suresense technologies

Case Study

Granulator

Manufacturer: Cumberland

integra™

intelligent fixed speed motor control

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Case Study

The Integra unit was supplied through a Suresense partner, called Renmar Plastics Machinery Ltd to MassMould Ltd who manufacture plastics for the food industry.

The granulator recycles plastic bottle tops. The hopper is filled up manually and a small conveyor belt feeds the Granulator. The Suresense motor controller is fitted to the Granulator to save energy when granulating.

On the request of MassMould the Integra firmware was changed to monitor the feed though the granulator and also inform the operator using a visual signal when the hopper feed has run out. This is a good example of how Suresense Technologies listen to their customers' needs; this application was specifically developed for MassMould who wanted product going through this granulator constantly, the reasoning was 'We want our investment to pay for itself'

Location

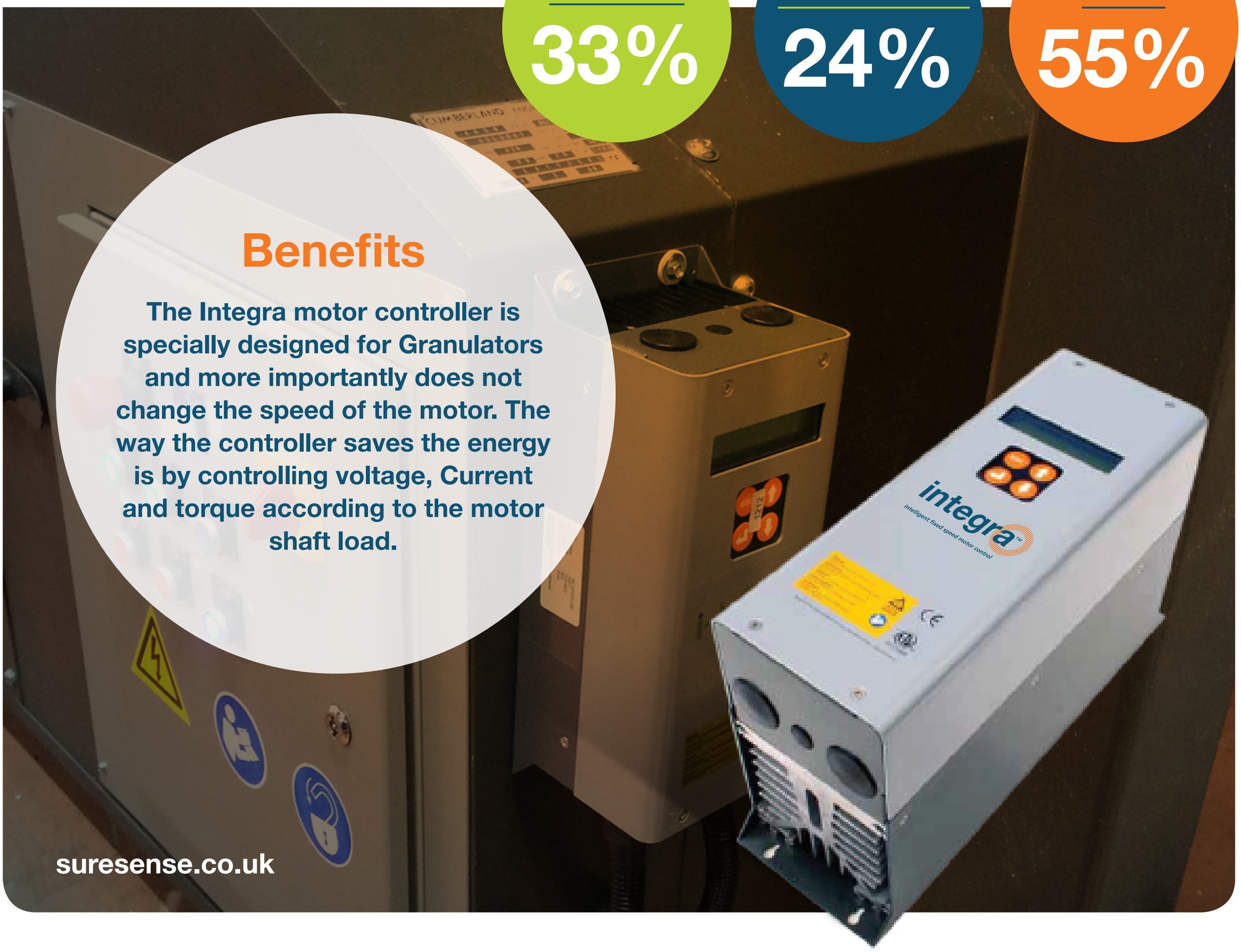
Bedford, England

Test Details

Type of Machine:	Granulator
Manufacturer:	Cumberland
Motor Size:	15kW
Motor Energy Rating:	IE2
Operating Hours:	24/7
Type of Material:	PET

On Load Savings

Current	Power kW	kVAr
33%	24%	55%



Benefits

The Integra motor controller is specially designed for Granulators and more importantly does not change the speed of the motor. The way the controller saves the energy is by controlling voltage, Current and torque according to the motor shaft load.

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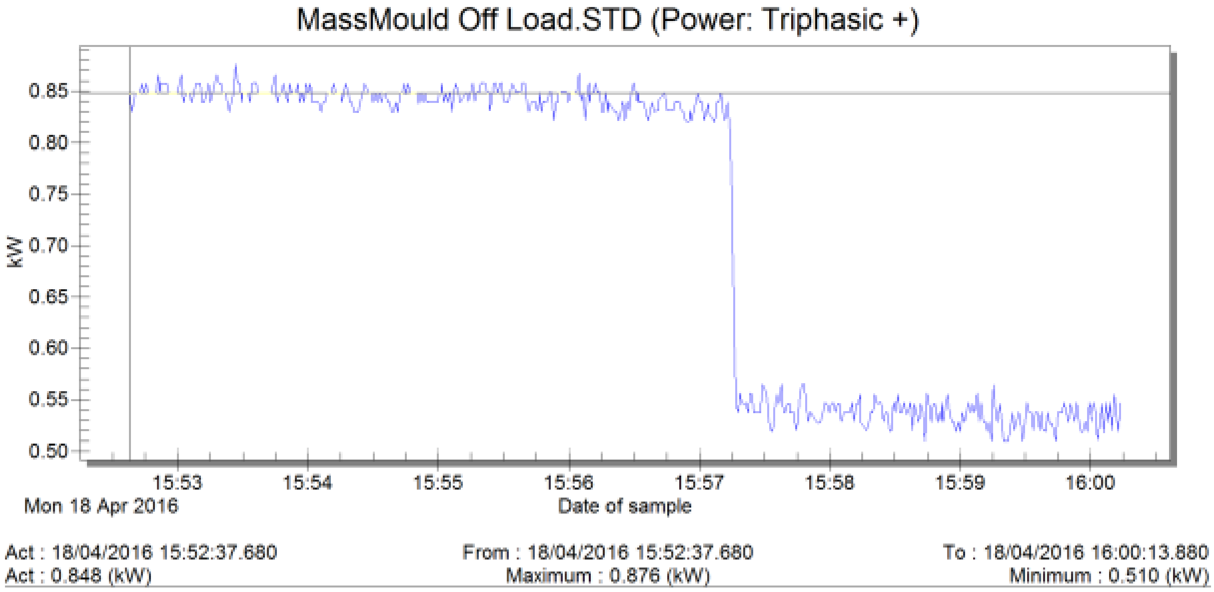
Test conditions:

Off Load Current and kW Graph:



Off Load Savings Data

Without Integra:

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
2	18/04/2016	52:37.7	11.327	0.848	8.126
3	18/04/2016	52:38.6	11.301	0.83	8.089
4	18/04/2016	52:39.6	11.34	0.839	8.134
5	18/04/2016	52:40.6	11.43	0.848	8.207
6	18/04/2016	52:41.5	11.443	0.848	8.216
7	18/04/2016	52:42.5	11.417	0.848	8.198

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
242	18/04/2016	56:27.7	11.249	0.831	8.034
243	18/04/2016	56:28.6	11.314	0.848	8.107
244	18/04/2016	56:29.6	11.378	0.858	8.144
245	18/04/2016	56:30.5	11.314	0.849	8.097
246	18/04/2016	56:31.5	11.275	0.839	8.07
247	18/04/2016	56:31.5	11.288	0.849	8.061
248	18/04/2016	56:32.4	11.224	0.839	8.016
249		**Average**	**11.333**	**0.846**	**8.123**

With Integra:

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
257	18/04/2016	57:21.3	7.105	0.547	3.505
258	18/04/2016	57:22.3	7.079	0.537	3.441
259	18/04/2016	57:23.2	7.298	0.556	3.615
260	18/04/2016	57:24.2	7.298	0.555	3.642
261	18/04/2016	57:25.1	7.117	0.537	3.486
262	18/04/2016	57:26.1	7.117	0.537	3.496
263	18/04/2016	57:27.1	7.118	0.538	3.487

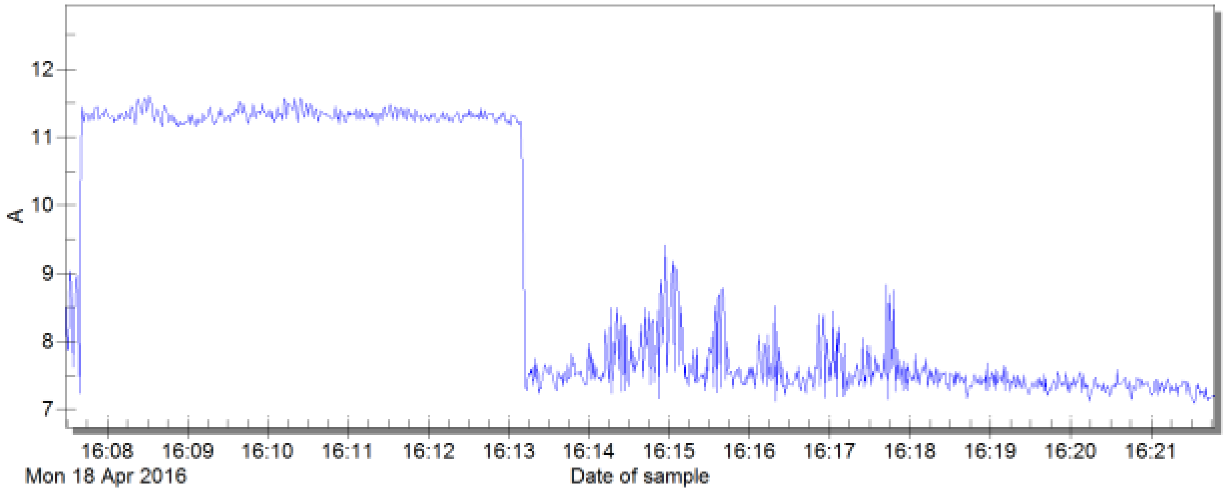
1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
428	18/04/2016	00:05.2	7.156	0.546	3.532
429	18/04/2016	00:06.2	7.195	0.518	3.523
430	18/04/2016	00:07.1	7.298	0.547	3.651
431	18/04/2016	00:08.1	7.208	0.528	3.569
432	18/04/2016	00:09.1	7.156	0.547	3.524
~~433~~	~~18/04/2016~~	~~00:10.0~~	~~7.247~~	~~0.52~~	~~3.56~~
434	18/04/2016	00:11.0	7.311	0.555	3.66
435	18/04/2016	00:12.9	7.131	0.519	3.496
436	18/04/2016	00:13.9	7.144	0.547	3.532
437		**Average**	**7.192**	**0.536**	**3.553**
438		**Savings Rate**	**37%**	**37%**	**56%**

Savings with Integra

Current	**37%**
Power (kW)	**37%**
kVAr	**56%**

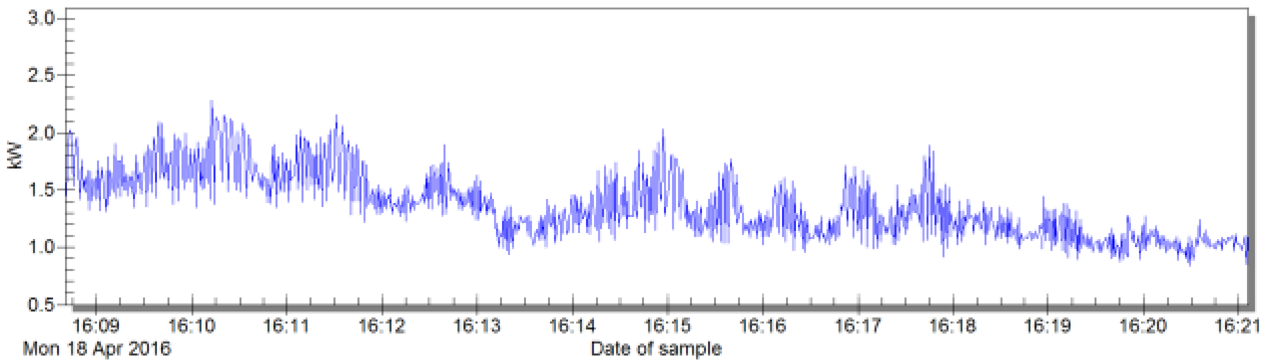
On Load Savings Data

MassMould On Load.STD (Current: Triphasic)



Act : 18/04/2016 16:02:43.241 From : 18/04/2016 16:02:43.241 To : 18/04/2016 16:51:11.240
Act : 7.246 (A) Maximum : 12.730 (A) Minimum : 6.938 (A)

MassMould On Load.STD (Power: Triphasic +)



Act : 18/04/2016 16:02:43.241 From : 18/04/2016 16:02:43.241 To : 18/04/2016 16:51:11.240
Act : 0.529 (kW) Maximum : 2.966 (kW) Minimum : 0.520 (kW)

On Load Savings Data

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
2	18/04/2016	08:41.0	11.159	1.45	7.814
3	18/04/2016	08:41.9	11.456	1.926	7.897
4	18/04/2016	08:42.9	11.456	2.025	7.888
5	18/04/2016	08:43.9	11.379	2.007	7.824
6	18/04/2016	08:44.8	11.353	1.742	7.869
7	18/04/2016	08:45.8	11.211	1.532	7.824
8	18/04/2016	08:46.7	11.314	1.889	7.823
9	18/04/2016	08:47.7	11.327	1.962	7.805

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
267	18/04/2016	12:54.4	11.34	1.514	7.989
268	18/04/2016	12:55.3	11.314	1.35	8.016
269	18/04/2016	12:56.3	11.365	1.524	7.998
270	18/04/2016	12:57.2	11.237	1.286	7.952
271	18/04/2016	12:58.2	11.25	1.579	7.887
272	18/04/2016	12:59.2	11.198	1.241	7.906
273	18/04/2016	13:00.1	11.25	1.624	7.869
274	18/04/2016	13:01.1	11.172	1.241	7.915
275	18/04/2016	13:02.0	11.327	1.578	7.98
276	18/04/2016	13:02.0	11.314	1.304	8.016
277		**Average**	**11.324**	**1.626**	**7.923**

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
285	18/04/2016	13:14.6	7.517	1.113	3.569
286	18/04/2016	13:15.5	7.504	1.103	3.615
287	18/04/2016	13:16.5	7.581	1.268	3.587
288	18/04/2016	13:16.4	7.491	0.994	3.642
289	18/04/2016	13:17.4	7.607	1.323	3.568
290	18/04/2016	13:18.4	7.349	0.975	3.532
291	18/04/2016	13:19.3	7.748	1.359	3.669
292	18/04/2016	13:20.3	7.401	0.94	3.615
293	18/04/2016	13:21.2	7.658	1.359	3.56

1	Date	Time	Current: Triphasic (A)	Power: Triphasic + (kW)	Power L: Triphasic + (kvar)
727	18/04/2016	20:17.8	7.426	1.021	3.587
728	18/04/2016	20:18.8	7.465	1.058	3.614
729	18/04/2016	20:19.8	7.298	0.975	3.522
730	18/04/2016	20:20.7	7.375	1.094	3.514
731	18/04/2016	20:21.7	7.337	0.884	3.577
732	18/04/2016	20:22.6	7.337	1.057	3.505
733	18/04/2016	20:23.6	7.272	0.949	3.505
734	18/04/2016	20:24.5	7.388	0.984	3.569
735	18/04/2016	20:25.5	7.246	0.957	3.487
736		**Average**	**7.600**	**1.239**	**3.601**
737		**Saving Rate**	**33%**	**24%**	**55%**

Savings with Integra

Current	**33%**
Power (kW)	**24%**
kVAr	**55%**

intelligent fixed speed motor control

Energy Efficient

This excess consumption is not only an unnecessary cost in your energy bill, but it also serves to damage your equipment as the excess energy is released through the windings of the motor in the form of heat, vibration and noise. Integra will give your motors intelligence through monitoring the load on the shaft of the motor for every cycle of the supply. The Integra will then feed your motors the electricity that they require to run efficiently at any point in the duty cycle.

Customers

There are a growing number of forward thinking executives and energy consultants who are taking their corporate responsibilities (CSR) very seriously. In an effort to target carbon reduction and increase their company profits, they have chosen Suresense Technologies energy saving solutions. These implementations were viewed as part of their own energy saving strategy and were driven by two other key factor, low risk and high return on investment (ROI).

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.