



Zip Line Brake  
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## **zipSTOP Case Study:**

*Major Ski Resort, Ontario, Canada*

In the winter of 2012, zipSTOP was contacted by Montgomery Childs, an engineering consultant hired by a major resort in Ontario Canada to improve throughput and decrease operational costs on the existing zip line operation installed at the resort.

### **The Challenges**

Monty conveyed three principal challenges with their current operations, of which could be solved with the addition of a zipSTOP braking installation:

#### **Challenge #1**

The resort employs dual 2,500' zip lines with extremely high demand, however their throughput was very low. Because their existing system required long initial customer set-up and an expansive customer disembarkation process, the resort wasn't able to meet customer demand. Their maximum capacity was only 80 participants per line/day, yet demand was in excess of 300 participants per line/day on a busy day.

#### **Challenge #2:**

Even with relatively low customer descent cycles, the resort's zip lines were wearing extremely fast. With the existing technology employed, the zip lines required complete replacement every two years. This cost, strongly impacted any possible Return On Investment.

#### **Challenge #3:**

The resort felt that customer satisfaction (and repeat visits) could be improved if they could increase rider speed. In brief, the resort employed a resistance pulley system that slowed a rider from start to finish – which left customers desiring more from an experiential standpoint.

### **The Solution**

Following extensive dialogue with Monty about how the zipSTOP product could assist on increasing throughput, zipSTOP (TRUBLUE LLC) felt that all problems could be easily solved with a comprehensive evaluation and replacement of their rider pulleys and braking system. zipSTOP (TRUBLUE LLC) recommended that Monty engage the services



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of Skyline Eco Adventures to implement a fully integrated zipSTOP based system, utilizing Skyline's proprietary Pulley and launcher system, integrated with a zipSTOP braking system. It was believed that throughput could be increased by decreasing rigging time (with Skyline's Launcher/Pulley/Harness interface), and the increasing of rider velocity and decrease customer unloading/disembarkation (both accomplished with the implementation of a zipSTOP braking system).

The implementation of zipSTOP and the much faster Skyline Pulley, would allow a much faster and quieter rider experience, which would not only increase throughput, but would dramatically increase the customer experience.

Finally, it was also projected that the line wear problem could be completely alleviated with the implementation of Skyline's pulley, which employ high-grade polyurethane Sheaves, and which would virtually eliminate wear to the cable, and provide for a very quiet ride.

### **The Results**

The installation was completed in the Spring of 2012. The installation was extremely successful in dramatically improving all variables. The following is a letter from Montgomery Childs to Ms. Anne Marie Moore of IAAPA:

*Dear Ms. Moore,*

*As the Senior Technical and Science Consultant for [the resort], I was to determine if it was possible to increase throughput, decrease maintenance, and improve safety on their current Zipline.*

*Part of the evaluation included extensive testing of the existing technology to develop a base line and then try various other potential solutions. ZipStop in combination with Skyline's Jet Trolley performed the best. Speed increased at the end of the Zipline by approximately 20% but by using the ZipStop, deceleration forces were determined to be around 0.75 g's. regardless of rider mass or velocity variation due to other factors. This is far lower than current technologies – gentler stop for the rider with predictable stopping distances. The addition of springs was used in the event a rider exceeds the limitation of 136kg and a resultant final velocity exceeding ZipStop's capabilities as well as a means to prevent injury should the ZipStop fail.*



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*With over 10,000 riders during the months of July and August there have been no failures of the ZipStop nor any indication of wear. This applies to the Skyline Jet Trolley as well. Throughput was increased by over 300%, and maintenance other than replacement of components like rope (which is expected and predicted) to activate the ZipStop. The system has had no issues and performs extremely well. ZipStop manual covers a wide range of topics surrounding the ZipStop it installation, maintenance and setup. In my opinion it is one of the most comprehensive manuals covering this type of technology I have had the pleasure to use.*

*I wish all amusement ride companies would put this kind of effort into developing technology of this quality.*

*Best Regards*

*Montgomery Childs  
President  
Integem Technologies Inc.*

**Financial Case Study: Hypothetical**

These financials are purely hypothetical and represent the economics that could be realized in a case similar to that described in the case study. These numbers are representative of the potential and were not provided by the resort.

**Assumptions:**

- Max Throughput prior to zipSTOP/Skyline implementation: 80 riders/day
- Max Throughput after zipSTOP/Skyline implementation: 300 riders/day
- Zip Line life prior to zipSTOP/Skyline implementation: 2 years at a replacement cost of \$20k
- Zip Line life after zipSTOP/Skyline implementation: 10 years at a replacement cost of \$20k
- Staffing cost reduced after zipSTOP/Skyline implementation: 20% savings due to single staff operating two side-by side launchers.

<b>System Employed</b>	<b>Max daily ind. line capacity</b>	<b># of rides per line per day</b>	<b># of lines operating</b>	<b>Total rides per day</b>	<b>income per descent</b>	<b>daily income</b>	<b>operational days per year</b>	<b>annual income</b>	<b>Annual amortized line wear</b>	<b>Annual equipment maintenance</b>	<b>Estimated staffing cost</b>	<b>Net Profit</b>
Prior Zip System	80	70	2	140	\$ 30.00	\$4,200	150	\$ 630,000.00	\$ (10,000.00)	\$ (31,500.00)	\$ (138,600.00)	\$ 449,900.00
Current zipSTOP System	300	258	2	516	\$ 30.00	\$15,480	150	\$ 2,322,000.00	\$ (2,000.00)	\$ (10,000.00)	\$ (110,880.00)	\$ 2,199,120.00

**Return on Investment:**

The cost of the upgrade similar to that described in the case study is \$110,000, which would include an entire retrofit and replacement of the worn zip lines. For a resort operating with a five month long season, the entire retrofit would be paid for within the first two weeks of operations.