

Case Study

Leeways Granulator

Manufacturer: Zerma



integra[™]

intelligent fixed speed motor control

Case Study



Introduction

Leeways produces plastic containers for food production, all the skeletal waste that is left over in the making of the containers is granulated to be reprocessed. This is also a space saving exercise to reduce the size of the excess plastic reels, this space reduction has a price tag in machine operating time. The integra units reduce the running cost as well as switching the granulators off after a period of inactivity.

The Feeding conveyor and Blower are also switched off to save energy, the conveyor being off also prevents the granulator from being fed accidentally whilst the granulator motor is in standby. The Granulator, Blower and Conveyor belt are then automatically

Sequence of events in achieve these savings;

- Installed a 90kw Integra unit.
- The Integra saves energy through the loading cycle and when Idle.
- The Integra unit fully granulates the product and waits.
- The Integra then monitors for a long period of off load and switches the Granulator off.
- The conveyor belt and blower are then also switched off.
- The Integra unit then waits for the proximity sensor to detect presents of material.
- The main motor and Blower are automatically re-started and when up to speed the conveyor is restarted.
- The process starts once again.
- Motors are inherently unintelligent, Installing this technology, saves a lot of money.

Analysis Details

Type of Machine:	Granulator
Manufacturer:	Zerma
Motor Size:	90kW
Motor Energy Rating:	IE2
Operating Hours:	24/5
Type of Material:	PET

Key Benefits



Soft Start

Integra Softstarts the granulator, reducing mechanical wear and tear + reduces peak demand.



Energy Saving

Through the Loading cycle, the Integra unit will reduce the energy consumed by the granulator.



Auto Switch Off

When the granulator is left running waiting for more product, the Integra unit will automatically detect for this and switch the granulator off.



ROI

Return On Investment 6 Months.



Savings

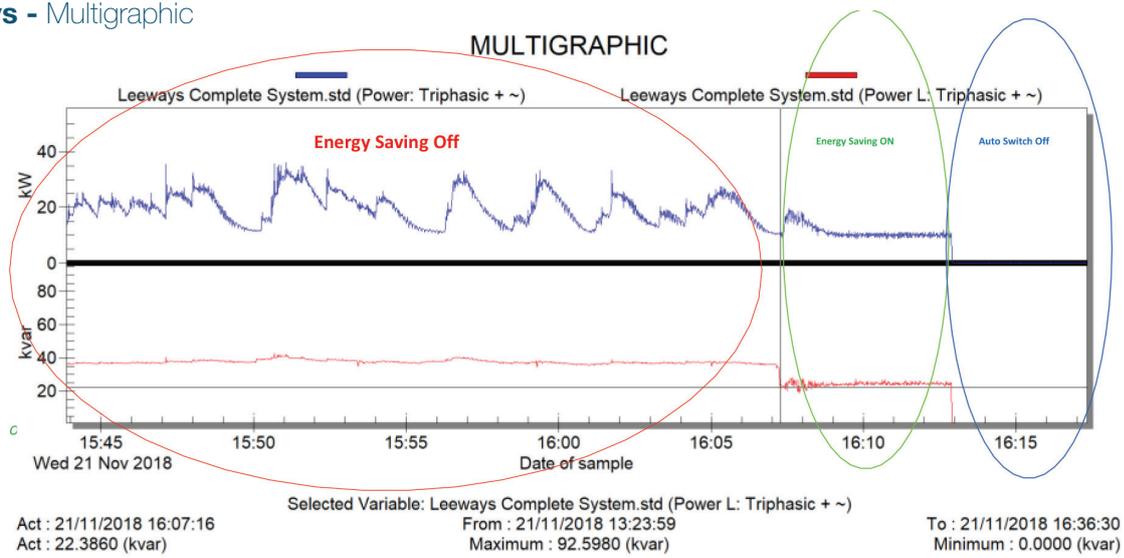
Savings Gained.



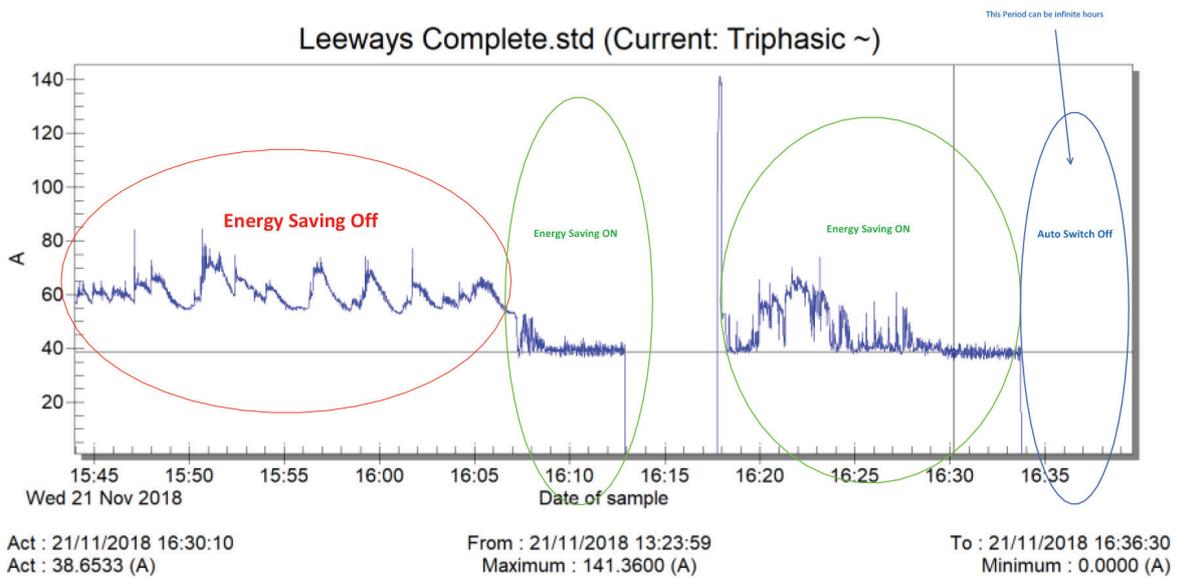
Sensor Installed

Sensor Installed

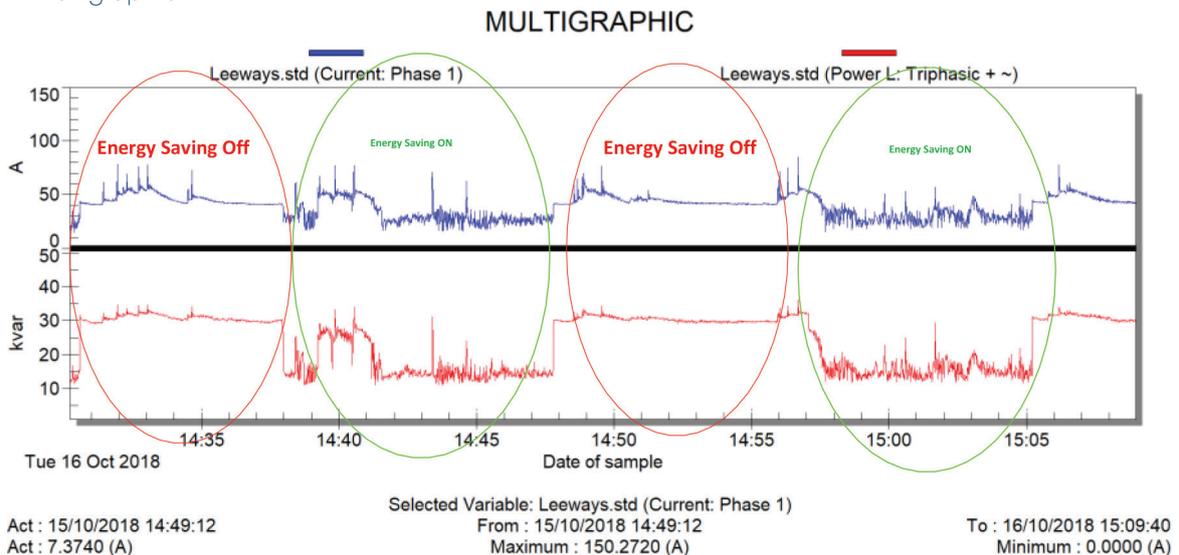
Leeways - Multigraphic



Leeways - Complete STD (Current Triphasic ~)



Leeways - Multigraphic



Energy Analysis



Off Load Sequence and Savings

Before

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
1039	16/10/2018	14:47:48	44.4867	5.034	27.92
1040	16/10/2018	14:47:49	43.5933	4.568	30.182
1041	16/10/2018	14:47:50	43.35	4.434	30.056
1042	16/10/2018	14:47:51	43.3367	4.128	30.116
1043	16/10/2018	14:47:52	43.2453	4.04	30.11
1044	16/10/2018	14:47:53	43.2767	4.128	30.13
1045	16/10/2018	14:47:54	43.1973	4.372	30.042
1046	16/10/2018	14:47:55	43.48	4.416	30.208

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
1582	16/10/2018	14:56:51	59.4413	26.164	32.092
1583	16/10/2018	14:56:52	60.3207	26.732	32.39
1584	16/10/2018	14:56:53	60.1787	26.572	32.47
1585	16/10/2018	14:56:54	59.2307	25.604	32.334
1586	16/10/2018	14:56:55	59.3567	26.05	32.14
1587	16/10/2018	14:56:56	59.1787	25.76	32.15
1588		Average	47.98	11.57	30.48

After

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
1594	16/10/2018	14:57:56	44.5393	14.228	17.792
1595	16/10/2018	14:57:57	29.6973	8.384	13.396
1596	16/10/2018	14:57:58	36.604	11.456	16.072
1597	16/10/2018	14:57:59	29.3907	9.906	12.88
1598	16/10/2018	14:58:00	34.1433	11.092	14.55
1599	16/10/2018	14:58:01	38.802	9.99	17.934
1600	16/10/2018	14:58:02	44.7053	13.522	19.616
1601	16/10/2018	14:58:03	36.4507	11.926	15.718

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
2023	16/10/2018	15:05:05	30.34	8.916	13.058
2024	16/10/2018	15:05:06	33.0567	10.262	14.342
2025	16/10/2018	15:05:07	34.786	9.14	16.908
2026	16/10/2018	15:05:08	30.2727	7.598	13.74
2027	16/10/2018	15:05:09	31.7053	8.34	13.72
2028	16/10/2018	15:05:10	38.6333	9.836	18.324
2029	16/10/2018	15:05:11	30.9567	9.174	13.874
2030		Average	33.35	8.64	15.39
2031		Savings Rate	30%	25%	50%

Savings with Integra

Current: Triphasic (A) **30%**

Power: Triphasic + (kW) **25%**

Power L: Triphasic (kvar) **50%**

Total Energy Saving Effect

The processing of the Skeletal waste:

- The waste is brought from the factory and stored in large metal containers.
- Every few hours an operator performs the granulation process.
- This involves lifting the rolls of skeletal waste out the storage containers onto a conveyor belt.
- Once the granulation process has been complete the operator walks away and goes onto another task.
- The granulation process can take an hour and then the motor can be left for hours waiting for more waste to pile up.
- The integra then monitors for this and switches the motor off.

The effect of the integra in this process taking a logical and conservative view.

If we say that the motor is switch off for 3 hours in between granulating sessions, through a 24h period this would equate to 18h in a 24 hour period.

If we say that the motor is switch off for 2 hours in between granulating sessions, through a 24h period this would equate to 16h in a 24 hour period.

Simply taking 10 hours in a 24h period, without considering the energy saving when the process is running, gives an ROI of 6 months for this customer.

Benefits

Integra integrates fully with its surroundings and can even switch your motors off automatically when they are not being used, or use stored energy in certain applications (such as flywheel mechanisms) to reduce your electricity consumption even further.

