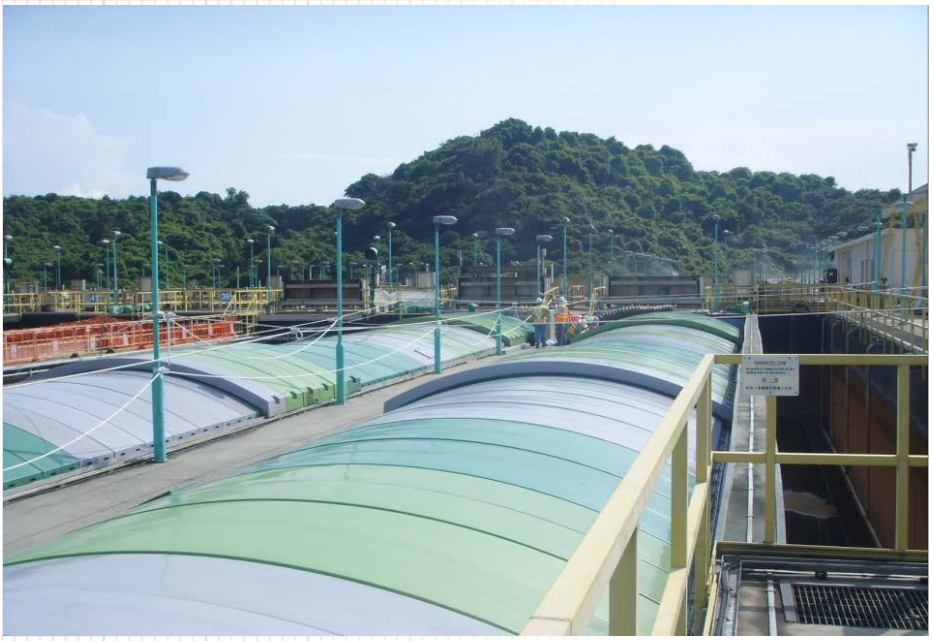
CHEMPOSITE®

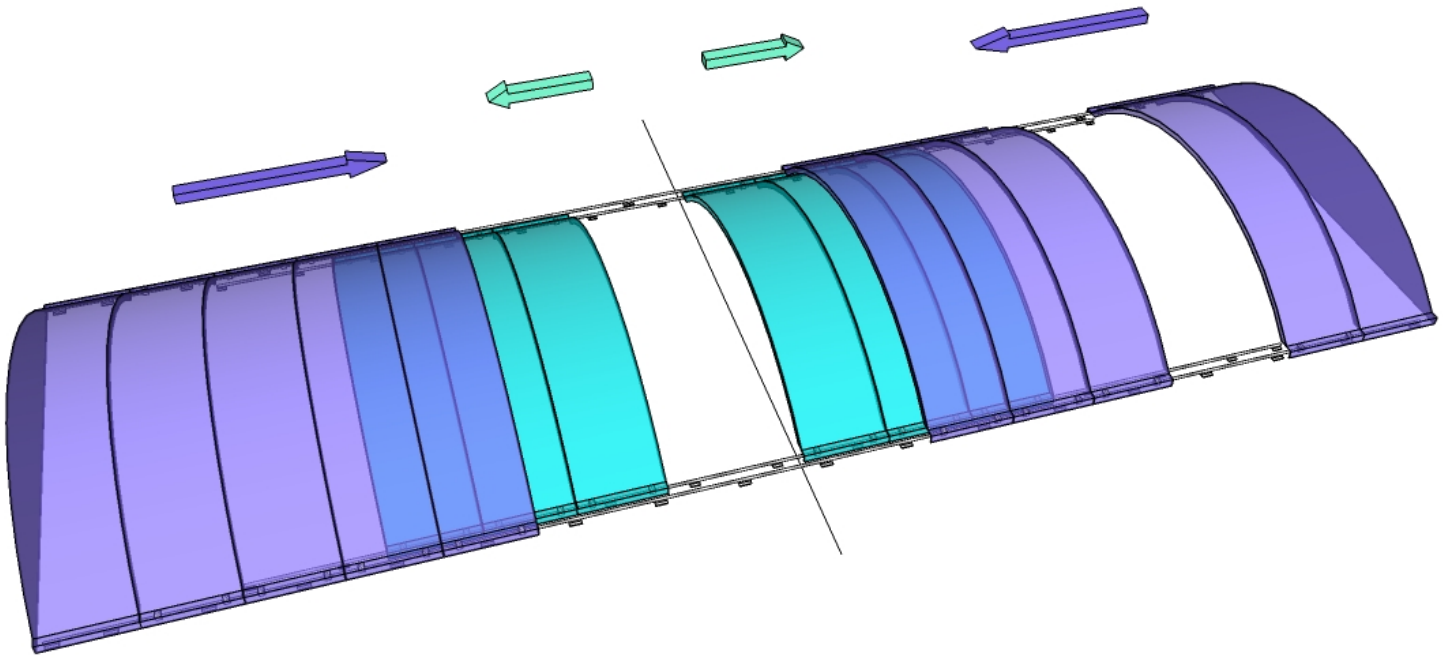
FIBERGLASS REINFORCED
PLASTIC E-Z SLIDE COVER

E - Z SLIDE™ COVER SYSTEM



Chemposite FRP hood and cover system are designed to reduce equipment emissions for safe clean air environments indoor and out. To cover, protect and shield your equipment from outside elements and safeguard vessel contents against contamination, we select the best combination of resin, glass, additives and fabrication methods to ensure you receive the best product possible for your application with our qualified products.

Our services include on-site visits and meeting; on-site measurements; design and engineering; precision mold building and fabrication; installation supervision and consultation.



Municipalities are looking for more efficient tank cover systems to contain off-gases, reduce algae growth, simplify maintenance and repairs, and cut expenses. Retractable, structurally-supported covers have become an increasingly attractive option for streamlining wastewater plant operations.

Chemposite's E-Z Slide Cover System provides an unprecedented level of flexibility and ease-of-access for tank monitoring, maintenance and repairs for the municipal wastewater and drinking water plants.

Depending on their size, both aluminum and fiberglass covers being rigid and heavy, can be bulky and difficult to maneuver for workers while perched above an open tank. This tricky maneuver requires a fair amount of labor-both to remove the panels, place the covers aside and later put the covers back on – but also poses a potentially significant safety hazard for the workers.

Our E-Z Slide Cover System, utilizing the Cup Core technology, is a structurally self-supporting cover system – invented, engineered and built by Chemposite – consists of an inner and outer composite sheet of high-strength, UV-protected, low-profile FRP arches and bonded to the Cup Core sandwich panel which spans across the tank to a normal length of 6m. The normal width of each section can range from 1000mm to 1500mm and supported on metal tracks along both sides and fixed with linear bearings mounted to the panels.

The E-Z Slide Covers are gas-tight, operating under negative air pressure. A ventilation system draws air through the tank and underneath the covers, and pulls along with it the off-gas from the aeration process. Off-gas removal piping is connected directly to the cover system and out to a soil filter for odor scrubbing.

ADVANTAGES OF E-Z SLIDE COVER SYSTEM OVER CONVENTIONAL COVERS

1) Light Weight, High Strength and Easy to Handle

Each panel shall not weight over 140 kg for handling by 4 people during emergency or maintenance purpose. While on tracks, each panel will be able to operate by only one person on one side of the tank only.

2) Self-Supporting

The high strength Cup Core™ sandwich panel can span over 6M without any mid span support or reinforcing ribs with an overall panel thickness of 40mm and below while meeting the maximum allowable deflection of 0.5% subject to a 500kg distributed load on 1 sq.m. at the center.

3) Low Profile Design to Minimize Air Flow

Average cover height in arch form shall have an average of 15-20% to the span length while maintaining the maximum deflection allowance. The feature could save on energy cost with a smaller size fan for gas extraction.

4) Easy to Clean and Maintain

With it smooth (no rib protrusion) on the inner and outer surface, it makes cleaning much easier and no tripping problem for man traffic. A non-slip surface is an option. All panels are UV protected with a gelcoat finish for outdoor installation. The sliding tracks are made of solid steel rod with chrome plated for weather and chemical protection, the sliding mechanism are self-lubricated seal bearings embedded in aluminium bearing blocks which are easy to maintain and replace. All interface gaskets are molded into the flange face and no need for constant replacement after each operation and to provide an easy installation on site.

5) Ease of Access and Safety

The movable panels are fixed onto heavy duty linear tracks on both sides for smooth operation and safety. It can resist the uplift force by strong wind or snow that could cause derailment, damage to property or safety to personnel. Any tanks maintenance can be done with a sliding of a panel and eliminate the requirement of heavy lifting equipment.

6) Air Tight Design with Double Containment Feature

All interfaces will have gasket fused in to prevent air leakage in meeting the required maximum allowance. The Cup Core™ panel, with its 30mm deep interstice space between the inner and outer wall can act as a double containment space if either surface is damaged.

DESIGN CONDITIONS

1) The resin of the FRP shall be chemical resistant polyester or vinylester fire retardant resin. The resin shall have a Class 1 flame spread rating when tested in accordance with ASTM E-84 or equivalent.

2) The FRP cover system shall be designed for expansion and contraction due to temperature changes without causing damages to the cover. The cover shall not be subjected to derailment from the sliding tracks due to thermo, wind, static or dynamic loads while it is in stable or mobile conditions.

3) Foul air exhaust points, make-up air intake points and accessories shall be provided on the FRP covers and enclosures as required.

4) The covers shall be arch shaped with a maximum height not greater than 20% of its span distance and each section shall not be over 1500mm in width for ease of handling. Each movable section shall be able to slide along the tracks by one person on one side, with the sliding force (pushing and pulling) at single side of the cover section shall not be more than 250N.

5) The covers shall have a smooth and flush exterior and interior surface without any projected reinforcing rib to affect its sliding and interlocking functions. The airtight covers shall be monolithic construction without any external supporting members.

6) The covers shall be designed to form a continuous solid surface which shall be airtight by durable sealed gasket joints to prevent leakage and suitable for forced ventilation.

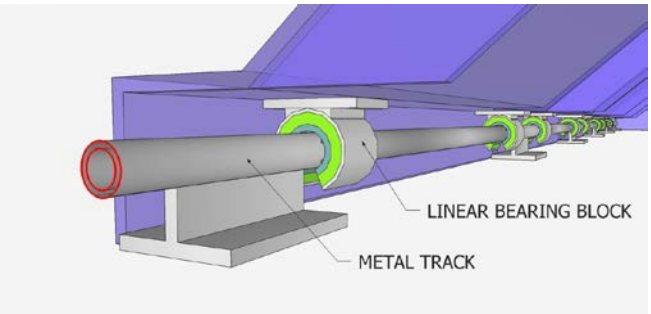
7) The movable cover sections shall be mounted along the chrome plated heavy duty industrial grade linear bearing rods with aluminum bearing blocks for smooth action and durability. The covers shall not be subjected to derailment or misalignment of the rollers from the sliding tracks due to thermos, wind, static or dynamic loads while it is in stable or mobile conditions.

8) Each cover shall have SS316 lifting lugs for the ease of installation and removal. Also, each cover section shall have lifting points for lifting mechanism or manual handling during emergency situation. The weight of each cover section shall not be more than 140kg for handling by 4 people.

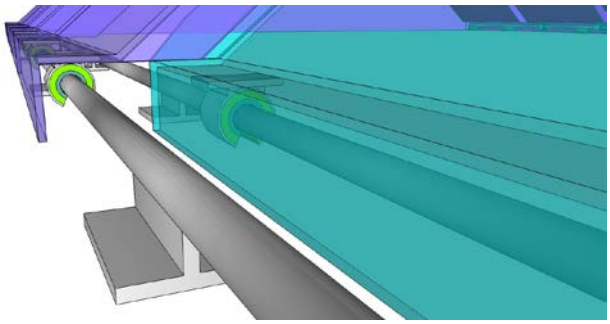
9) Each movable cover section shall have good interlocked and double sealed mechanical joints with rubber gaskets so that the movable gaps at the joints are minimized to prevent leakage of door. Mechanical locks made of SS316 shall be provided to fix the position of each movable cover.

INSTALLATION

1) The installation of the E-Z Slide Cover System shall cause no obstruction or interference with the flow inside any part of the treatment unit. The complete cover shall have no adverse effect on the flow capacity and condition of the treatment unit as before the cover installation.

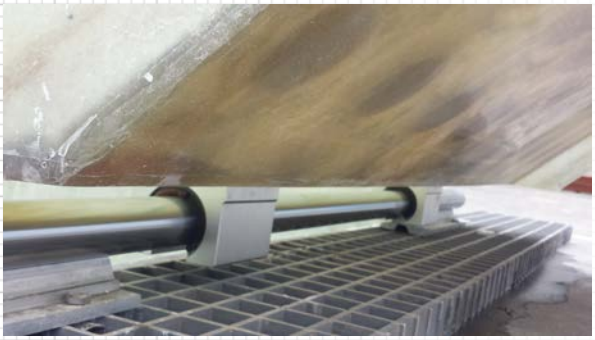


2) The cover shall be installed in a manner such that any future removal, reinstatement and replacement of any parts of the cover can be carried out manually with hand tools and small equipment.



3) During the cover installation, all covered tanks shall be fully ventilated to prevent any buildup of gases to the explosive and occupational limits.

4) Most of the working places such as pits, chambers, channels and tanks are classified as confined spaces. The Contractor shall take extra care and provide sufficient ventilation in the work areas for the execution of the work. The Contractor shall comply with all latest regulations for working in confined space. The Contractor shall note and fulfill all requirements regarding working in confined space under relevant ordinances/regulations.



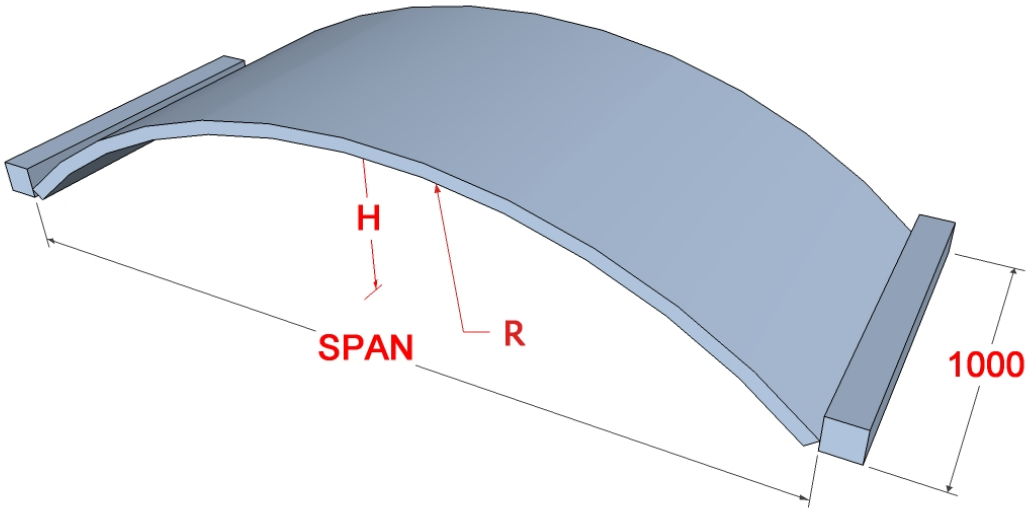
LOAD & DEFLECTION DESIGN

Chemposite has used two different test methods to determine the deflection and strength of our Cup Core® E-Z Slide Cover Systems.

The test specimens are based on the contact molded panels with a common radius of 3850mm with a total cover thickness of 40mm. The Cup Core depth is 34mm with 3mm (M/R/M)* of fiberglass plate on both sides. The nominal weight of the panel is 17kg/sq.m. (3.5Lb/sq.ft.).

The test results are a guideline to assist you to determine the acceptable support spacing required for your product.

* Note:
M = 450g/m^2 chopped strand mat
R = 800g/m^2 woven roving



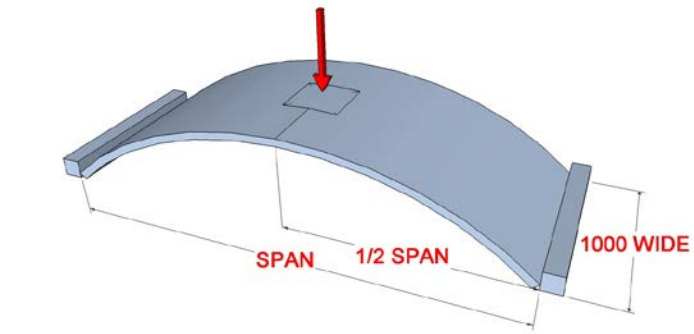
SPAN	*HEIGHT (H)*
3000	*300*
3500	*500*
4500	*650*
5000	*850*
5500	*1000*
6000	*1200*

Dimensions are in mm

Concentrated Load

A 1000mm wide strip of the arch shape Cup Core Sandwich panel is fixed at both ends and spanned at various distances from 3000mm to 6000mm. The load is applied on a 300mm x 300mm pedestal at the center of the span. The deflection of the panel is measured for loads from 50kg to 1000kg or until the panel reached the maximum allowable defection of 0.5% over the span.

CONCENTRATED LOAD (P)



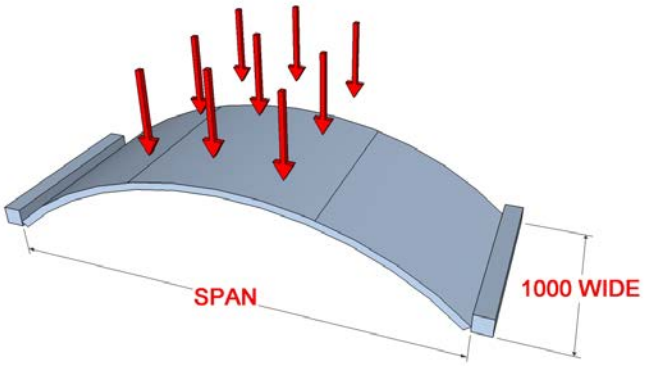
LOAD (P) KG.	SPAN					
	3000	3500	4500	5000	5500	6000
50	-	-	-	2	2	4
100	-	2	3	4	5	9
200	2	5	5	8	11	19
300	3	7	9	13	17	24
400	4	10	12	16	23	30
500	5	11	15	20	30	-
600	6	13	18	24	-	-
700	7	15	21	27	-	-
800	8	17	23	-	-	-
900	10	-	-	-	-	-
1000	11	-	-	-	-	-

Dimensions are in mm

Uniformed Load

A 1000mm wide strip of the arch shape Cup Core Sandwich panel is fixed at both ends and spanned at various distances from 3000mm to 6000mm. The load is applied uniformly over 1 sq.m.at the center of the panel. The panel radius is 3850mm and the deflection of the panel is measured for uniform loads from 50kg to 1000kg or until the panel reached the maximum allowable defection of 0.5% over the span.

LOAD AREA 1000 x 1000
UNIFORM LOAD
(U)



LOAD (U) KG.	*SPAN*					
	3000	*3500*	*4500*	*5000*	*5500*	*6000*
50	-	-	*1*	*2*	*2*	*2*
100	-	*2*	*3*	*3*	*4*	*6*
200	*3*	*5*	*6*	*7*	*8*	*12*
300	*4*	*7*	*8*	*10*	*13*	*18*
400	*5*	*9*	*10*	*14*	*18*	*23*
500	*7*	*11*	*12*	*16*	*23*	*30*
600	*8*	*12*	*14*	*20*	*28*	-
700	*9*	*14*	*16*	*22*	-	-
800	*10*	*15*	*18*	*25*	-	-
900	*11*	*16*	*20*	-	-	-
1000	*12*	*17*	*22*	-	-	-

Dimensions are in mm

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