



ELS has been the operations and maintenance services provider for the BHS at Fort Myers' Southwest Florida International Airport (RSW) since it was installed in the early part of the last decade. This BHS has more than 860 electric motors ranging in size from 2 to 7½ horsepower (480 volt, 3 phase.) There are 12 ticket counter and 12 curb side input conveyors collecting bags into 3 primary conveyor lines. These primary conveyor lines carry bags to 7 security lines, each feeding bags to one of 7 L3 Explosive Detection Systems screening machines. Bags that are cleared exit the machines and are routed to the "clear" conveyors and ultimately sorted to the individual airlines. Bags that are not cleared by the L3 machines are routed to the "not clear" conveyor for further processing by the TSA.

Though a detailed analysis of the BHS, ELS identified the potential to reduce energy consumption by routing bags differently during periods with lower bag volume, fine tune shut down of idle sections and through enhanced maintenance practices. This different routing, combined with revised PLC (programmable logic controller) programming, enables sections of the outbound system to be shut down during these periods to conserve energy.

The BHS is certified to process 2,600 bags per hour through the L3 EDS machines. During periods of reduced baggage volume, the bags can be routed to a single bank of L3 machines, either 1 - 4 or 5 - 7, which allows

### Energy Facts

- **Abstract:** BHS that operates with excess capacity or run times increases its total cost through energy waste, parts usage, repairs and its carbon footprint.
- **Scope:** Enhance maintenance activities and perform system analysis that optimizes electromechanical and system control efficiencies.
- **System Statistics:** 3 miles of conveyor, 840 electric motors, up to 2,600 Bags Per Hour
- **Potential Savings:** 790,000 KWH = \$71,000 per year plus reduced parts and labor
- **Project Completion:** On-going

# Value Added Services

## Reducing BHS Energy Consumption (RSW)



much of the system to be shut down.

When the daily bag volume is forecast to be less than 10,000 items and less than 1,000 for each 2 hour period of the operating day, ELS reroutes the normal flow to allow the L3 machines banks 1 - 4 or 5 - 7 to be shut down and consequently part of the system. This is accomplished by configuring the system to reroute all bags. The power face diverters on OL Lines are disabled to the security conveyors SS1 - SS4 or SS5 - SS7, preventing bags from being routed to the L3 machines on those lines. ELS constantly monitor the bag volume to immediately return the system to a full operational status when the capacity is needed.

The energy savings from these initiatives have achieved in excess of 2,100 kilowatt hours per day or more than 790,000 kilowatt hours annually. This equates to energy cost savings of approximately \$71,000 per year. An additional benefit not yet quantified is reduced maintenance cost for parts and labor result of the reduced wear and tear. These energy and maintenance cost savings are passed directly to ELS' customer, the Lee County Port Authority, and the operating airlines.

The table summarizes the estimated KWH savings for each bank of conveyors. Actual savings have exceeded these estimates.

OL2 CONVEYOR	OL4 CONVEYOR	SS2 CONVEYOR	SS3 CONVEYOR	SS4 CONVEYOR
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
	5	5	5	5
	6	6	6	6
	7	7	7	7
	8	8	8	8
		9	9	9
		10	10	10
		11	11	11
				12
				13
				14
				15
<b>Hours</b>	<b>Hours</b>	<b>Hours</b>	<b>Hours</b>	<b>Hours</b>
20	20	20	20	20
<b>Amps</b>	<b>Amps</b>	<b>Amps</b>	<b>Amps</b>	<b>Amps</b>
11.7	41.4	26.7	26.7	38.3
<b>Daily Amps</b>	<b>Daily Amps</b>	<b>Daily Amps</b>	<b>Daily Amps</b>	<b>Daily Amps</b>
234	828	534	534	766
<b>Watts</b>	<b>Watts</b>	<b>Watts</b>	<b>Watts</b>	<b>Watts</b>
112,320.00	397,440.00	256,320.00	256,320	367,680.00
Total Saving Per Day				
Total Watts of Down time =		1,390,080 x .9 x 1	.73/1000=2167.35	KWH
FPL Charges \$0.69 per KWH =		X .9		
Total Daily Savings =		<b>\$194.79</b>		

**Note: Estimated KWHs savings are calculated using Full-load Amperage (FLA) and is based on a continuous 20-hour day. Final savings will be affected by variations in the actual amp draw of each component during normal operation. Power savings for the CTX machines are not included in this estimate. All final changes are completed with the cooperation of the TSA and customer.**



**OUR ENERGY MISSION: ELS is dedicated to saving energy whenever possible. We actively seek ways to perform more efficiently to leave a smaller carbon footprint during and after our maintenance services. The improved operational efficiency equates to significant cost savings to our customer and a corporate responsibility to our planet. To learn more how ELS can add value to your maintenance requirements contact us today.**