

The background features a dark blue-to-orange gradient with a white grid. On the right side, there are several horizontal white wavy lines that resemble a stylized wave or a signal waveform.

**MARINET:**  
**System for safe take-off and landing  
operations of helicopters and UAVs on  
ships and platforms**

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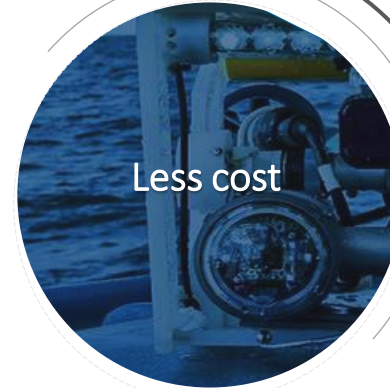
Krylov State Research Center

# UAV on ships

## UAVs today

- Around 67,3 Billions USD (2016-2025)<sup>1</sup>
- UAV of vertical takeoff and landing – 8,4 %
- Significant growth in the use of UAVs on ships and offshore facilities

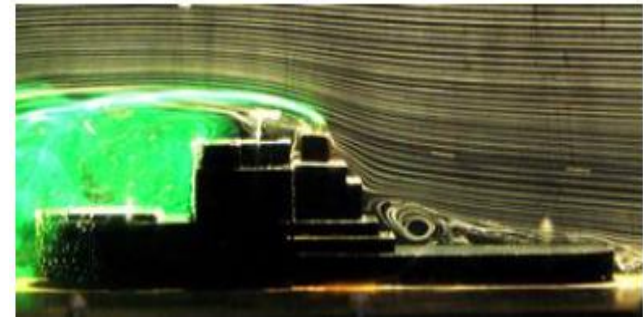
Insufficient use of UAVs on ships due to complexity of operations and high risks



<sup>1</sup> -«Forecast International»

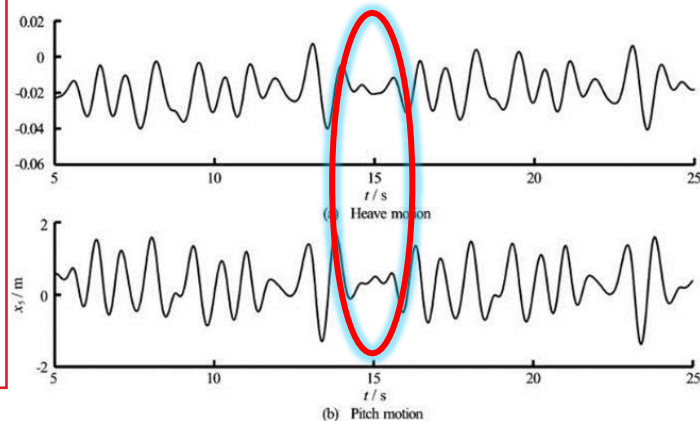
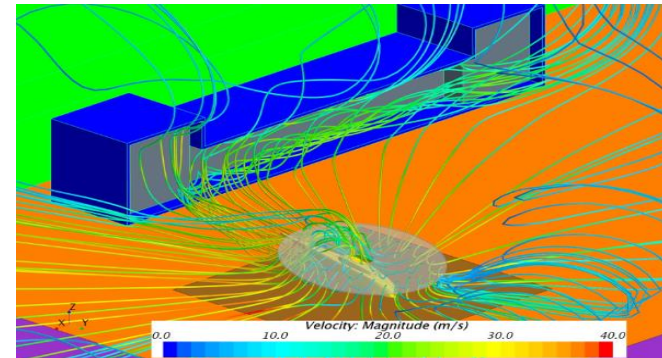
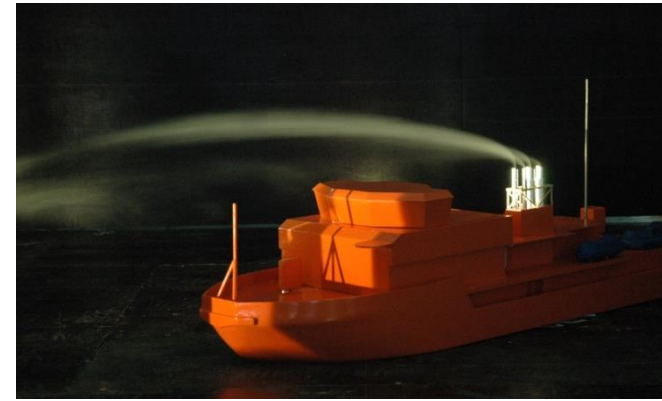
## Issues

- ✓ Complexity of take-off operation
- ✓ Flow specific near the vessel's superstructure
  - flow separation zones
  - low pressure zones
  - big angles of airflow
- ✓ Ship motion in sea waves
  - Irregular process
  - Heave, roll and pitch motion
  - Significant speed and amplitudes of deck motion
- ✓ Risk of damage of the ship and its structures due to UAV, especial at a big distance from the shore
- ✓ Lack of professional UAV operators on board as a permanent member of the team.



The following tasks will be solved within the framework of the project:

- technology for the non-contact determination of air flow parameters near the helipads
- display of real-time information on the air flow structure in the takeoff / landing area
- predicting the structure of the air flow with increasing/decreasing wind speed and changing the heading and speed of the vessel
- prediction vessel's kinematic parameters (amplitude and speed of movement)
- predicting the ship's kinematic parameters with a changing the heading and speed of the vessel



### Techniques

- New equipment
- Possible to install on any ship+UAV

### Risk

- Save take off and landing operations

### Marketing

- New advantages, New opportunities, New markets

### Cooperation

- Integration of UAV produced by China companies and Russian ships

Thank you!

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