

# Panels with cellular aluminum core production

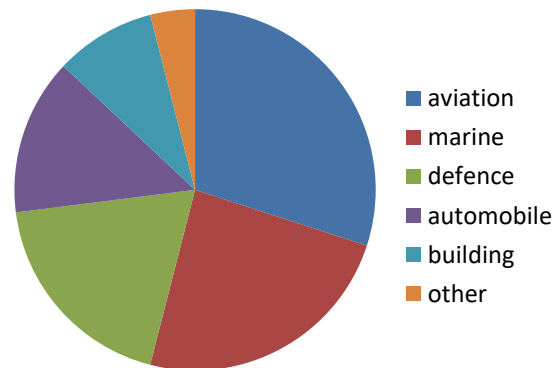
## Market

**The goal:** localization of mass production of panels with cellular core in countries with intensively developing logistics and industrial infrastructure

**Target markets** – China, Russia, Long and Middle East, America

**World market** – 50 mln sq.m./year (\$2,8 bln)

**Trends** – expansion into adjacent areas (VIP - \$12 bln)



**Cellular core panels have a uniquely high specific stiffness (resistance to bending load per unit mass).**

### **Effective application of panels with cellular core:**

- Building industry (facades, walls, partitions, floors, clean rooms) – reduction of costs for installation, transportation, load on the foundation, design
- Vehicle manufacturing (auto, railway cars, sea and river vessels, yachts, airplanes, space) – weight reduction without loss of strength

# Application

SUV



Facades



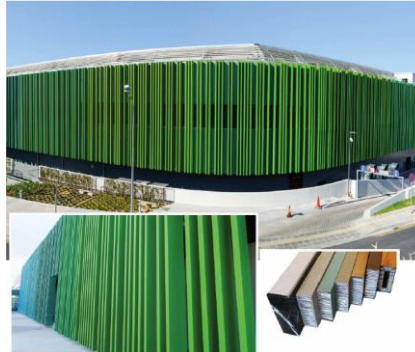
Interior



Clean rooms



Furniture

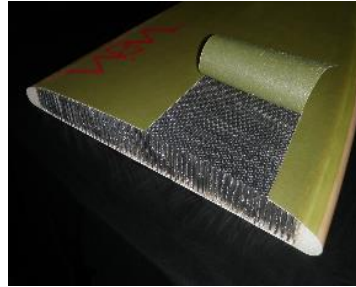


Roof

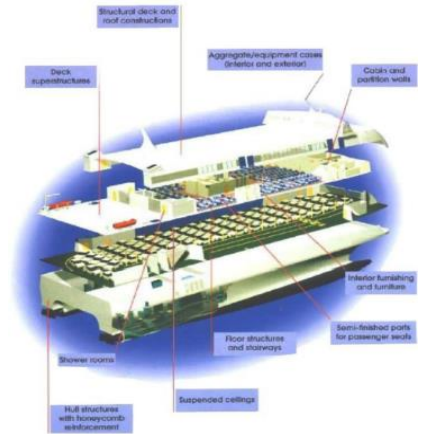


Solar panels

# Application



Big, small and unmanned airplanes, helicopters



Shipbuilding: interior and exterior, partitions, bathrooms, ceilings, floors



Bodies of trucks and vans, mobile homes



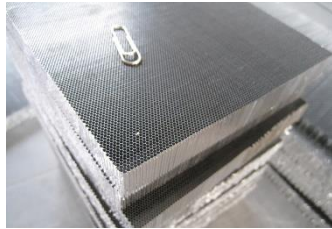
Railway cars: interior, ceilings, partitions, floor

Energetics: wind turbine blades

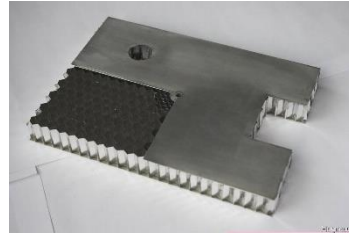


# Materials and designs

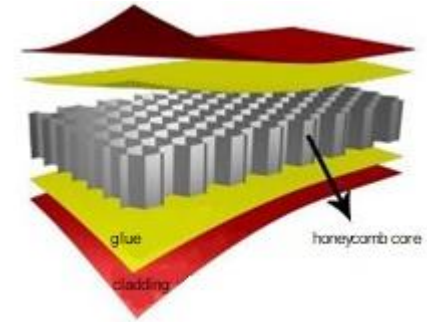
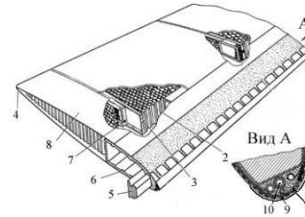
Core



Panels



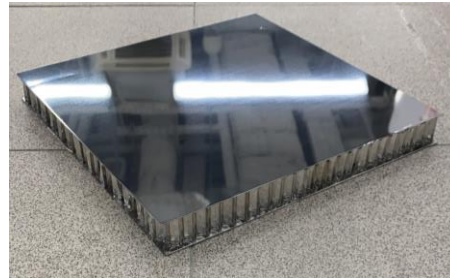
Design



## Panels typical size

- ❑ Basic size - 1220x2440x15 mm
- ❑ Maximal size – 6000x1500x50 mm

**Core panels** can be made in the form of a flat slab or a curved surface and operate in a wide range of climatic conditions



## Carrier layers (cladding)

- ❑ Aluminum 5052, 3003 - 0.5-1.5 mm
- ❑ Steel 304 - 0.5 mm
- ❑ Titanium - 0.5 mm
- ❑ Оцинкованная сталь 0.4 мм

## Core

- ❑ honeycomb – 3003 (0.05-0.06 mm)
- ❑ flexible – 3003 (0.05-0.06 mm)
- ❑ wave form – 3003 (0.05-0.06 mm)

# Skoltech innovations

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## 1 Technology of small-scale production of panels with a core with a honeycomb-shaped cells

- In a field conditions (e.g. at a construction site) with minimal infrastructure requirements (5-10 thousand sq.m./year, 150 sq.m, 3 workers, 50 kW)
- Simple in maintenance and use equipment



Manufacture  
in a field  
conditions

## 2 Serial production technology for cellular core panels with multiple ventilation channels

- For ventilated facades, walls and floors (heated or cooled by air or liquid)
- Cost price at the price of metal and glue with perfect quality



Products for hot  
or cold climate  
applications

### Proposal:

- Supply / installation supervision of equipment (production lines)
- Staff training, joint ventures
- Engineering of standard and special designs for key industries



## Technology readiness

- ❑ **Honeycomb core for the space industry.** The technology and equipment for the production of aluminum honeycomb core developed by Skoltech has been used since 2019 for the manufacture of products for space satellite constellation.
- ❑ **Common-use panels with core.** Pilot production of glued honeycomb panels with honeycomb core launched at Skoltech in 2023.



Honeycomb core production



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**Thank you for attention**