



**suresense**  
technologies

# Report

# Strata Products

18/08/2017



[suresense.co.uk](http://suresense.co.uk)

## Background

Suresense is the world leader in fixed speed variable load energy saving, we also produce our own intelligent industrial lighting. We strive to help our customers save money through energy reduction, we have been in this business since 1997, so the technology is well established. We specialise in these two technologies because they use 64% of industrial electricity.

Our main target market is the plastics industry, this is where our technology works best, We currently deal directly with Zerma, Neue Herbold, Genox, Getecha, Blackfriars, all install at source (OEM). We have installed units on just about every type of granulator/shredder out there.

### Advantages of installing this equipment;

- **Energy saving when running**
- **Auto switch off**
- **Prolong the life of the equipment**
- **ISO 50001**
- **Pays for itself**
- **Removes the Human element.**

## Results/Savings

**Mwh**  
**1.37**

**ROI**  
**5-6 months**

**Equates**  
**£16.40 per day**

**Saving**  
**45%**

## What Makes Suresense different

- **We do all our own; Mechanical design, electrical design, software development, PCB design, basically we own all the IP to all our products.**
- **Our sensors / Motor Controllers are extremely configurable and designed around real life scenarios.**
- **All the engineers who have developed the software and hardware have been on site multiple times and have hands on experience in the installation / commissioning process.**
- **Our products are built to last.**
- **We have worked with the Strata engineering team in solving energy issues.**



# Brief and Objective

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We have been working very closely with Mark Humphries to create the perfect energy saving solution for Strata's shredder/ granulator combination. The project has been very successful;

## Measurement and verification

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We installed an Online meter System call an Eniscope, this enables us at any stage through the process to verify what is actually happening 24/7. All the graphs have come directly from the online Analysis software that talks to the meter.

An Integra Unit is installed on both the Shedder and Granulator set.

## Setup

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- **A Presence detector is installed on the Shedder and is connected to input 4 of the Shedder Integra.**
- **The shredder control for the power pack is connected to the Granulator Integra into Input 4.**
- **This inter connection ensures that the Granulator Must be running when the shredder is running.**
- **The Shedder Integra also has the ability to turn the Power pack on and off.**
- **The Granulator Integra has the ability to switch the extraction fan on and off.**

## Sequence of events

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After the initial starting of the Shedder and Granulator the following sequence will continuously take place until the power is switched off.

## Shedder Activity;

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- **The Shedder will start sensing for an unloaded condition.**
- **The shredder Integra will also optimise the Motor when running an save energy.**
- **Until an unloaded condition is detected the countdown timer on the Shredder Integra will remain at 7 min 25 sec.**
- **When the shredder starts to unload and becomes empty the timer will start counting down to zero.**
- **When the Shredder Integra gets to zero, it will switch off both the main motor and power pack.**
- **The Shredder Integra unit will then wait for a trigger via the presents detector.**
- **In the event of material being fed into the shredder, the shredder Integra will power up the system again, power pack and mainmotor.**
- **The Shedder will then go through the same sequence.**



## Granulator Activity;

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The Granulator Integra will be continuously monitoring for both load and the Shredder being turned off.

- **When the Shredder Integra times out the Granulator Integra will then monitor for load.**
- **When the Granulator Integra detects an unloaded condition and the shredder motor is still off the granulator Integra will start its count down sequence.**
- **After 7 min 25sec the granulator Integra will then switch the main motor and fan motor off.**
- **The Granulator Integra will then monitor for activity on the shredder.**
- **When the Shredder Integra restarts a signal is sent to the Granulator Integra to start up.**

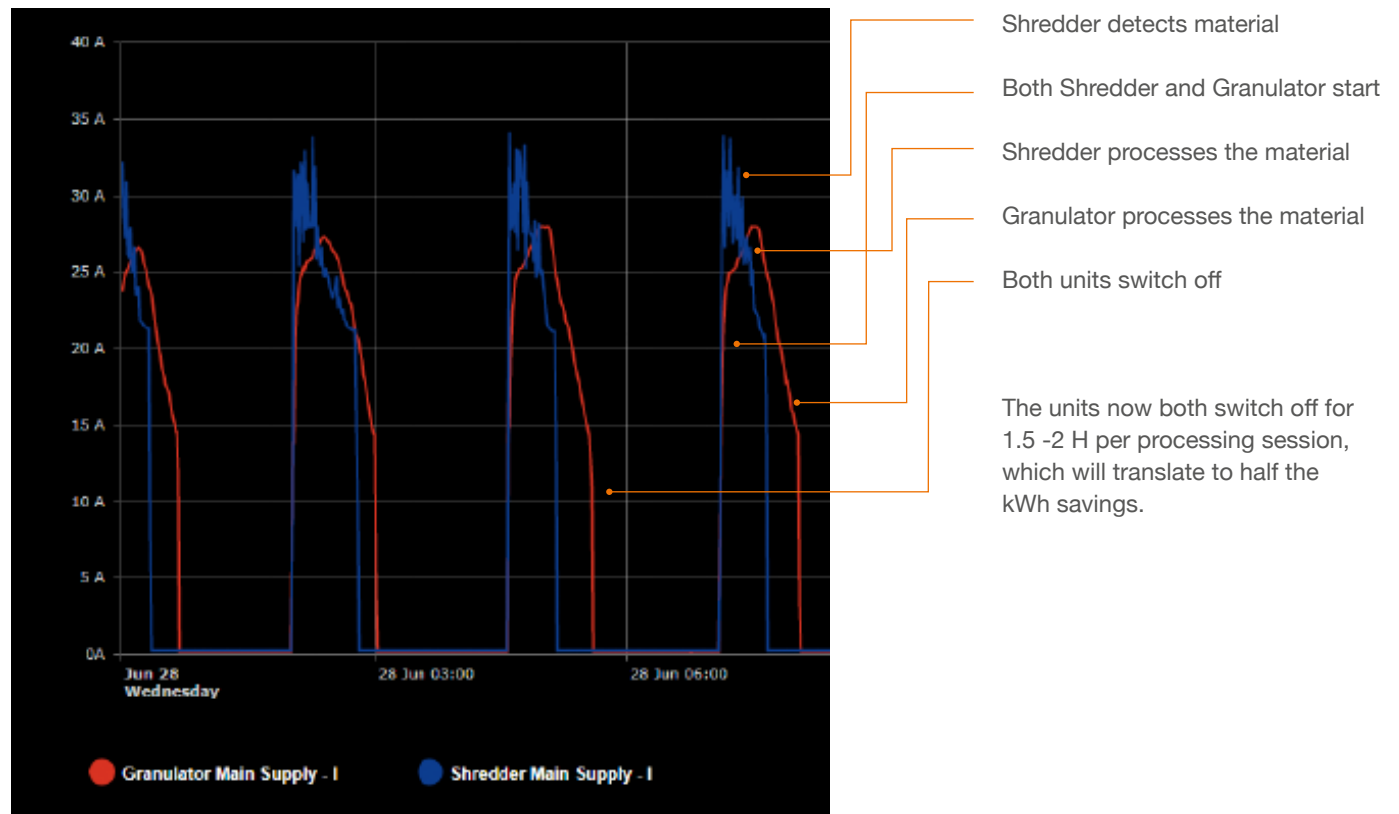
### Important Note:

*The granulator is constantly monitoring the shredder so even if the shredder is switched off manually and the granulator times out, as soon as the power pack restarts the granulator will also start. To optimise the opportunity we suggest training the employees to not touch the Shredder/ Granulator combo, there has been scenarios where the operators have switched the main motors off but left the power pack and granulator running. The only time they should interact is in a lock down scenario for maintenance and cleaning.*



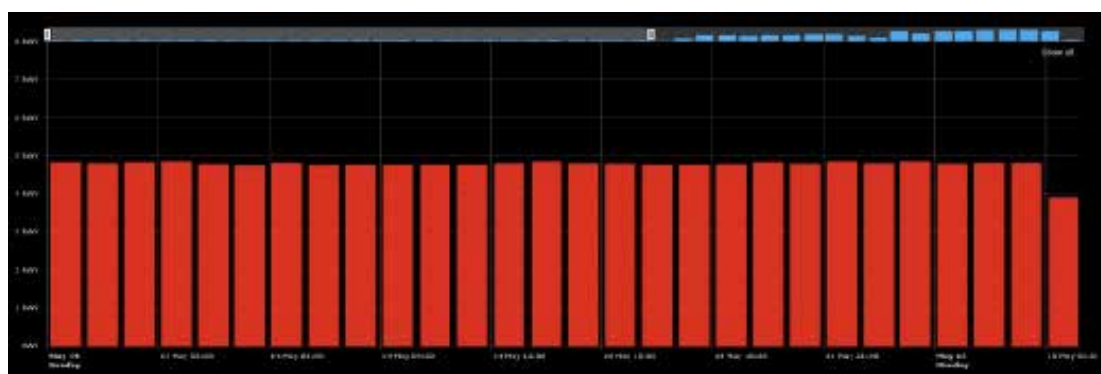
## Perfect operation

Where before our setup was installed the Shredder set would have been running constantly, the profile now shows what we have achieved and I would consider this a perfect scenario.



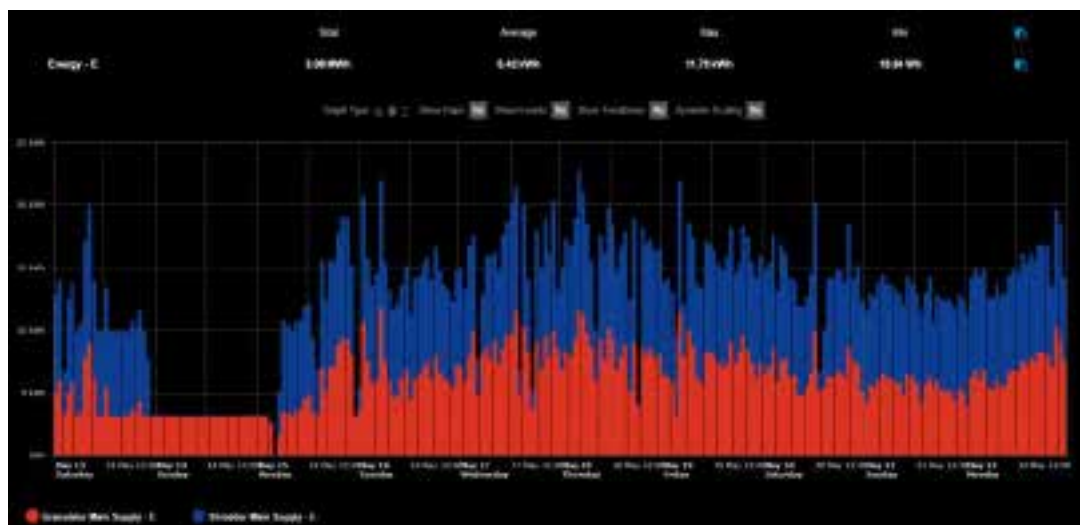
## Preventing the inevitable

Another scenario which will be addressed, which is not unique to Strata, because there are so much noise in a factory environment, usually things are left on during shut downs . This can be clearly seen below, when the factory was closed the granulator was running. The Integra units simply monitor for this even and switch everything off.



## How much energy is being Saved

The Shedder and Granulator set was run for 10 days without Integra and 10 days with.



Consumed 3.08 Mwh



Consumed 1.71 Mwh

## Results

Savings 1.37 Mwh

ROI 5-6 months

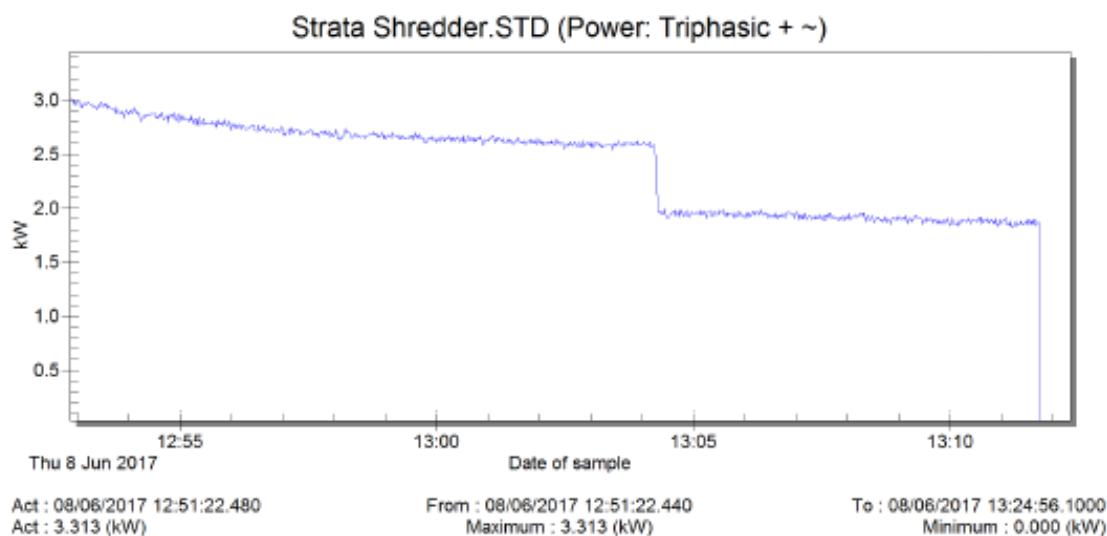
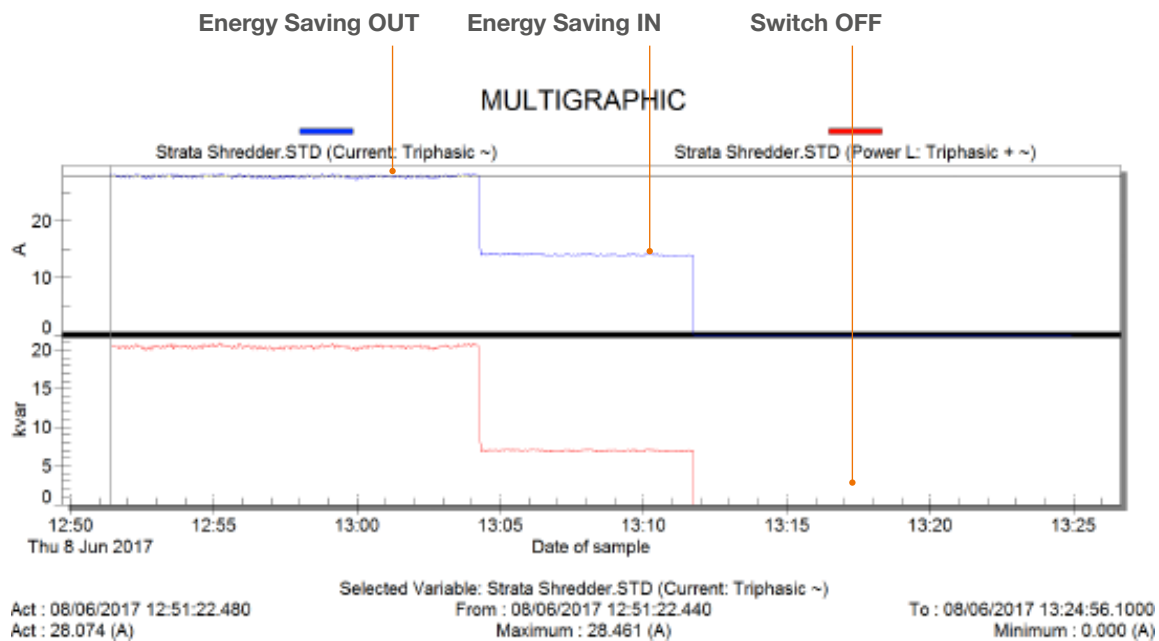
Equates to £16.40 per day

260 day period £4264.00

Saving  
**45%**

## More In-Depth View of the Running

### Shredder



## More In-Depth View of the Running

### Shredder WITHOUT Energy Saving

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
2	08/06/2017	51:22.5	28.074	3.313	20.497
3	08/06/2017	51:22.4	28.087	3.305	20.479
4	08/06/2017	51:23.4	28.126	3.304	20.515
5	08/06/2017	51:24.4	28.126	3.304	20.561
6	08/06/2017	51:25.3	28.126	3.295	20.552
7	08/06/2017	51:26.3	28.01	3.268	20.46

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
797	08/06/2017	04:04.0	28.267	2.592	20.771
798	08/06/2017	04:05.0	28.293	2.582	20.77
799	08/06/2017	04:06.9	28.151	2.6	20.653
800	08/06/2017	04:07.9	28.19	2.592	20.652
801	08/06/2017	04:08.9	28.087	2.61	20.588
802	08/06/2017	04:09.8	28.164	2.565	20.643
803		Average	27.90	2.76	20.41

### Shredder WITH Energy Saving, No Switch Off

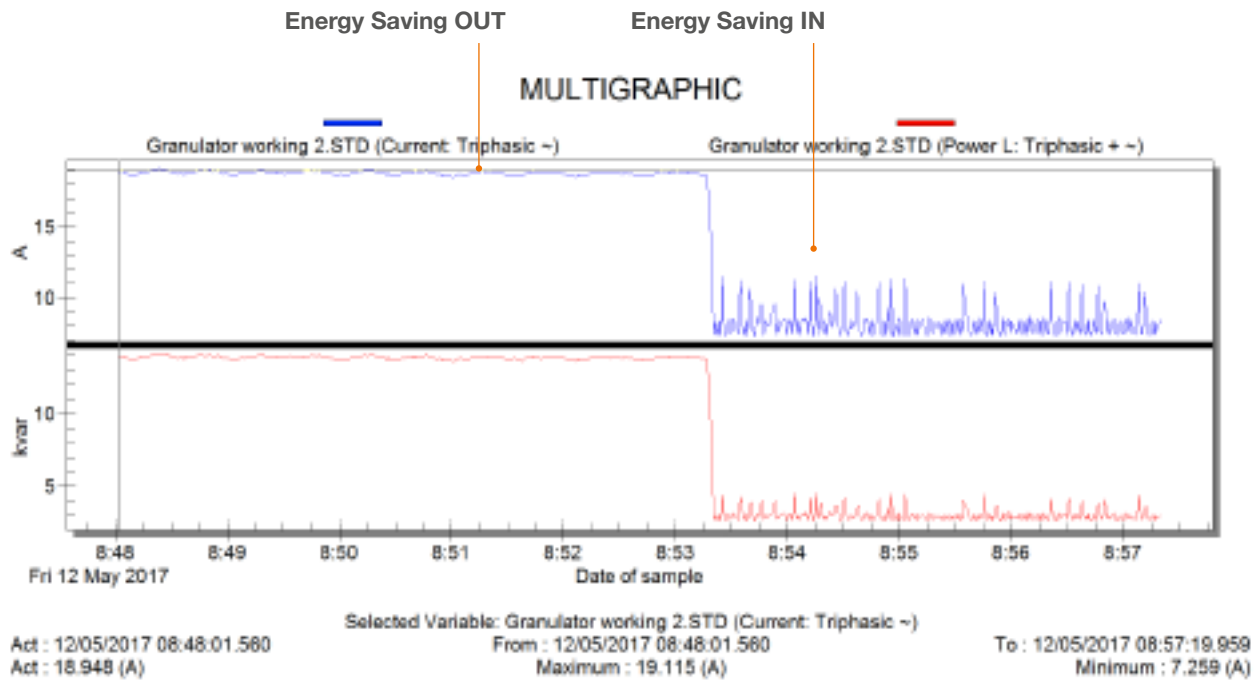
1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
809	08/06/2017	04:19.4	14.148	1.979	7.019
810	08/06/2017	04:20.3	14.159	1.952	6.974
811	08/06/2017	04:21.3	14.146	1.971	7.03
812	08/06/2017	04:22.3	14.185	1.944	7.012
813	08/06/2017	04:23.2	14.134	1.943	7.019
814	08/06/2017	04:24.2	14.172	1.965	7.038

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
1261	08/06/2017	11:33.3	14.095	1.852	6.992
1262	08/06/2017	11:34.3	14.069	1.88	6.992
1263	08/06/2017	11:35.2	14.056	1.843	6.974
1264	08/06/2017	11:36.2	14.134	1.880	7.030
1265	08/06/2017	11:37.1	14.018	1.851	6.974
1266	08/06/2017	11:38.1	14.043	1.889	7.011
1267		Average	14.10	1.91	7.00
1268		Saving Rate	49%	31%	66%



## More In-Depth View of the Running

### Granulator



## More In-Depth View of the Running

### Granulator WITHOUT Energy Saving

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
2	12/05/2017	48:01.6	18.948	1.487	13.777
3	12/05/2017	48:02.5	18.922	1.478	13.767
4	12/05/2017	48:03.5	18.961	1.541	13.804
5	12/05/2017	48:04.4	18.896	1.496	13.739
6	12/05/2017	48:04.4	18.845	1.46	13.694
7	12/05/2017	48:05.4	18.793	1.469	13.694

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
326	12/05/2017	53:12.8	18.78	1.213	13.677
327	12/05/2017	53:13.8	18.703	1.221	13.612
328	12/05/2017	53:14.7	18.729	1.222	13.608
329	12/05/2017	53:15.7	18.665	1.204	13.613
330	12/05/2017	53:16.6	18.626	1.195	13.558
331		Average	18.82	1.31	13.69

### Granulator WITH Energy Savin, No Switch Off

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
333	12/05/2017	53:23.3	8.307	0.766	2.893
336	12/05/2017	53:24.3	7.345	0.666	2.483
337	12/05/2017	53:25.3	11.52	0.839	4.198
338	12/05/2017	53:26.2	7.478	0.692	2.778
339	12/05/2017	53:27.2	7.511	0.762	2.436

1	Date	Time	Current: Triphasic ~ (A)	Power: Triphasic + ~ (kW)	Power L: Triphasic + ~ (kvar)
575	12/05/2017	57:14.2	7.427	0.701	2.517
576	12/05/2017	57:15.1	8.367	0.655	2.856
577	12/05/2017	57:16.1	7.44	0.712	2.537
578	12/05/2017	57:17.0	8.304	0.665	2.806
579	12/05/2017	57:17.0	7.401	0.702	2.5
580	12/05/2017	57:20.0	8.495	0.674	2.875
581		Average	8.23	0.71	2.86
582		Saving Rate	56%	46%	70%



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 factors, 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.**

