

DSI STANDARD MUCK LIFTER - 1



The life of any tunneling project can vary from less than one year to several years, so any muck lifting system must be able to relocate and adapt to the next tunneling site.

THE STANDARD MUCK LIFTER – 1 (SML1) is the optimal solution for elevating muck at a tunneling project. This extension of the standard DSI Sandwich Belt high angle conveyor is modular and easily suits the varied needs at multiple tunneling and construction sites. The system consists of a simple tail/loading/transition station followed by an extendable/contractible elevating structure, ending at a head/drive/take-up/discharging station.

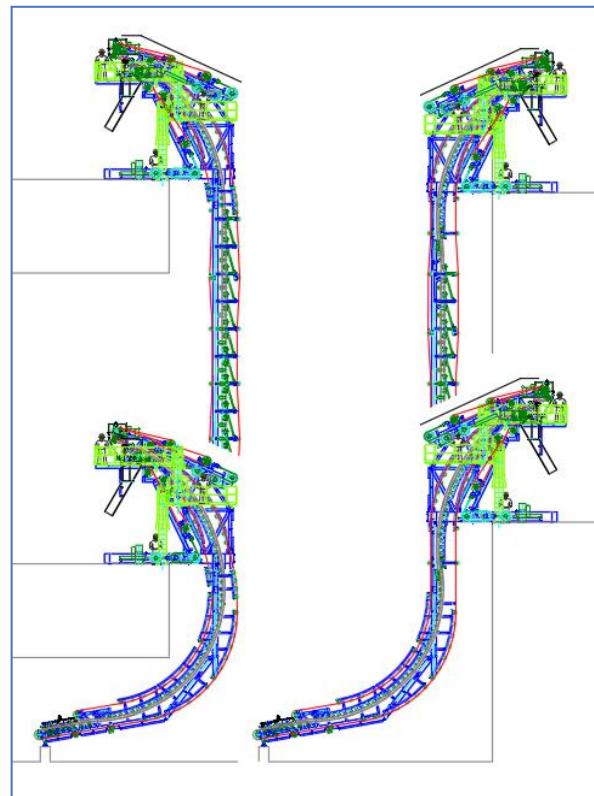
HEAD

On the surface, the head station contains all of the mechanical and electrical equipment. The head station also serves as the structural support for the vertical lift structure which hangs from the head station and carries the upper end of the tail station.

TAIL

Only one simple, light support point is needed for the tail section on the shaft floor. Though elegant and simple in design, the tail section does offer two alternate loading points - a main loading point onto the bottom belt and an alternate loading point onto the return of the top belt. The second loading point accommodates the temporary discharge location of the trailing conveyor during the initial tunnel development for the TBM launch.

The tail and head modules may be arranged for a C-profile or for a S-profile as depicted. The amount of vertical structure is customized for



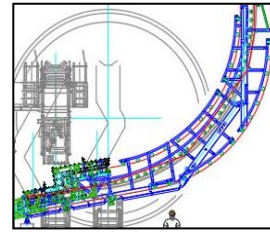
Standard Muck Lifter – 1
DSI Sandwich Belt High angle Conveyor
Design Basis

Material	- Tunnel Muck
- Density	- 1.6 t/cu-m (100 PCF)
-Size	- 150 mm (5.9") minus
Conveying Rate	- 800 t/h (882 STPH)
Conveying Angle	- 90 degrees
Belt Width	- 1400 mm (55.1")
Belt Speed	- 3 m/s (591 FPM)
Lift	- 17072 to 40536 mm (56.0 to 133.0')
Drives	
- Top Belt	-55 to 90 kW (74 to 121 HP)
- Bottom Belt	-55 to 90 kW (74 to 121 HP)

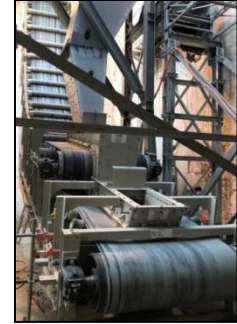
the site requirements.

The vertical lift of the C configuration may vary from a minimum of 17.0 meters to a maximum of 40.5 meters. For the S configuration, it is a minimum of 19.6 meters and a maximum of 39.7 meters.

Though the system is designed to allow for the maximum parameters, each installation will only require the belt strength and drive power that is appropriate for the application. 3-ply 330 PIW belts serve the tension requirements for vertical lifts up to 31.4 meters while 4-ply 440 PIW belts are required at the higher vertical lifts. Two 55 kW drives will provide the power requirements for vertical lifts up to 23.8 meters, while two 75 kW drives are required up to 35.5 meters, and two 90 kW drives are required at vertical lifts above 35.5 meters.



Muck loading onto the return top belt.



PROVEN IN PARIS

The SML1 was originally developed for the Paris Metro Expansion and its many TBM tunneling sites. The system has been proven at two TBM launch sites on Metro Line 15 TC2. The units are designated P1 at Lot OA802 and P2 at Lot OA813. Both systems are of S-profile differing in elevation by 1676 mm.

P1 has a vertical lift of 24647mm while the vertical lift at P2 is 26323 mm. Both systems utilize 3-ply 330 PIW belts and 75 kW drives. During the initial TBM tunnel development, P2 utilized the second alternate loading point at the return of the top belt then switched to the main bottom belt loading point once production began. P1 did not require the alternate loading point. Both systems have completed the muck elevating duties at their sites and are ready for adaptation to the next site. The more general SML1 design also stands ready to be implemented as new equipment at tunneling projects throughout the world.

