


Cable Over Chain, Hands-Down

Why Cables are Preferred in a Tube-Style Drag Conveyor

Have you ever noticed anytime weight and human safety is involved, engineers choose cable over chain?



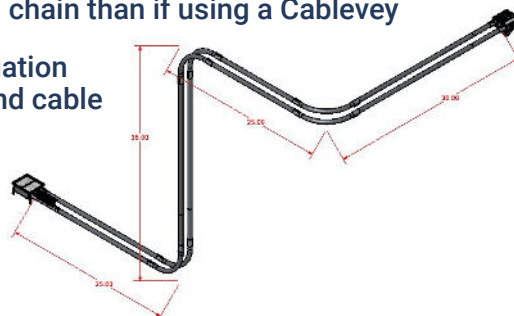
Cable v Chain Strength to Weight Ratio

	Yield Strength	Break Strength	Weight per 100' (30M)
	70,000psi 483MPa	16,000lbs 7,257kg	136lbs 62kg
	300,000psi 2,070MPa	17,600lbs 7,983kg	35lbs 16kg

- Pound for pound*, cable is stronger than chain
- Yield Strength is the stress at which the element stretches and will not return to its original length
- Break Strength is the stress at which the element will critically fail (break)
- A chain of similar Break Strength will weigh 3-4 times as much as a cable*. If the Break Strength of the chain is greater than the cable, the chain will be much heavier

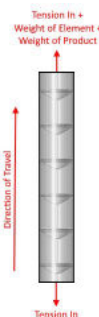
Using some rough numbers

- Because of the difference in weight of the element (cable or chain)
 - Even if running empty of the customer's product, the 6" conveyor shown below will require approximately an additional 0.7 HP if using a common chain than if using a Cablevey
 - Adding product to the equation adds load to both chain and cable conveyor equally
- Many other layouts were compared, and in all cases, chain required more power



Friction is the Enemy

- The primary challenges to the performance of a drag conveyor are:



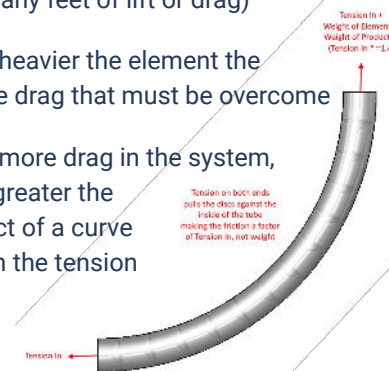
- Lifting the weight of the product to a higher elevation
- Dragging product and the element (cable or chain) through the straights and curves of the system
- Having adequate take-up tension to keep the element engaged at the sprockets

- In many situations, the dragging is the greater challenge, and is especially magnified by the curves



- Curves force the element against the inside of the curve, amplifying the friction (one curve may be equivalent to many feet of lift or drag)

- The heavier the element the more drag that must be overcome
- The more drag in the system, the greater the effect of a curve upon the tension



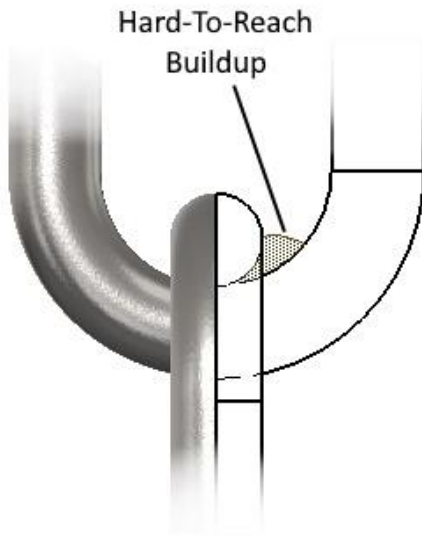
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Wear

- The additional friction and resulting tension increases wear
 - At the sprocket
 - Between the links of the chain
 - On the edges of the discs
 - On the insides of the curves (generating more heat as well)
- Due to the additional friction, causing additional tension, customers pay for
 - Larger motors
 - More power
- And the only result of this is increased wear
- As the chain passes through the bends of a system, the links articulate, grinding product and links
- As the links wear, this causes a “stretching” effect
 - A small amount of wear between each pair of links adds up quickly
- The tensioner may take up the slack, but the distance between links grows in a way that the sprocket cannot adjust for, and sprocket endures more wear
- And the sprocket is already wearing away quickly due to increased tension!

Cleaning



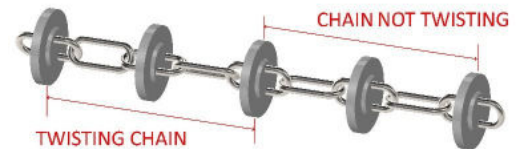
- In situations where cleanliness is critical, a coated cable is used
- Coated cable has much less surface area for buildup to adhere to
- All of the disc and cable surfaces are exposed to cleaning devices like brush bristles or high-pressure spray
- Between every two links of chain there are small spaces where product can build up and are difficult to reach with brush bristles or spray

Noise

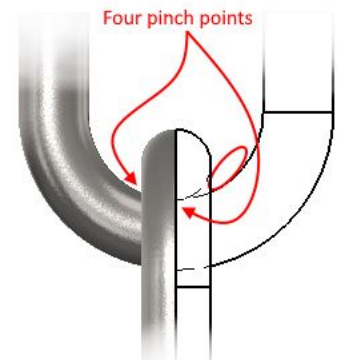
- The additional friction and resulting tension increases noise
- When the discs are pulled with more force against the inside of the curves the discs vibrate with more intensity. This intensity changes the pitch and volume of the sound produced
- Our customers have reported that chain conveyors have caused the installation locations to become ear-protection zones where before they were not

Installation

- Our customers have reported hours of increased downtime resulting from twist introduced during installation
- If twist is introduced
 - The machine must be taken offline
 - The twist located
 - The chain splice undone
 - Chain rotated until twist is removed
- If twist is not removed
 - Degradation of sprocket engagement causes increased sprocket wear
 - Downtime if the chain disengages with the sprocket



Product Damage



- Between every two links of chain there are pinch points
- When pockets between discs are full, there will always be product near these pinch points
- As the chain passes through the curves, the links will roll and grind product between themselves



The Gentle Way to Convey®