



DRONE DEFENSE

ENGINEERED PROTECTION SYSTEMS

Critical infrastructure protection against UAV attacks

Closed 360° rope-net envelopes
based on aramid materials

From engineering design to turnkey construction

Corporate presentation | 2026

360°

OVERHEAD +
SIDE
ENVELOPE



THE THREAT HAS NO SINGLE DIRECTION

Protection must work from every direction

A UAV may approach from above, diagonally or at low altitude. An overhead net without side walls does not create a complete protective envelope.

360°

closed perimeter

2

connected elements: roof and side walls





POWER INFRASTRUCTURE

Substation protection

35-750 kV

protected equipment voltage range

- Closed overhead and side envelope, 360°
- Dielectric aramid elements
- Safe electrical clearances, entries and service openings

Design and construction take SP 542.1325800.2024 and other applicable requirements into account.





OIL DEPOTS AND TANK FARMS

Dual layers reduce impact

5,000-50,000 m³

tank capacity range in the approved project

- The first layer intercepts the UAV
- The second layer mitigates fragment impact
- The structure does not bear on the tank walls or roof

Final parameters are determined by calculations for the specific facility.



TRANSPORT INFRASTRUCTURE

A protective corridor preserves route continuity



**Closed protective
tunnel**

Modular extension

Local element replacement



INDUSTRIAL FACILITIES

Protection adapts to the facility

Protection is focused on critical process zones rather than an abstract boundary. The design accounts for operating modes, personnel access, maintenance and future site development.

- Overhead + side walls, 360°
- Protected service portals
- Engineering design and turnkey construction





SYSTEM MATERIAL

Aramid 1414: strength without excess weight

5-7x

stronger than steel at equal mass

5-6x

lighter than steel rope of equal diameter

- Dielectric and radio-transparent material
- No corrosion; resistant to humidity and seawater
- Flexible handling with no steel burrs



APPROVED MATERIAL DESCRIPTION

Protective coating extends aramid rope service life

Para-aramid rope / Aramid 1414

Pure aramid fiber is deeply impregnated with a black polyurethane compound containing carbon black. The coating protects against UV, abrasion and moisture while reducing glare and aerial visibility.

1.44 g/cm³

aramid density versus 7.8 g/cm³
for steel

2.0-2.5 mm

approved diameter for anti-drone
nets

- Temperature description: cold service to -200 °C; long-term heat to +250...+400 °C; short exposure to +1000 °C
- Resistant to oils, diesel fuel, gasoline, most solvents and seawater
- Does not create a dangerous steel-rope whip after rupture, reducing risk to personnel
- The rope entangles quadcopter propellers, blocks rotors and retains aircraft fragments
- The PU coating reduces abrasion at contact points and simplifies operation



ONE TECHNOLOGY - DIFFERENT FACILITIES

Protecting critical zones where downtime is unacceptable



Seaports and terminals



Airports and logistics complexes



Solar power plants



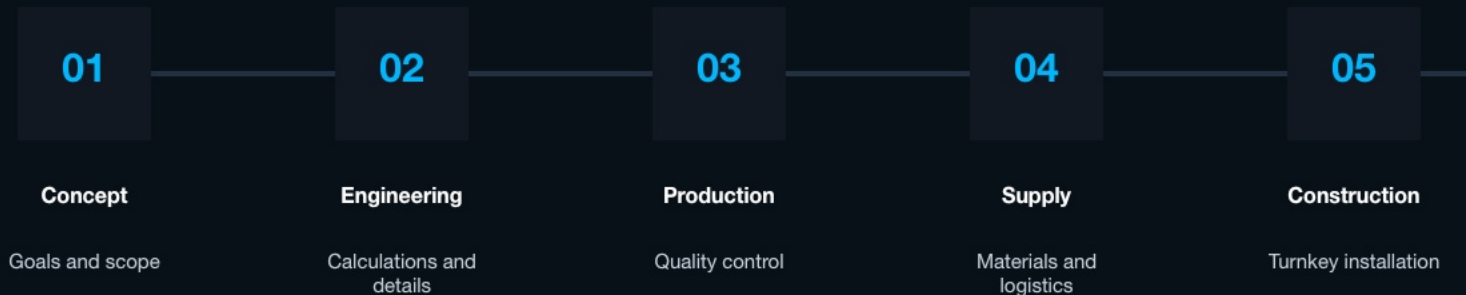
Public infrastructure



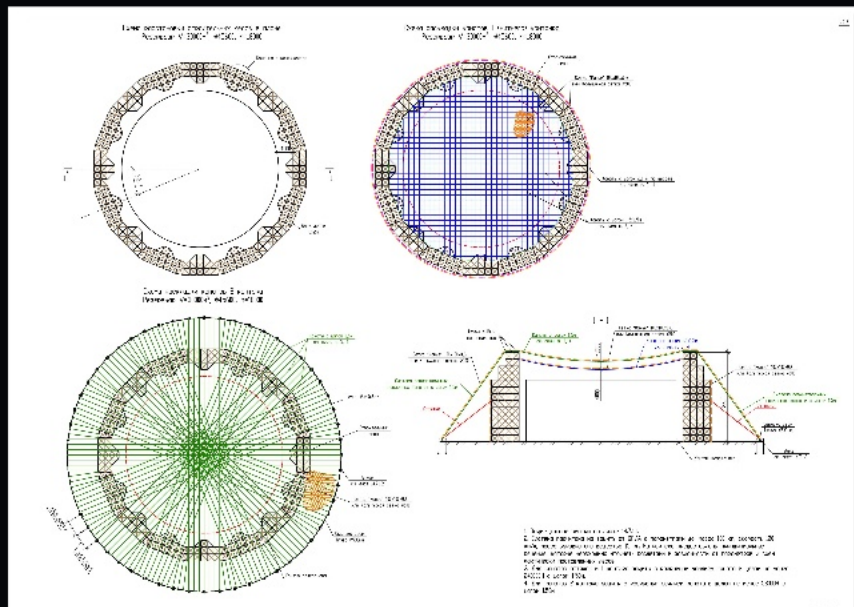
ACCOUNTABILITY FOR THE RESULT

From facility data to a commissioned system

An integrated engineering cycle closes the gaps between calculation, materials, installation and operation.



Each stage produces the inputs for the next, preserving the engineering logic end to end.



APPROVED PROJECT PARAMETERS

Calculation defines the structure

1,500 mm

rope spacing in the described solution

240 / 58 kN

minimum breaking force for the first / second layer

- UAV up to 100 kg
- Speed up to 120 km/h
- Charge up to 15 kg
- Distances of 3-5 m and 5-30 m

These values apply only to the specific tank-protection project. A new facility requires separate data collection and engineering calculations.



NOT A SINGLE MATERIAL - AN INTEGRATED SYSTEM

A partner throughout the lifecycle

Value comes not from the net as a standalone product, but from the right combination of calculations, support structure, aramid materials, connection details and installation.

ENGINEERING · PRODUCTION · SUPPLY ·
CONSTRUCTION

01 **Aramid technology**

Dielectric, lightweight and corrosion-resistant elements

02 **360° protection**

One closed overhead and side protective envelope

03 **Facility-specific approach**

Geometry, operating mode and regulatory constraints

04 **Modularity**

Scalability and local element replacement



DRONE DEFENSE

NEXT STEP

We will prepare a preliminary facility protection concept

To begin, we need a facility layout, a list of critical equipment, operating constraints and the required protection level.

01

Facility data

02

Preliminary concept

03

Calculation

04

Commercial
proposal

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