

# Äager

---



ÄPS

[www.aager.de](http://www.aager.de)  
[sales@aager.de](mailto:sales@aager.de)





# Aluminum Flat Roof Systems

# Who we are?

Established in 1983, Äager is a leading company focused on the energy, water, marine, and mining industries.

We specialize in providing a wide range of products and solutions for;

- ❖ Storage tank terminals,
- ❖ Pipelines, refineries,
- ❖ Chemical and industrial plants,
- ❖ Water treatment facilities,
- ❖ Electricity generation, and alternative energy sources.

Our aim is to deliver the highest quality products that ensure environmental protection, safety, efficient storage, and reliable process filtration.



# What we offer?

We are committed to delivering top-quality products that ensure environmental protection, safety, and efficient processes.

Our mission is to drive the transition towards sustainable energy while protecting the environment, assets, and human life.

- ❖ **Environmental Protection:** Advanced systems for pollution control and emission reduction.
- ❖ **Safety:** Reliable safety equipment and solutions to ensure safe operations in hazardous environments.
- ❖ **Storage Solutions:** Efficient and robust storage systems for various liquids and gases.
- ❖ **Process Filtration:** High-quality filtration systems to ensure clean and efficient industrial processes.



# Our Facility & Certifications

**Location:** 40,000 sqm fabrication facility in Mersin, Turkey

## Capabilities:

- ❖ Advanced welding and fabrication technologies
- ❖ In-house R&D center for continuous innovation
- ❖ Stringent quality control processes
- ❖ Large-scale production capacity

## ❖ Proximity:

- ❖ Located next to Turkey's largest seaport
- ❖ Ideal for global shipping and logistics

## ❖ Certifications:

- ❖ ASME U-4, R, S-2 Stamps
- ❖ ISO 9001, 14001
- ❖ CE/ATEX



# Industry Solutions

- ❖ **Oil & Gas:** Chemical injection skids, metering skids, gas processing units.
- ❖ **Chemical Processing:** Reactor skids, mixing systems, separation units.
- ❖ **Water Treatment:** Filtration skids, reverse osmosis systems, chemical dosing units.
- ❖ **Pharmaceuticals:** Clean-in-place (CIP) systems, formulation skids, bioreactor systems.
- ❖ **Food & Beverage:** Pasteurization units, blending skids, beverage processing systems.
- ❖ **Renewable Energy:** Hydrogen storage solutions, gas scrubbing systems.
- ❖ **General Engineering:** Custom skid systems for various applications.



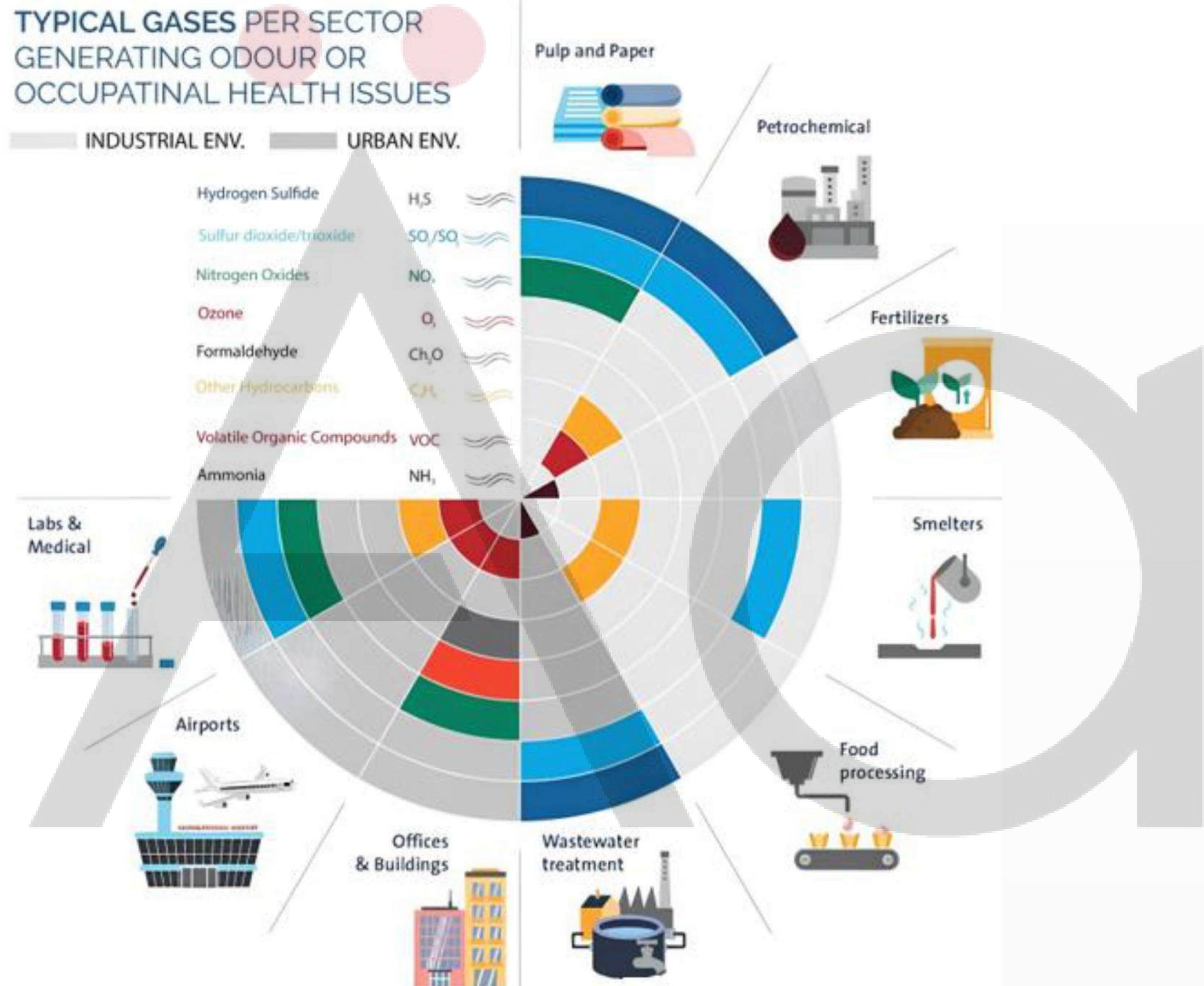
# TurnKey Solutions

ERGIL provides a comprehensive range of professional services to Oil, Gas, Petrochemical, Chemical, Water industries for almost 40 years.

Besides manufacturing environmental friendly products; such as **wet scrubbers, silencers and emission control equipment**, we also cater for our customers' custom products demand for storage tanks, pressure vessels and heat exchangers.



# Odour Emissions



# Regulatory Limits

Table 6.7: BAT-associated emission levels (BAT-AELs) for channelled NH<sub>3</sub>, odour, dust and TVOC emissions to air from the biological treatment of waste

Parameter	Unit	BAT-AEL (Average over the sampling Period)	Waste treatment process
NH <sub>3</sub> (1) (2)	mg/Nm <sup>3</sup>	0.3–20	All biological treatments of waste
Odour concentration (1) (2)	ouE/Nm <sup>3</sup>	200–1 000	
Dust	mg/Nm <sup>3</sup>	2–5	Mechanical biological treatment of waste
TVOC	mg/Nm <sup>3</sup>	5–40 (3)	

(1) Either the BAT-AEL for NH<sub>3</sub> or the BAT-AEL for the odour concentration applies.

## European Union

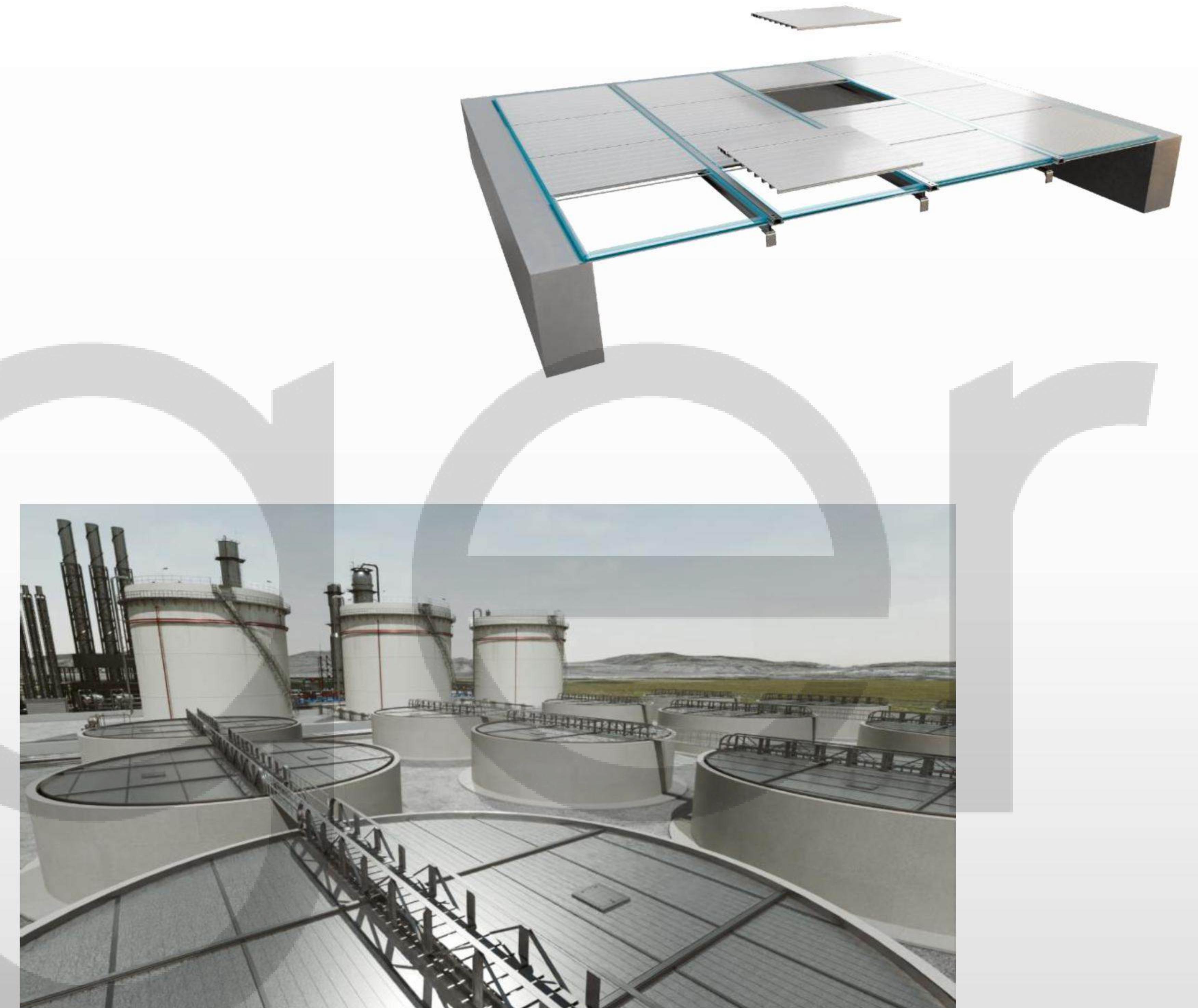
- ❖ **Industrial Emissions Directive (IED)**  
Requires Best Available Techniques (BAT)
- ❖ **BAT Reference Documents (BREFs)**  
BAT for VOC and odour control.

## United States

- ❖ *EPA Clean Air Act*
- ❖ *Best Available Control Technology (BACT)*

# What is the Aluminum Flat Roof?

- ❖ An Aluminum Flat Roof is a modular, lightweight roof system designed for flat or low-slope tanks and structures.
- ❖ It covers large surfaces, protecting them from environmental factors such as rain, dust, and UV radiation.
- ❖ Its modular design allows for easy installation and low maintenance.
- ❖ Applications include water reservoirs, wastewater treatment tanks, clarifiers, chemical storage tanks, and industrial facilities.



# Why Aluminum?



## ❖ Lightweight

Aluminum is lightweight, reducing structural load while maintaining strength.



## ❖ Durability

Aluminum offers long service life even in harsh outdoor and industrial conditions.



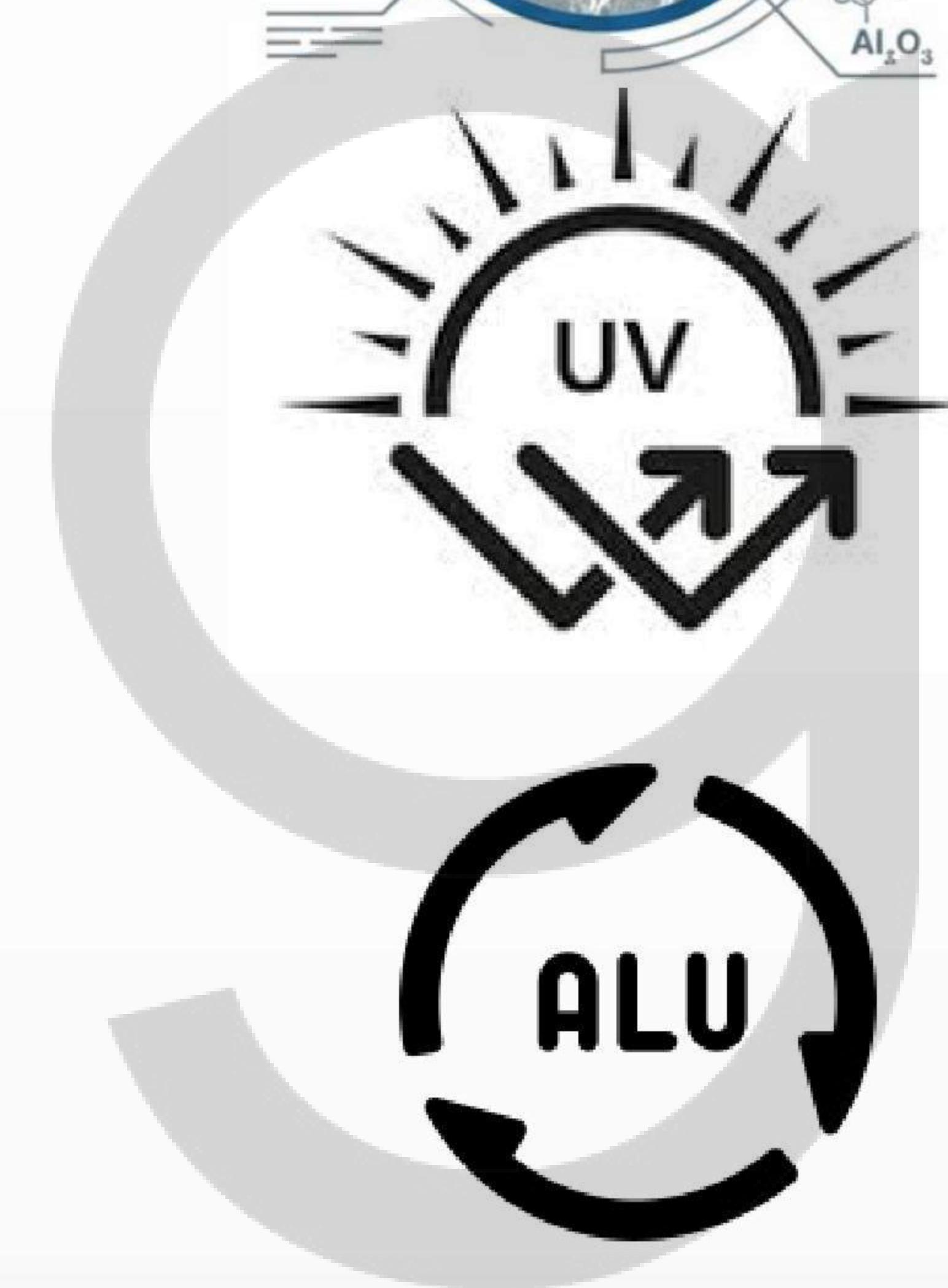
## ❖ Chemical Resistance

Aluminum shows strong resistance to many chemicals commonly found in wastewater and industrial environments.



## ❖ Corrosion Resistance

Aluminum naturally forms a protective oxide layer, providing high resistance to corrosion.



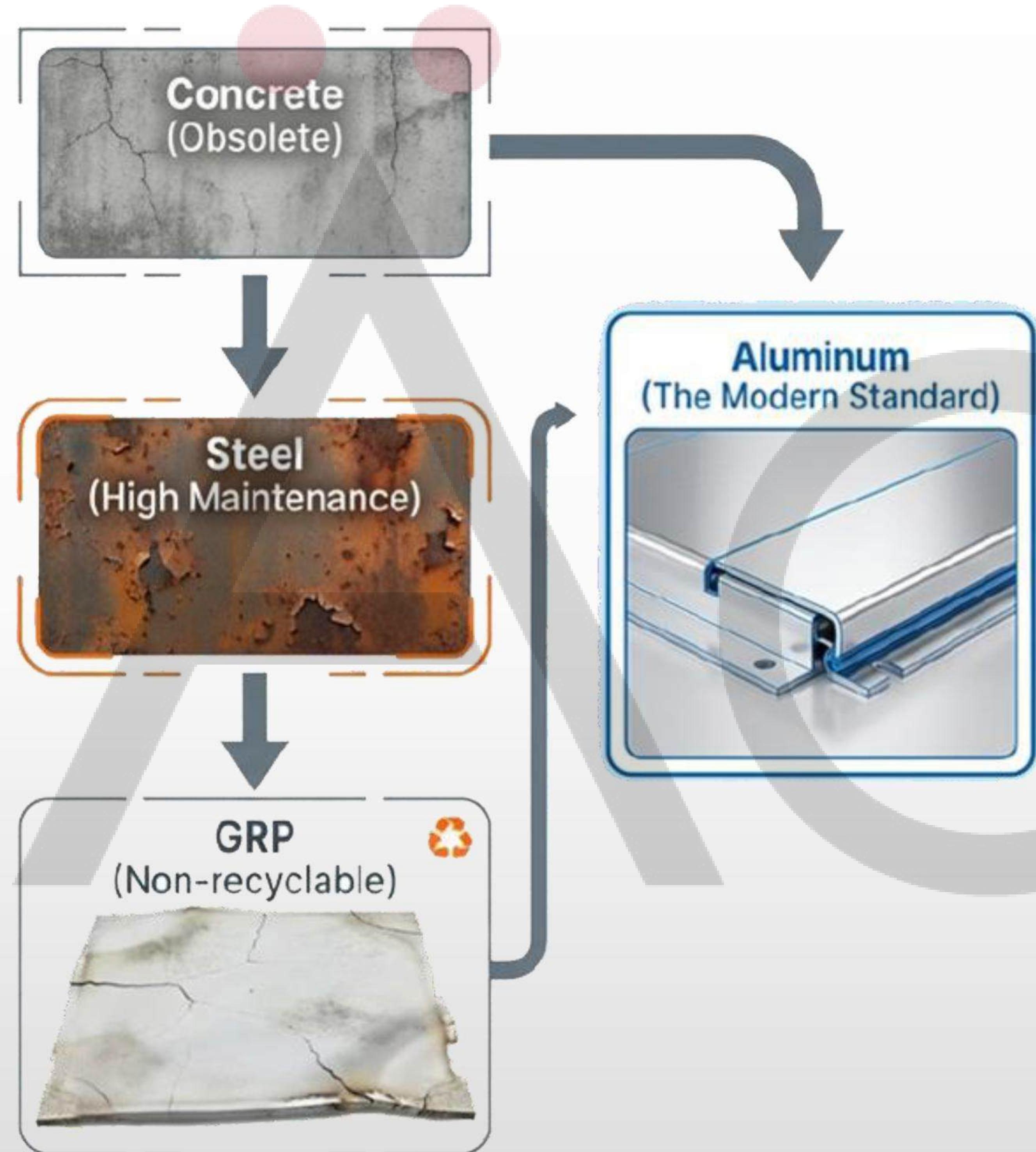
## ❖ UV Resistance

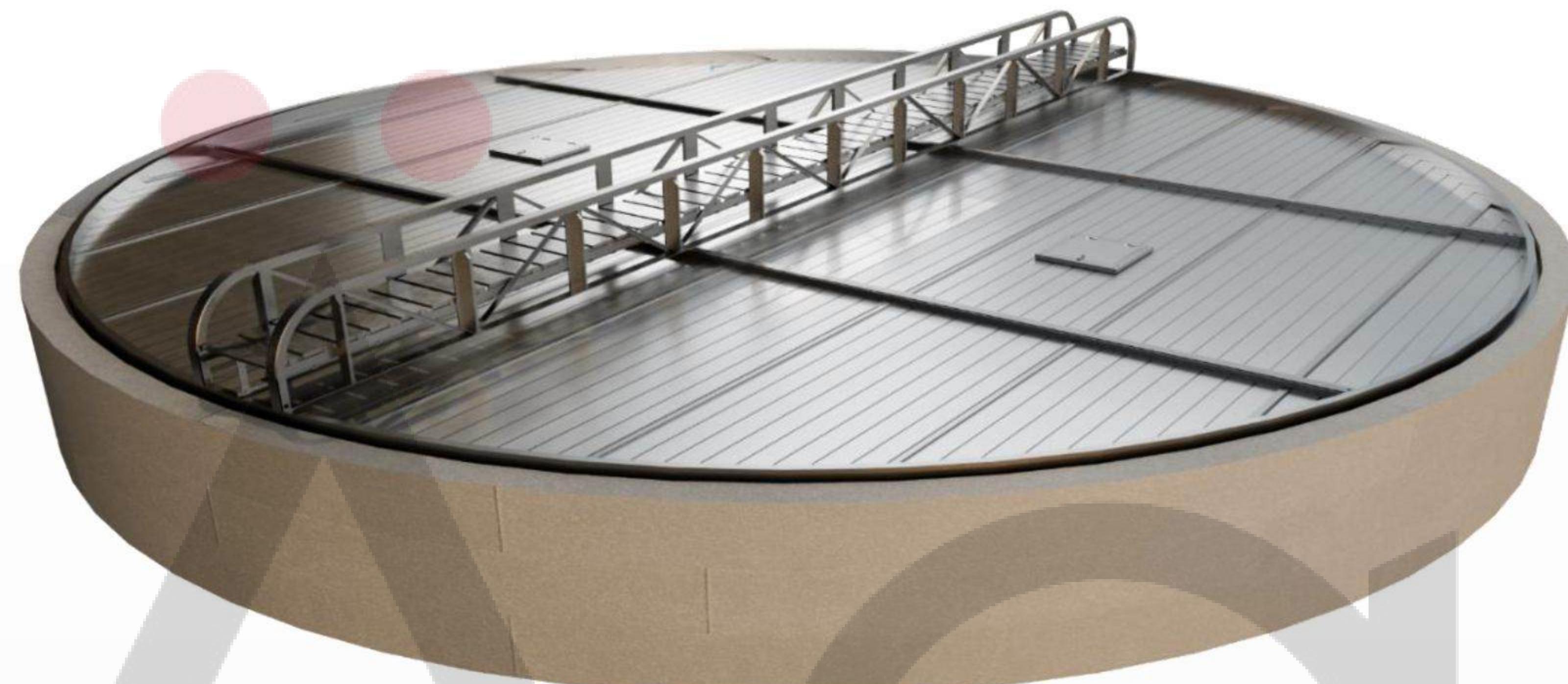
Aluminum reflects UV radiation and does not degrade under long-term sunlight exposure.

## ❖ Recyclability

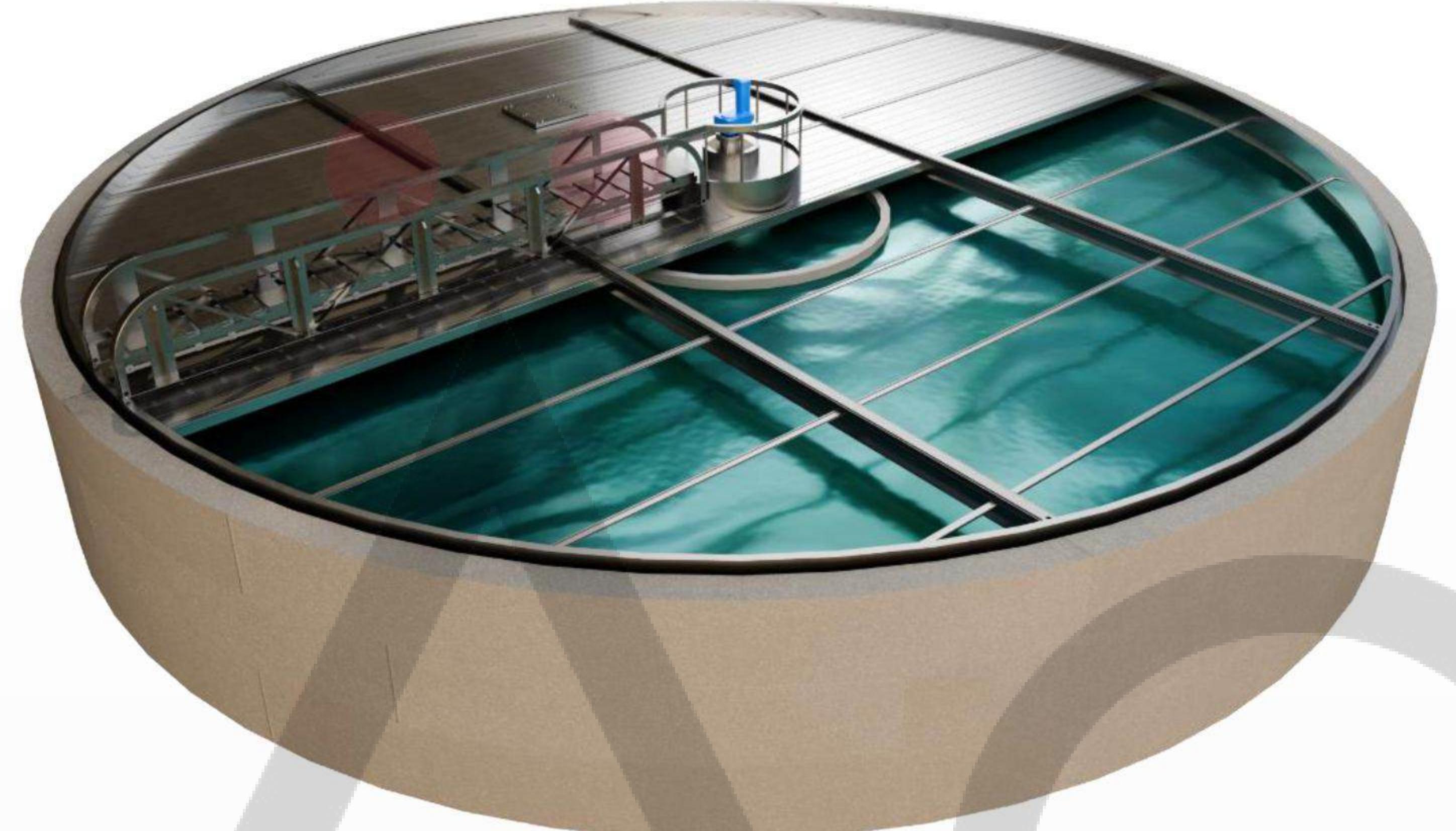
Aluminum is 100% recyclable without loss of material quality.

# Why Aluminum?

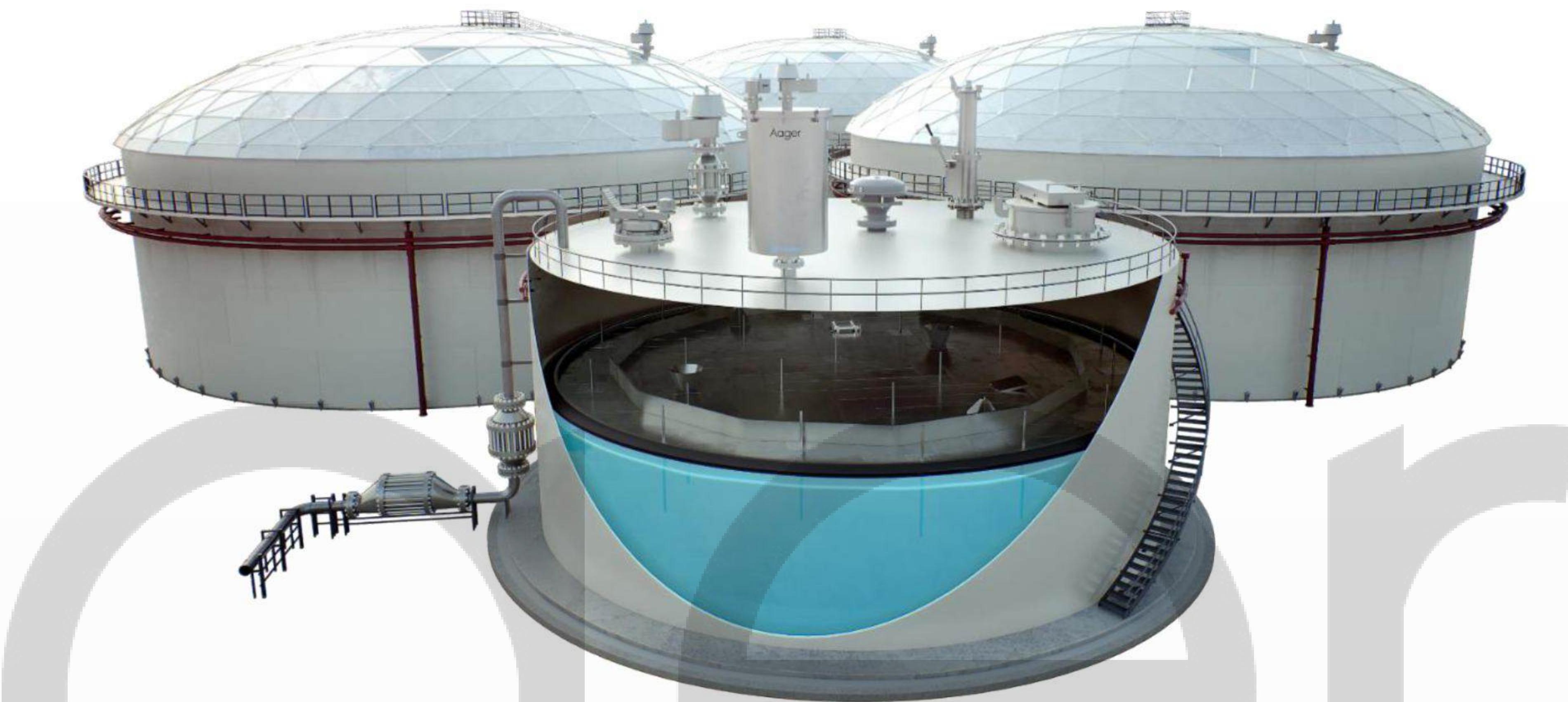




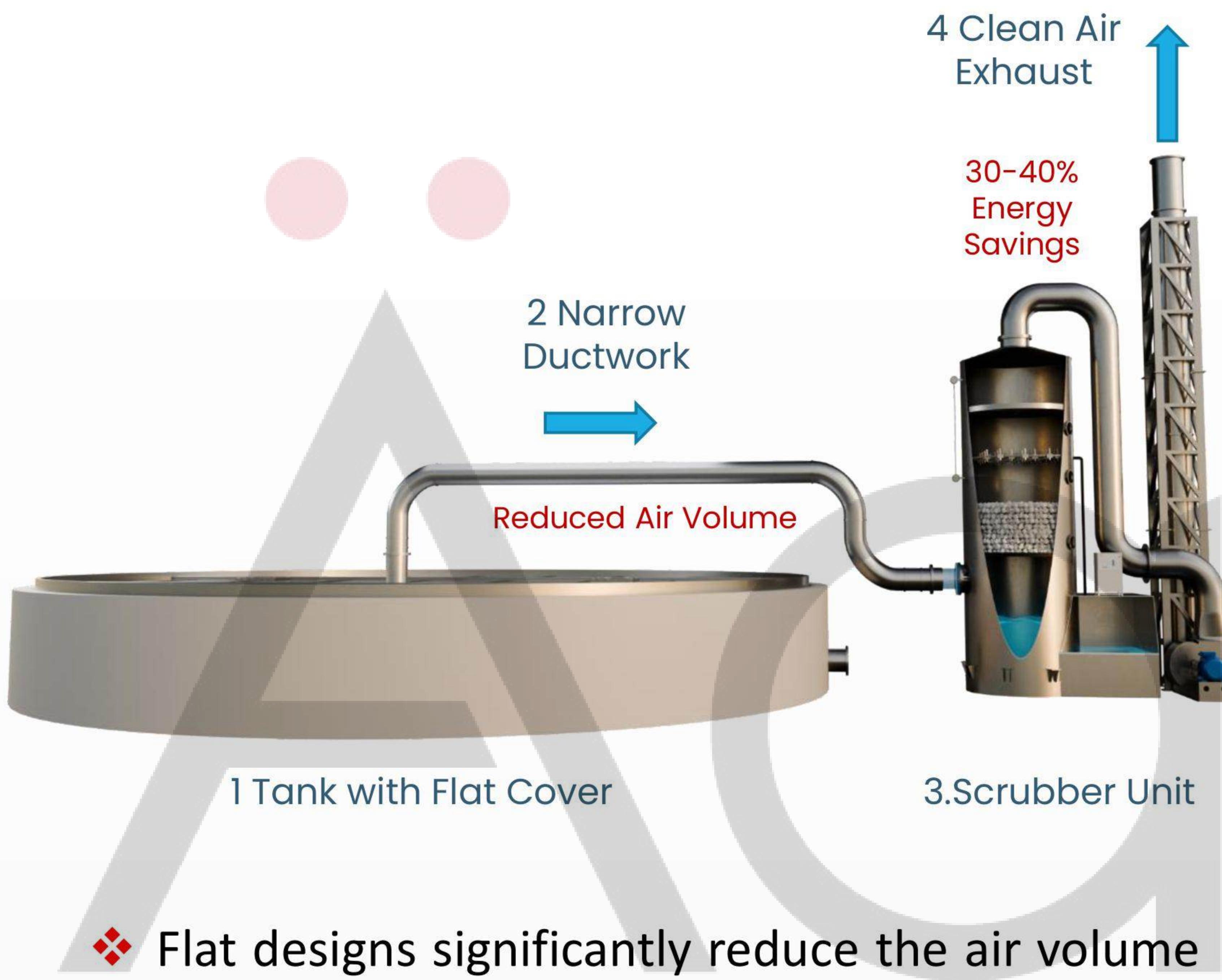
- ❖ The system is geometry-independent.
- ❖ It can be integrated into any reinforced concrete or steel structure with radial, parallel, or linear configurations ideal for wastewater plants, chemical storage and industrial sites.



- ❖ These include clarifiers, sludge holding tanks, sand holding (settling area) aeration basins, biological treatment areas, and other storage vessels.



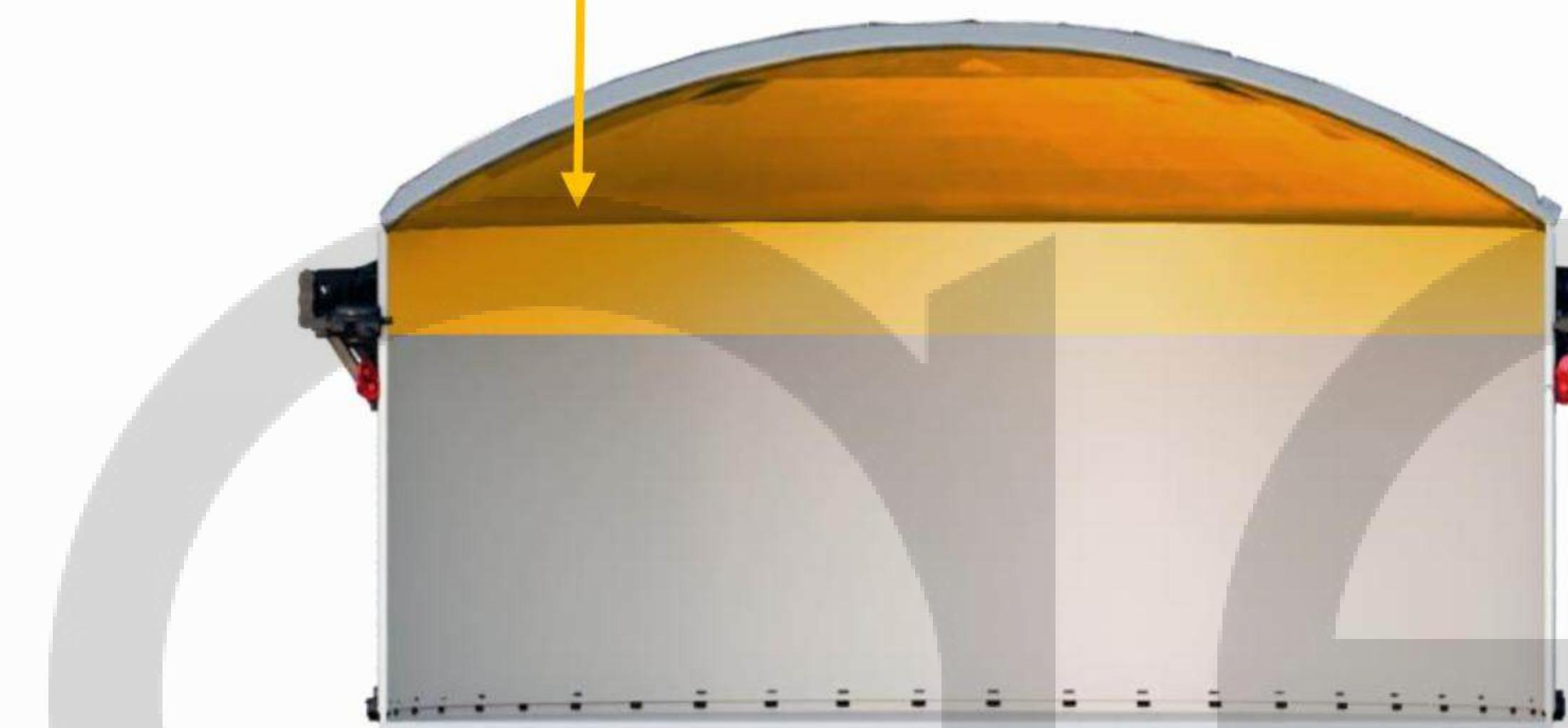
- ❖ Dome Roofs are mainly for large circular tanks in oil & gas terminals and water reservoirs where structural load resistance is critical.



- ❖ Flat designs significantly reduce the air volume required for scrubbers, enabling smaller fans and lower energy consumption.

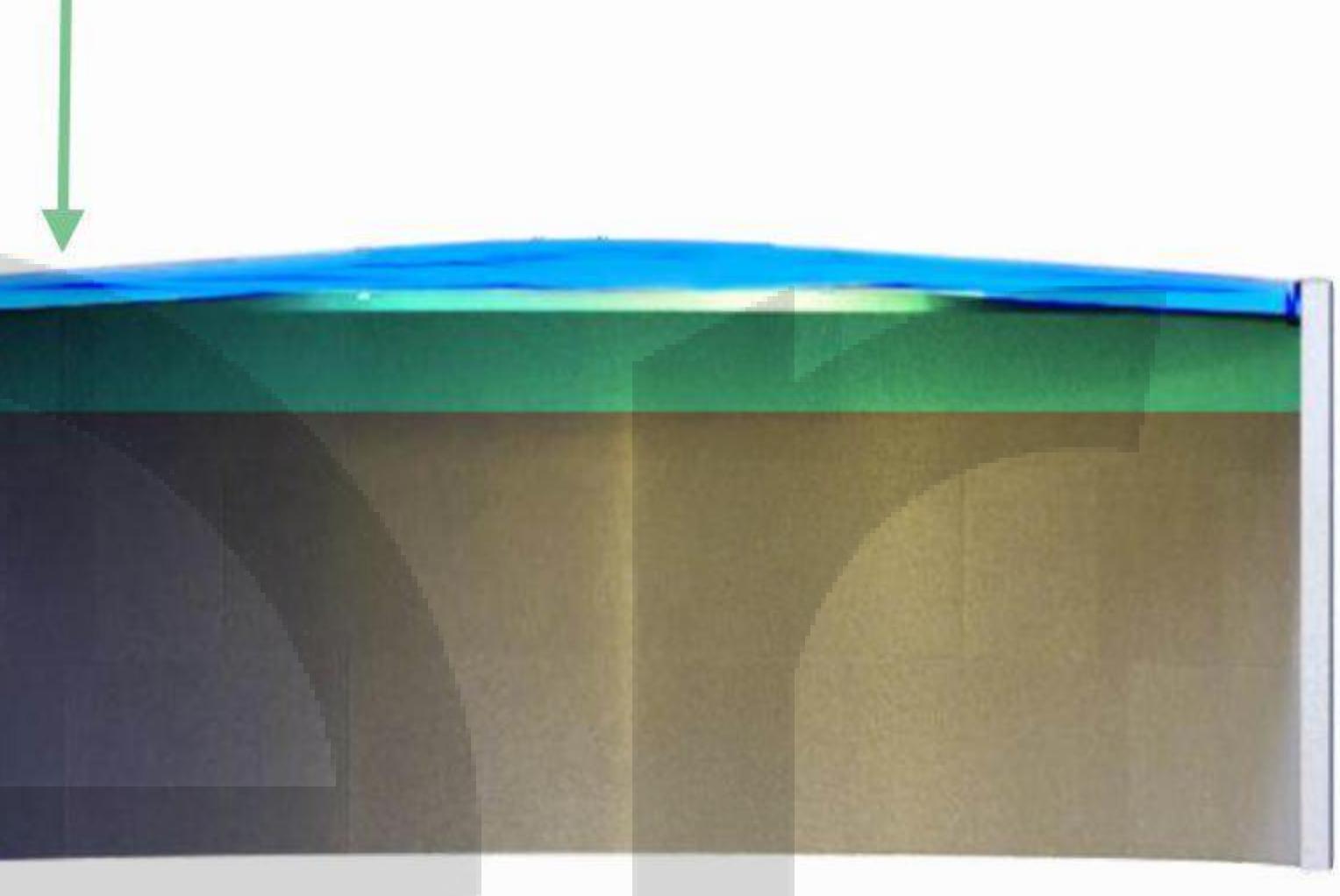
### Traditional Dome Cover

Excessive Headspace (Dead Volume)

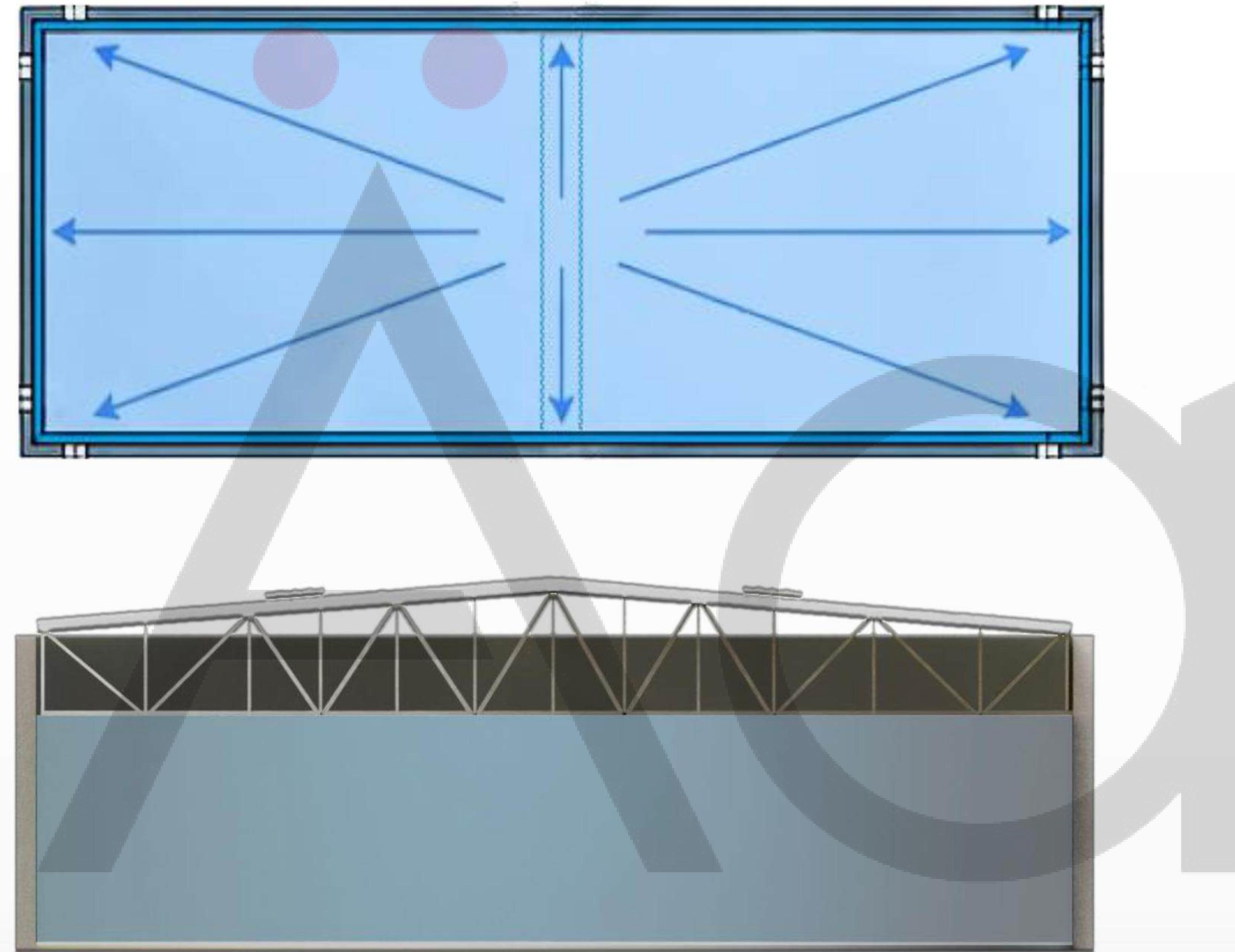


### Aluminum Flat Cover

Minimized Headspace (Optimized)



- ❖ Lower air volume allows for higher concentration control within the scrubber system, maximizing filtration efficiency while minimizing fan power usage

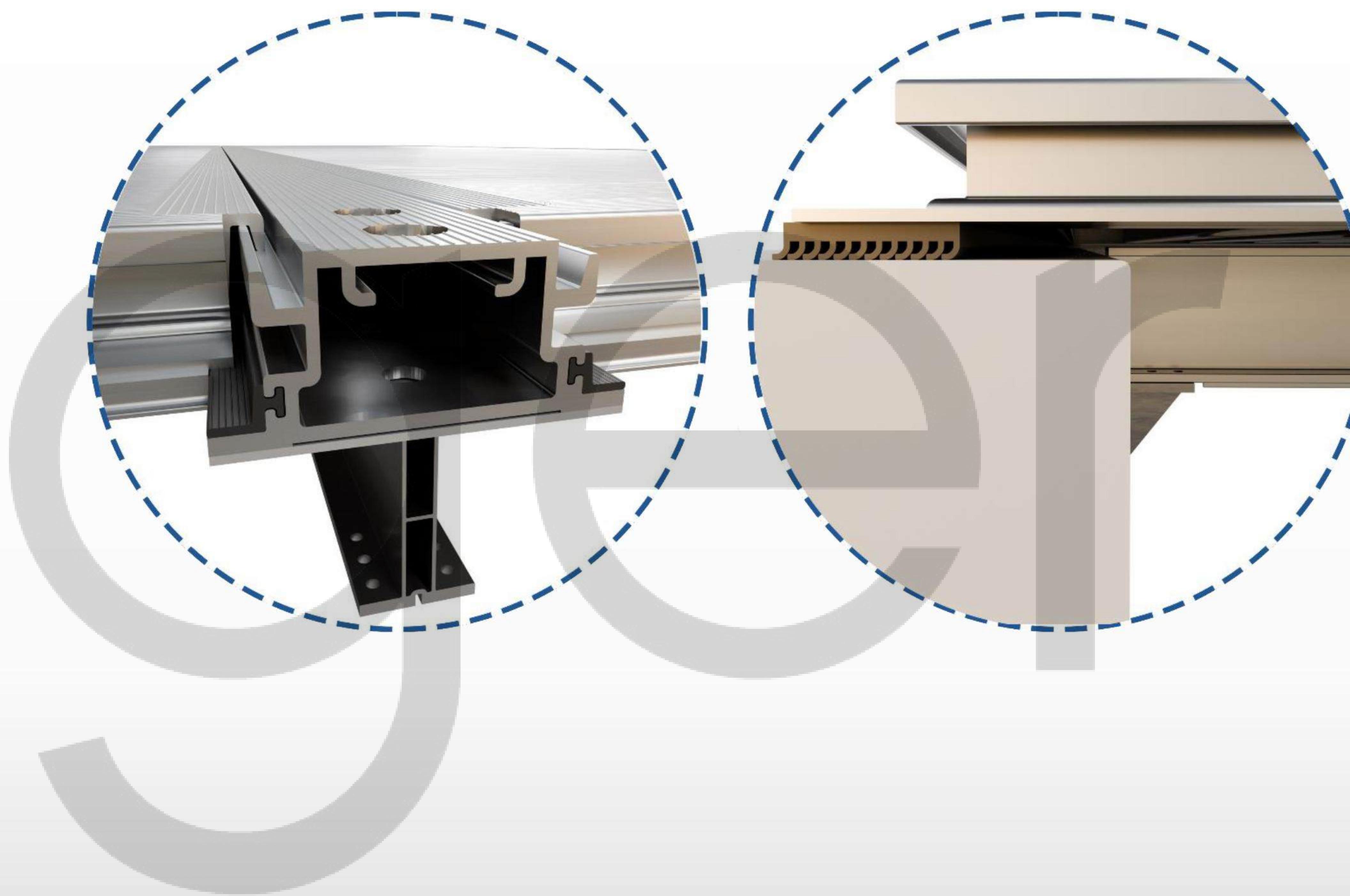


- ❖ **No Ponding Risk:** Although it looks flat from the outside, the system has a hidden slope that prevents rainwater from accumulating. Water is directed to planned drainage points.
- ❖ **Column-free span:** For spans up to 15-20 meters, columns descending into the tank are not required. For wider spans, hybrid solutions supported by steel construction or truss supports are used.

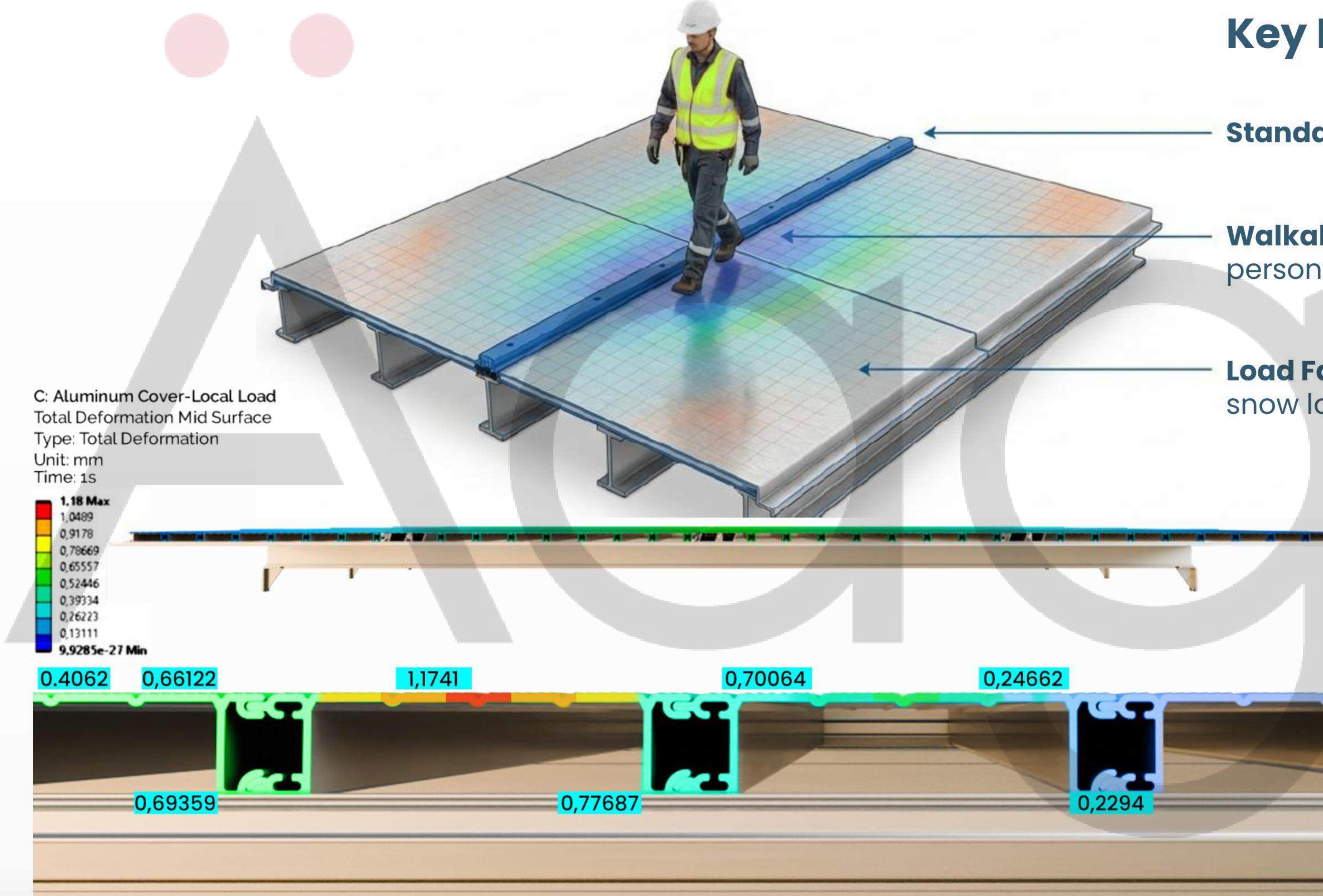
# Materials & Test

---

- ❖ Material: 6061-T6 & 6063-T6 Aluminum Alloy
- ❖ Load Capacity: 180 kg (400 lbs) on 152×152 mm area
- ❖ Gasket: UV and H<sub>2</sub>S-resistant Neoprene/EPDM
  - ❖ Leak Test:  $\leq 0.20$  CFM/sqft
- ❖ Waterproof Test: 350 kPa pressurized water jet
- ❖ Analysis: ANSYS FEA per ASME VIII Div.2



# Technical Features



## Key Design Parameters:

**Standards Compliance:** Eurocode 9 API 650

**Walkable Design:** Engineered to support personnel for maintenance access

**Load Factors:** Calculated for site-specific snow load and wind loads



Site Safety

# Standarts

---



ASME Section VIII Div.1 & Div.2



ASTM C509 for Neoprene Materials



API 650 / API 2000 for Tank Integration



AWWA D108 / D100 / D103 for Water Systems



EUROCODE 9 and IS 875 Structural Codes



### Manhole Cover

Quick Opening Type

Model: 410

Storagetech™'s Manhole Cover has a variety of uses within the petro-chemical industry, farming, storage and general manufacture. It has applications on industrial tanks, mobile and stationary storage vessels, mixing tanks, large diameter conveyors, and bulk containers. The Model 410 Manhole Cover is a flange-mounted unit that, as well as allowing the loading of powders, pellets and liquids, it provides access for cleaning the empty vessel.



### Flame Arrestor

End-Of-Line,  
With Automatic  
Opening Hood,

Storagetech™ Flame Arrestors ( End-of-line, with Automatic Opening Hood) are passive devices that prevent the propagation of a flame or fire from entering into an opening in a pipeline or vessel discharging flammable vapor. As different from model 310, Model 312 end of line flame arrestor's weather hood is designed to react fire instantly tanks to it's fusible link, which is melted during the fire and let the weather hood release the gas/fire to the atmosphere.

### 2. Inspection Hatch

### 1. Square Manhole

### 3. PVRV (Pressure Valve)

### 4. Gauge Hatch

### 5. Emergency Vent

### 6. Mixer Bridge

### 7. Flame Arrestor

### Pressure Vacuum Relief Valve With Flame Arrestor

End-Of-Line,  
Weight Loaded,  
Combination,  
Atmospheric Deflagration  
Proof



Storagetech™'s Model 330 Pressure Vacuum Relief Valve with Flame Arrestor provides protection to bulk storage tanks and vessels from over and under pressurization.

### Gauge Hatch

Non-Atmospheric,  
Sampling Slot  
Dip Hatch

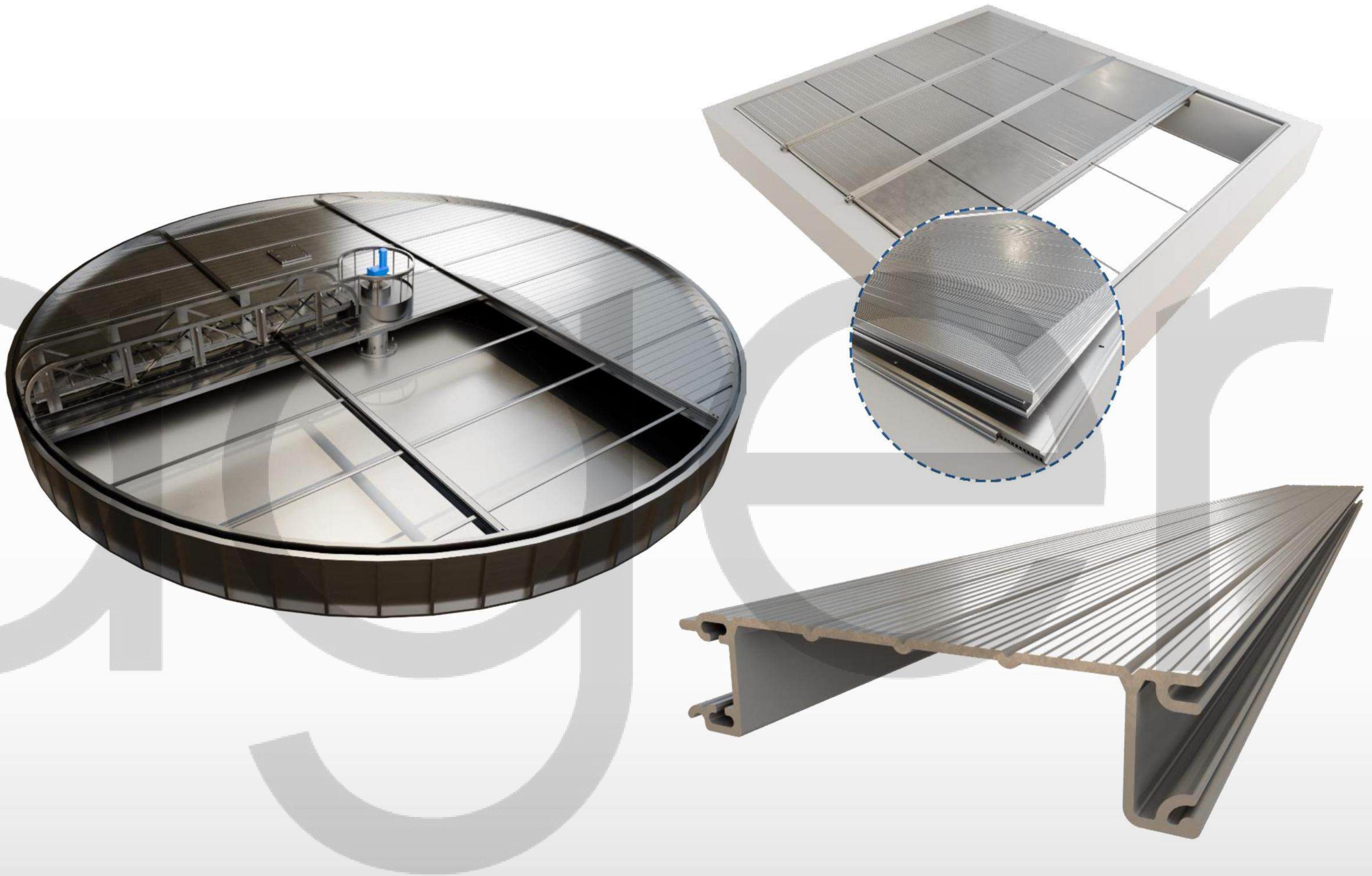
Model: 220



Storagetech™'s Non-atmospheric Sampling Gauge Hatch provides access to bulk storage tanks while protection personnel and the environment when taking product samples, temperature, and gauging the depth product and residual water.

# Modular Construction

- ❖ **Scalable Design:** Standard modules provide excellent compatibility with treatment ponds of different diameters and wide-span industrial tanks.
- ❖ **Easy Logistics and Storage:** Lightweight and stackable parts can be transported to remote facilities and challenging construction sites at low cost.
- ❖ **Local Intervention Capability:** Allows for operational flexibility by permitting the removal of only the relevant panel for maintenance or repair, rather than the entire roof.



# Easy Installation



## Weld-Free Assembly (Zero Sparks):

Ensures maximum workplace safety in areas with explosive gas risks (methane, etc.) using a bolted connection system that requires no welding.



**No Heavy Equipment Required:** Thanks to the system's light weight, it can be installed quickly with minimal labor, without the need for huge cranes.



**Minimum Downtime:** Installation is completed within a few days without interrupting the facility's operating speed, allowing the facility to be put into service immediately.



# Äager

---



ÄPS

Thank You !



[www.aager.de](http://www.aager.de)  
[sales@aager.de](mailto:sales@aager.de)