acquisition was mounted in the cockpit. Data on the temperature, pressure, and more inside the TENGA while in space was successfully collected. This marks the first step in the development of Space TENGA, which will become a pioneer in space-grade sexual devices for the new era of life in space.

◀ The measurement TENGA flying to space

### Live Stream from Inside the Vehicle

For the TENGA Rocket Project, a cockpit for TENGA ROBO was mounted inside the launch vehicle, and for the first time on a commercial launch in Japan views from inside the vehicle were broadcast live. Cockpit views and the moment TENGA ROBO jumped into space were brought to viewers in real time.

Cockpit view from the live stream ▶



## ③ About the MOMO Sounding Rocket

### From "Rocket Launches" to the Era of "Using Rockets"

MOMO is a sounding rocket privately developed and manufactured by Interstellar Technologies. It reaches an altitude of approximately 100km before ballistically falling back to earth and splashing down into the ocean. The microgravity environment during ballistic flight can be utilized for scientific experiments.

MOMO was developed with the vision of allowing everyone to reach for space, aiming to be **the world's cheapest, most convenient rocket**. Including TENGA Rocket, MOMO has launched 7 times, and in May 2019 MOMO F3 became the first privately developed rocket in Japan to reach space. After a year of development, the newly upgraded Rocket of NEJI (MOMO F7) and TENGA Rocket both successfully reached space.

MOMO can also **adapt to unique missions**. On TENGA Rocket, there were three missions, and in particular the payload ejection and recovery as well as live stream from inside the vehicle were firsts for a private company in Japan.

MOMO boasts a high in-house manufacturing ratio and achieves an extremely low cost by uniting design, manufacturing, testing, and launch operations all under one roof. With both launches so far of the new upgraded design successful, the reliability has also been improved significantly.

Interstellar is now aiming to begin mass production and commercialization, not only for traditional scientific payloads but also for a new yet-untapped sounding rocket marketing and branding market.



#### TENGA Rocket Specifications

Propulsion System	Liquid Fueled Rocket Engine
Propellants	Ethanol / Liquid Oxygen
Thrust	14kN (1.4 tons)
Fueled Mass	1220kg
Dry Mass	370kg
Vehicle Length	10.1m
Vehicle Diameter	500mm
Target Altitude	100km

## ④ Representative Comments

### **TENGA Co. Ltd. CEO Koichi Matsumoto**

Thanks to everyone we were able to have a truly wonderful launch.

We succeeded at the first commercial payload ejection and recovery in Japan. Live streams from inside the launch vehicle were also a first, which we attempted wanting to bring everyone a sense of scale and of how interesting a rocket launch is, as well as what would happen to EGG DOG in the cockpit and so on. Additionally, we were able to gather valuable data from inside a TENGA in space, which we will use in the development of Space TENGA.

This success is thanks to a lot of engineering, trial and error, as well as everyone's wishes.

These wishes create things, create reality, create the future. I think it is very important to dream, to chase the things you like. To be considerate, to never forget gratitude, to accept each other, to share joy. These things are also very important.

Because I believe this will connect to love and freedom. With everyone's power, we can create a world overflowing with love and freedom. TENGA will continue the challenge of love and freedom.

### **Interstellar Technologies Inc. CEO Takahiro Inagawa**

The payload ejection and recovery and live stream were a very big challenge for Interstellar Technologies, but we managed to clearly show the capabilities of MOMO.

With the completion of the new factory in December of last year we are now able to manufacture multiple rockets at once, and successfully launched two in the month of July. With operations having been significantly improved, we were able to launch on time, setting the stage for mass production.

The MOMO series will now make a big step from the testing phase to the operation phase. With the world's lowest cost and high reliability, it will open up a new market for sounding rockets.

### **Interstellar Technologies Inc. Founder Takafumi Horie**

TENGA's president Matsumoto understands manufacturing and was an empathic partner, allowing the project to proceed smoothly. Since president Matsumoto is very particular about staging and video production, I was worried what would happen if the launch failed, but even the recovery succeeded so I'm relieved.

We poured all our resources, and countless hours of hard work into both technology and operation, and I'm proud of it and the success it brought about. President Matsumoto and all the staff at TENGA are also to thank for this result. Coincidentally, today was also president Matsumoto's birthday, and the best weather ever for a MOMO launch. That is good fortune. There were a lot of hard times in the year of delay, but I'm glad it led to this result.

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## ⑤ Missions of the TENGA Rocket Project



It all started when TENGA's CEO Matsumoto was on a TV show together with Interstellar's founder Horie and learned about Interstellar's space business.

Interstellar's vision of *creating a future where everyone can reach for space*, and TENGA's vision of *bringing sexuality to the forefront, for all to enjoy*. With the visions and maker spirit of both companies resonating, the TENGA Rocket project was born.

▼ TENGA Rocket Project Website: <https://rocket.tenga.co.jp/81/>



### MISSION① Carrying Wishes of Love and Freedom from 1000 People to Space

We collected messages from 1000 People, which are stored in a TENGA-shaped message pod which will be mounted to the rocket, and eject everyone's thoughts into space.



### MISSION② TENGA ROBO to Space and Back

TENGA's official mascot TENGA ROBO will ride to space on TENGA Rocket! After reaching space, TENGA ROBO will exit the rocket and return to earth.



### MISSION③ Space TENGA Development

A TENGA CUP outfitted with sensors will be launched on the rocket to observe how it is affected by the flight to space. TENGA Rocket will mark the first step towards Space TENGA development. As a first in history, TENGA will finally go to space!