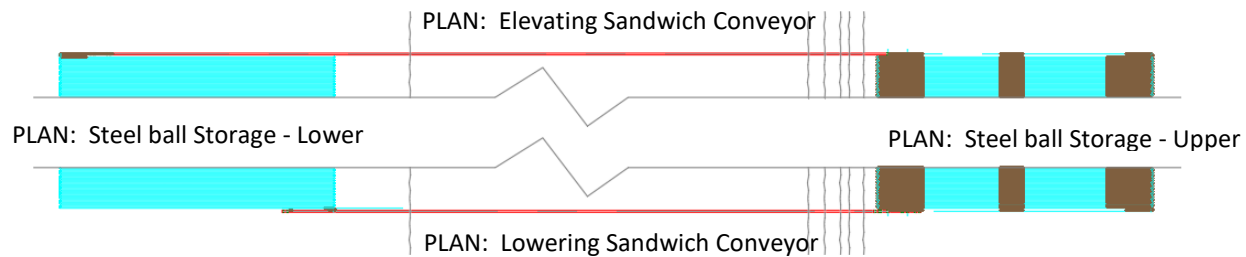


# DSI MEGA BATTERY

## ENERGY STORAGE

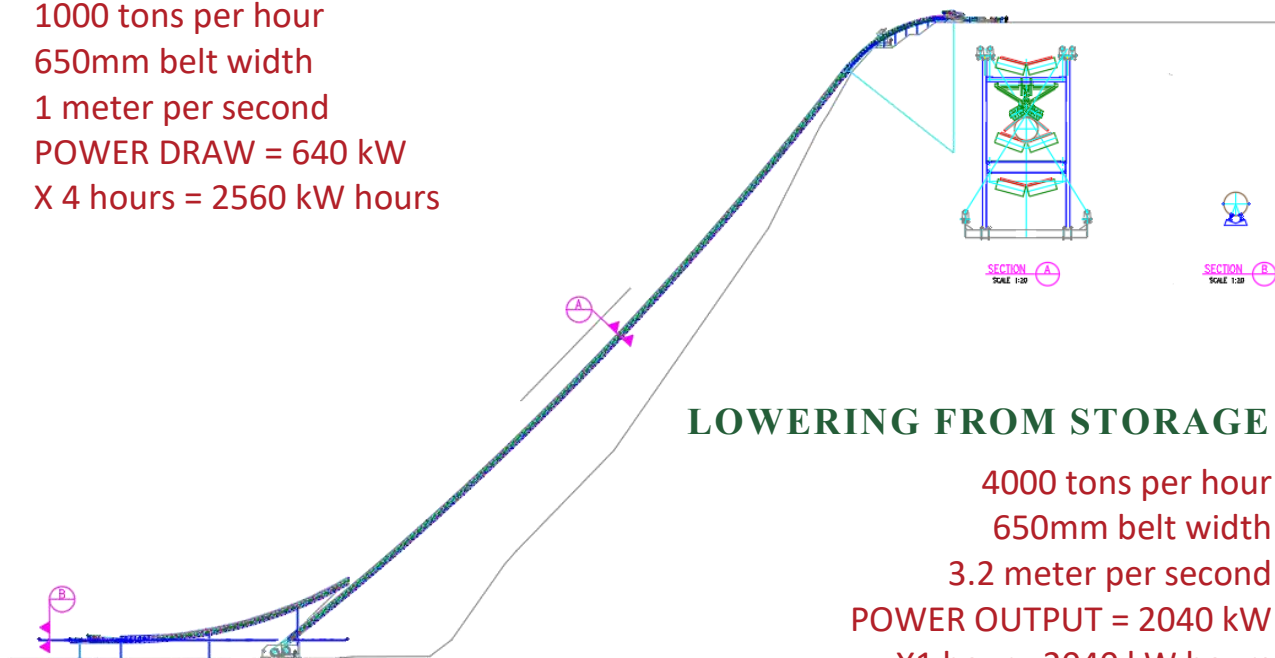
Features of the DSI Sandwich belt high angle conveyor are ideal for energy storage during low power demand and energy production during high energy demand.



The Sandwich Belt high angle conveyor elevates a dense material to an elevated height, and then a downhill Sandwich conveyor can lower the material regeneratively to produce electricity.

## ELEVATING TO STORAGE

1000 tons per hour  
650mm belt width  
1 meter per second  
POWER DRAW = 640 kW  
X 4 hours = 2560 kW hours



## LOWERING FROM STORAGE

4000 tons per hour  
650mm belt width  
3.2 meter per second  
POWER OUTPUT = 2040 kW  
X1 hour - 2040 kW hours



## DSI FLYING SANDWICH BATTERY

Efficiency = 80%

Work out - 2040 kW hours - Work in - 2560 kW hours

### STEEL BALLS FOR THE MEGA BATTERY

Mass each steel ball	100	kgs
Steel Density	8050	kgs/m <sup>3</sup>
Volume each Ball	0.01242236	m <sup>3</sup>
Volume of Sphere	$(4/3)\pi r^3$	
Radius of Sphere	$R=(vol(3/4)/\pi)^{1/3}$	
Ball Diameter (=2r)	0.28734938	m
Say D=	288	mm

### POTENTIAL ENERGY EACH BALL

Mega Battery Lift:	210	m
Gravity	9.8	m/s <sup>2</sup>
Potential Energy Each Ball	Mgh	
	205800	Newton-m
	57.2124	Watt-hours
Elevating Conveyor Length	315	meters
	1096	balls

\*1 joule = 0.000278 Watt-hour

### SANDWICH CONVEYORS ARE HARMONIOUS WITH THE ENVIRONMENT

The power source for a Sandwich Belt conveyor is electricity, which can be produced by hydro, wind, solar or any other carbon neutral source. A Sandwich Belt conveyor when operating in a downhill mode, becomes the source of power.

It's very efficient with regard to power. The majority of the energy usage is directed toward useful work, with the only losses due mainly to light rolling friction of idlers. The lesser the losses, the better!

In the elevating system, with medium to heavy materials, useful work makes up around 85% of total power draw with the losses at 15% or less.

In the regenerative case, where the high angle conveyor is lowering and producing electricity, 85% is available as potential energy that turns into power and 15% or less is lost to friction, which makes the Sandwich conveyor an extremely efficient means of power storage.