

# A Study on the Performance Improvement of Dual Tiltrotor ; Switch to Hydrogen Fuel Cell



Kijung Kwon. CEO

## Dual Tilt-rotor

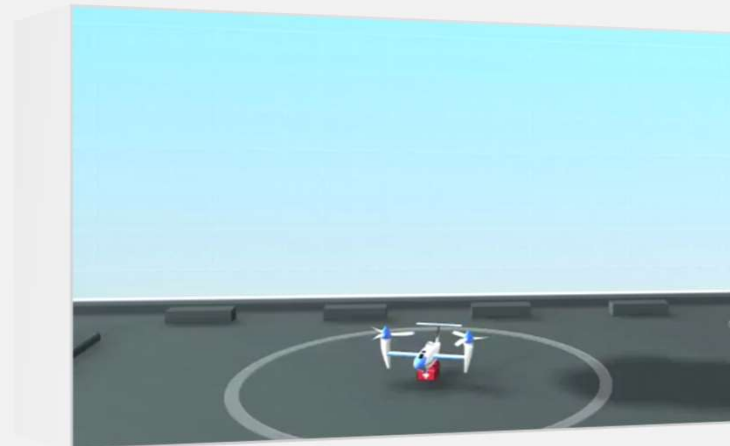
- Narma has the **world 1<sup>st</sup> and only electric** dual tilt-rotor technology.
- Spin-off company of **KARI**(Korea Aerospace Research Institute)

**BREAKING: Army Chooses Bell Textron's V-280 Valor Tiltrotor to Replace Black Hawk**

12/5/2022  
By Meredith Roaten



Photo Bell




5

# How Tiltrotor Flies

EQUAL WELFARE WITH DRONES >

< 2022.11.11



To be the Standard of Drone Deliveries  
by NARMA

From. August 2018

AF200 >

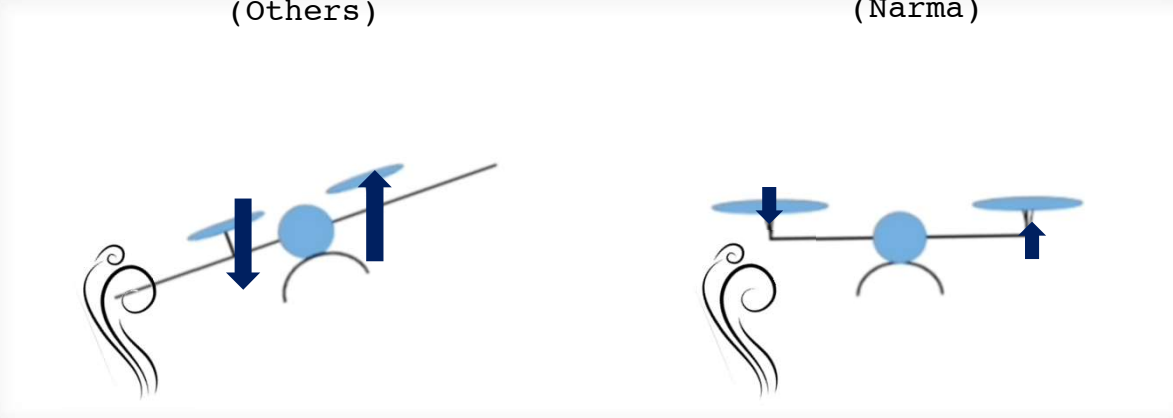
< From. NARMA Inc.

# Core Value



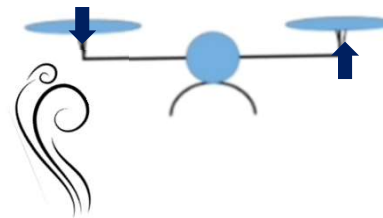
- Highest Wind Resistance

Tilt-prop  
(Others)



Wind gust 12m/s

Tilt-rotor  
(Narma)



Wind gust 15m/s

Annual usage : 200 vs 250 days

## Best for

- Drone Delivery



\*range : 13 miles

- Surveillance from Ships



\*range : 20 miles

# Delivery



[Last Friday in NeoCity, FL]



[Yesterday in Sarasota, FL]

# Core Value - KIOSK

- Ease of use (Patent in KR & US)

Previous



Controller



Ground Control Station

vs.

Now



KIOSK  
(Ground Control System)

## Development Status

AF100

(1kg/20km)



AF200

(5kg/40km)



- **2021 Innovative Product**  
certified by the government

'2019

'2020

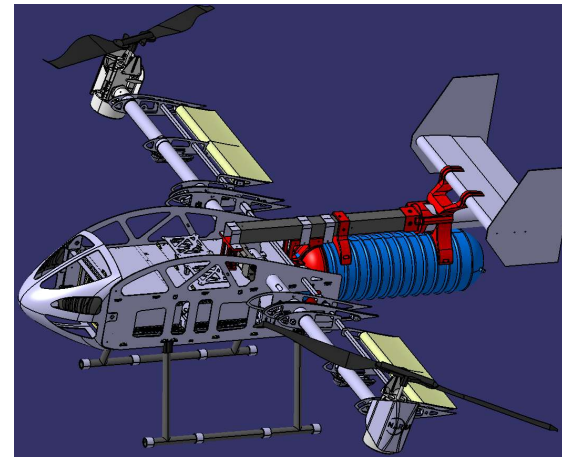
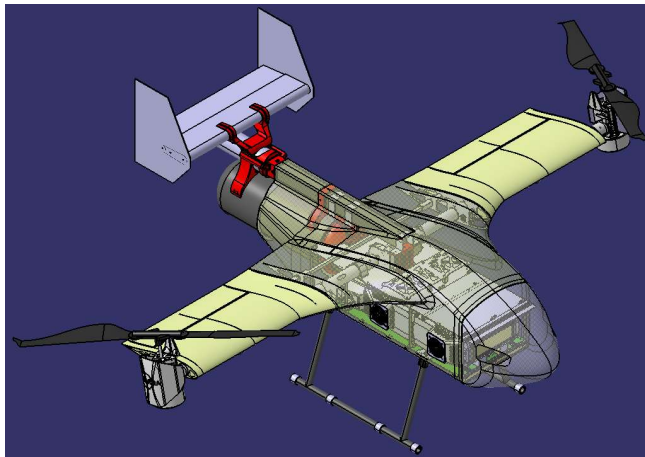
'2021





# Hydrogen Fuel Cell

L x W x H	1675x1850x567mm
Weight(Empty)	12kg
MTOW	20.5kg (5L liquefied hydrogen) 21.5kg (9L compressed hydrogen)
Payload	3.5kg
Flight Time	2.5h(Liquified), 1.5h(Compressed)



# Hydrogen Fuel Cell

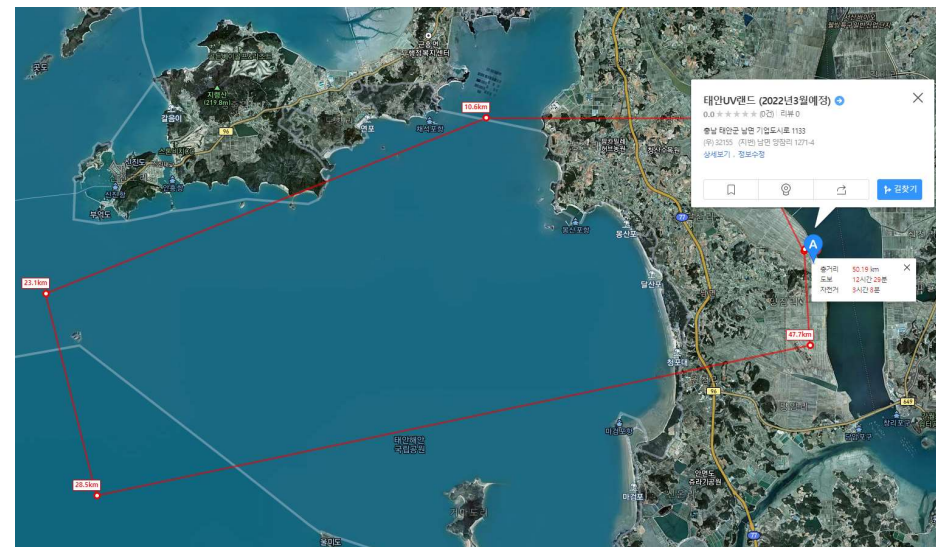
- Using Li-ion battery



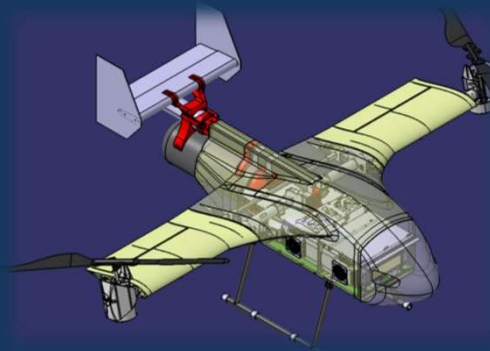
# Hydrogen Fuel Cell

## □ In 2023

- Taean UV Land test site
- 2h/150km
- Test certification



Narma / Electric Dual Tilt-rotor Drone



**Narma / Kijung Kwon. CEO**