

Compressor Energy Audit



PEOPLE YOU CAN TRUST,
EQUIPMENT YOU CAN RELY ON,
DELIVERING REAL ENERGY SAVING
SOLUTIONS.



FTAO: Steve / Mark
Something company Limited
Green Lane,
Somewear
england
Post

27/01/2011

Dear Steve / Mark,

Thank you for offering us the opportunity to survey your compressed air installation and provide you with our energy saving recommendations for improving your system.

We have used the iiTRAK measurement tool to log your compressed air installation from 20/01/2011, 15:00 Thursday to 27/01/2011, 9:56 Thursday.

The iiTRAK audit principle is the following:

- We clamp one iiTRAK on each compressor in your installation
- The iiTRAK logs the status of the compressor during one complete week
- Our team analyses the results using a powerful software that can evaluate the saving potential
- The software creates a complete report with recommendations for possible energy savings using the following assumptions:
 - o The measured week is a representative week of your normal activity
 - o There are 50 weeks of similar activity in one year
 - o Your price of energy is 0.10 p / KwHr

The report is split into three sections:

1. SAVING POTENTIAL & RECOMMENDATIONS
2. THE MEASUREMENT
 - a. Measurement data
 - b. Air consumption graphs
 - c. Energy use
3. "BEST FIT" SIMULATED INSTALLATION
 - a. Simulated data
 - b. Air consumption graphs
 - c. Energy use

If you want a quotation for this "Best Fit" compressed air installation, do not hesitate to contact me.

Yours Sincerely,

Barry Thornton

BT Compressor Services,
Anchor Road,
Coseley,
Bilston,
West Midlands, WV14 9NA



SAVING POTENTIAL & RECCOMENDATIONS

Based on the iiTRAK measurement, and if we accept the assumptions defined in page 2 of this report about the number of running weeks per year and energy cost of your production plant (cost per kWh), we can identify the following saving potential:

The actual cost of energy for the existing installation is: £67439/year

If you replace your installation by the following installation:

1. ALLEGRO 90-10
2. -, - ---
3. -, - ---
4. -, - ---
5. -, - ---
6. -, - ---

You will have a total energy cost of £45580.00p/year.

This means that there is a saving potential of £21859.00p/year.

Annual Saving (CO₂ Tonnes) 118.95

Overview consumption, table 1

	Existing installation	Recommended installation
Annual power consumption (kWh)	674389	455796
Annual cost of power (Pounds)	67439	45580
Annual running hours	8826	7677

Energy savings summary based on recommendation, table 2

Annual Power Savings (kWh)	218592
Potential Cost Savings (Pounds)	21859

MEASUREMENT DATA

We have logged the following compressors with the iiTRAK:

1. ALMiG, BELT110-8
2. Compair, Cyclon 345SR
3. -, -
4. -, -
5. -, -
6. -, -
7. -, -
8. -, -

Technical data of the existing compressor installation

Compressor number	1	2	3	4	5	6	7	8
FAD (l/s)	304	134	---	---	---	---	---	---
Min FAD (l/s)	---	22	---	---	---	---	---	---
Unload Power (kW)	33.3	10	---	---	---	---	---	---
Load Power (kW)	126.2	58.3	---	---	---	---	---	---
Min Load Power (kW)	---	11	---	---	---	---	---	---
Unload Pressure (Bar)	---	---	---	---	---	---	---	---
Load Pressure (Bar)	---	---	---	---	---	---	---	---
Min Load Pressure (Bar)	---	---	---	---	---	---	---	---
Pressure Set point (Bar)	---	---	---	---	---	---	---	---
Indirect Stop Level (Bar)	---	---	---	---	---	---	---	---
Direct Stop Level (Bar)	---	---	---	---	---	---	---	---
Idling Time (min)	---	---	---	---	---	---	---	---
Prog.Stop Time (s)	---	---	---	---	---	---	---	---
# Starts	---	---	---	---	---	---	---	---

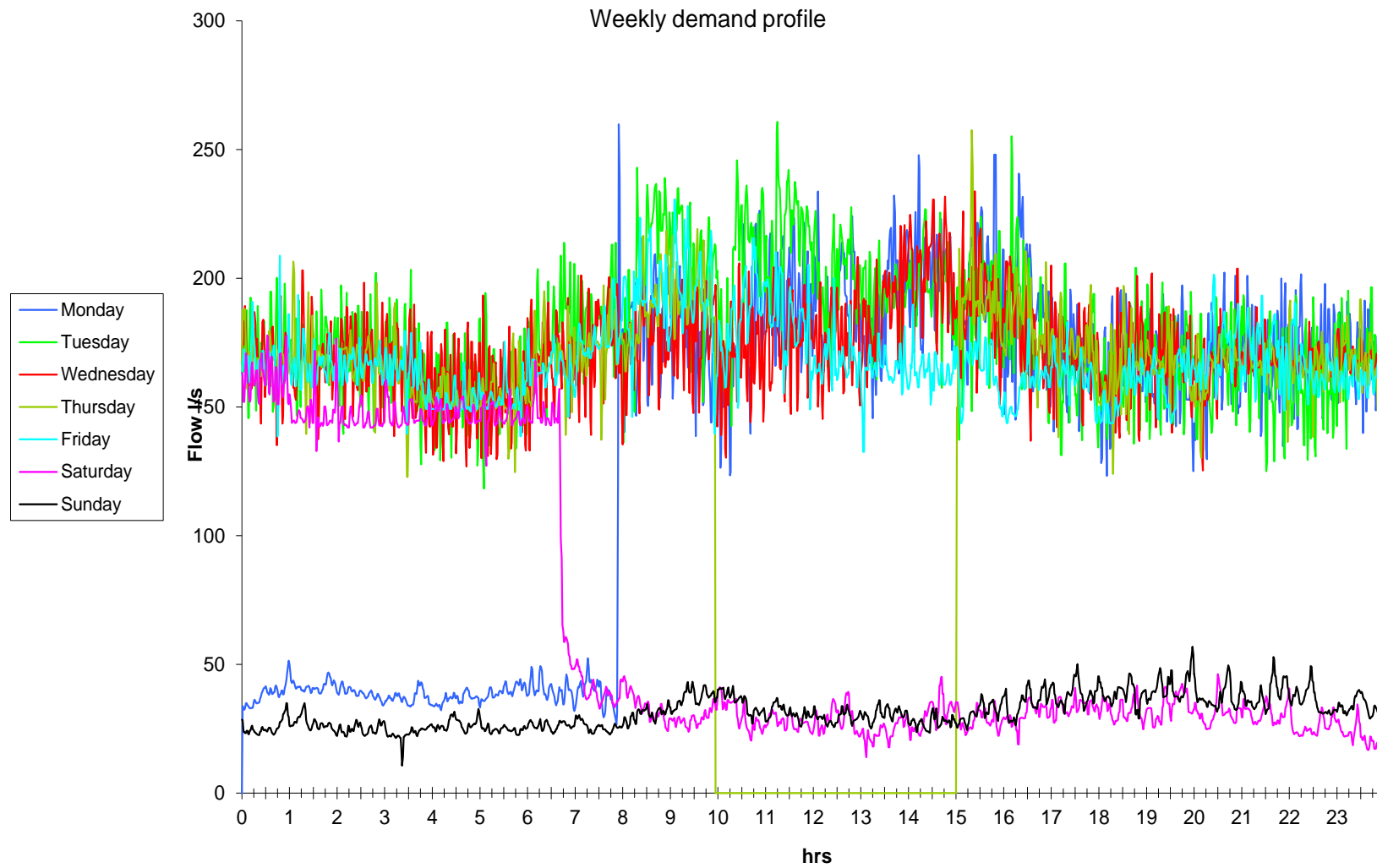
Calculated data based on one week of measurement

Compressor number	1	2	3	4	5	6	7	8	Total
Loaded Time (h)	63.9	57.5	---	---	---	---	---	---	
Unloaded Time (h)	49.8	0	---	---	---	---	---	---	
Stopped Time (h)	49.2	105.3	---	---	---	---	---	---	
Load/Unload Cycles-VSD Stops	7487	6672	---	---	---	---	---	---	
Energy Loaded (kWh)	8070	851	---	---	---	---	---	---	8920
Energy Unloaded (kWh)	4161	0	---	---	---	---	---	---	4161
Total Energy Cons. (kWh)	1223	851	---	---	---	---	---	---	1308
	0								1
Energy Cost (£)	1223	85	---	---	---	---	---	---	1308

Compressed air demand

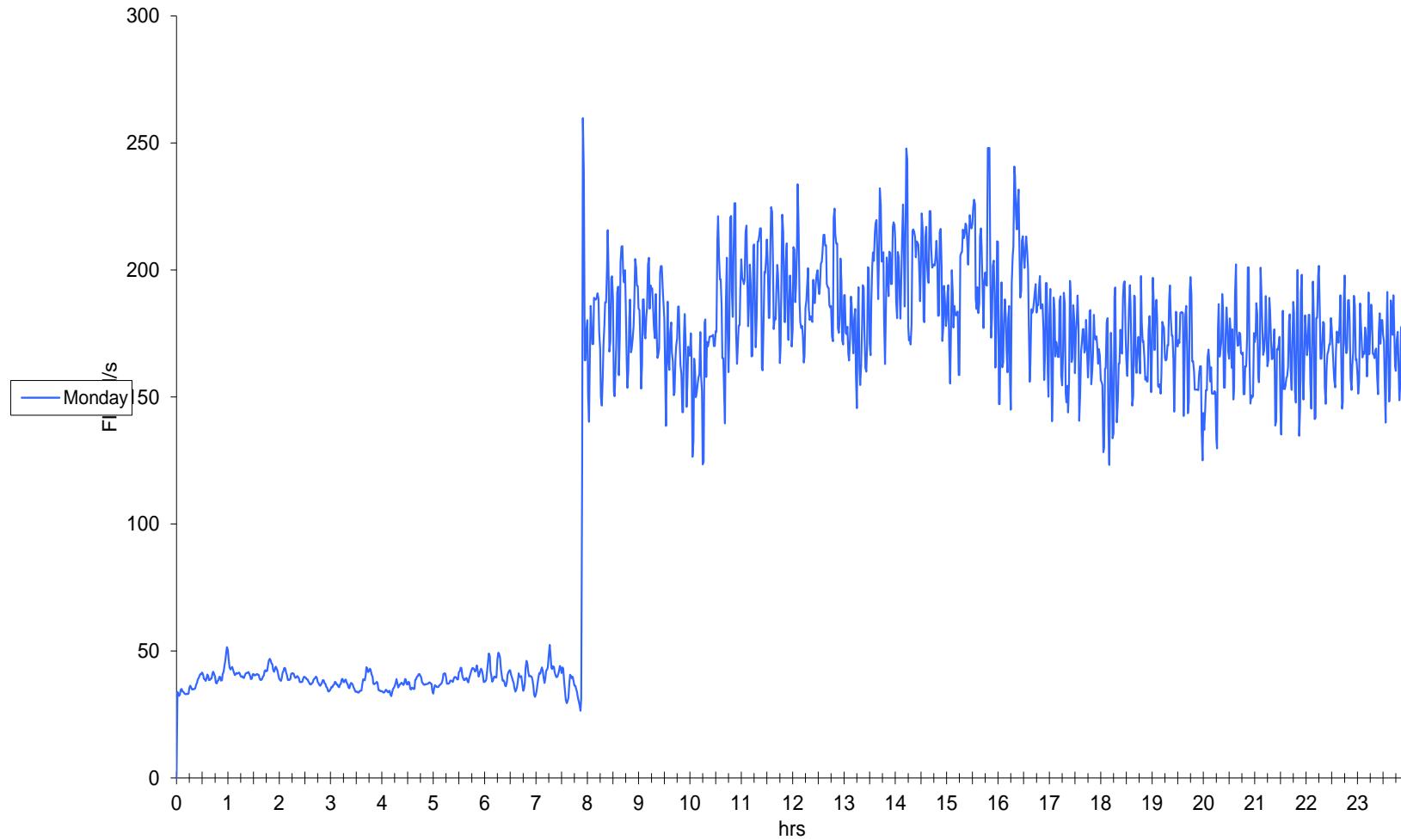
	1	2	3	4	5	6	7	8	Total System
Measured Demand (l/s)									
Weekly – min demand	0.0	0.0	---	---	---	---	---	---	0.0
Weekly – max demand	252.1	65.6	---	---	---	---	---	---	260.7
Weekly – average demand	101.1	9.3	---	---	---	---	---	---	110.4
Monday – min demand	0.0	0.0	---	---	---	---	---	---	0.0
Monday – max demand	239.3	52.4	---	---	---	---	---	---	259.8
Monday – average demand	118.4	15.1	---	---	---	---	---	---	133.2
Tuesday – min demand	135.1	0.1	---	---	---	---	---	---	118.3
Tuesday – max demand	238.3	9.7	---	---	---	---	---	---	260.7
Tuesday – average demand	176.5	2.9	---	---	---	---	---	---	179.8
Wednesday – min demand	129.3	0.0	---	---	---	---	---	---	125.3
Wednesday – max demand	225.2	10.2	---	---	---	---	---	---	233.7
Wednesday – average demand	169.7	2.5	---	---	---	---	---	---	172.6
Thursday – min demand	0.0	0.0	---	---	---	---	---	---	0.0
Thursday – max demand	252.1	3.2	---	---	---	---	---	---	257.6
Thursday – average demand	134.4	0.0	---	---	---	---	---	---	134.6
Friday – min demand	132.6	0.0	---	---	---	---	---	---	132.6
Friday – max demand	228.6	0.4	---	---	---	---	---	---	230.6
Friday – average demand	168.1	0.0	---	---	---	---	---	---	168.1
Saturday – min demand	0.1	0.0	---	---	---	---	---	---	14.0
Saturday – max demand	177.8	65.6	---	---	---	---	---	---	177.8
Saturday – average demand	41.6	22.1	---	---	---	---	---	---	63.7
Sunday – min demand	0.1	10.7	---	---	---	---	---	---	10.7
Sunday – max demand	0.1	56.9	---	---	---	---	---	---	56.9
Sunday – average demand	0.1	31.6	---	---	---	---	---	---	31.6

WEEKLY AIR CONSUMPTION



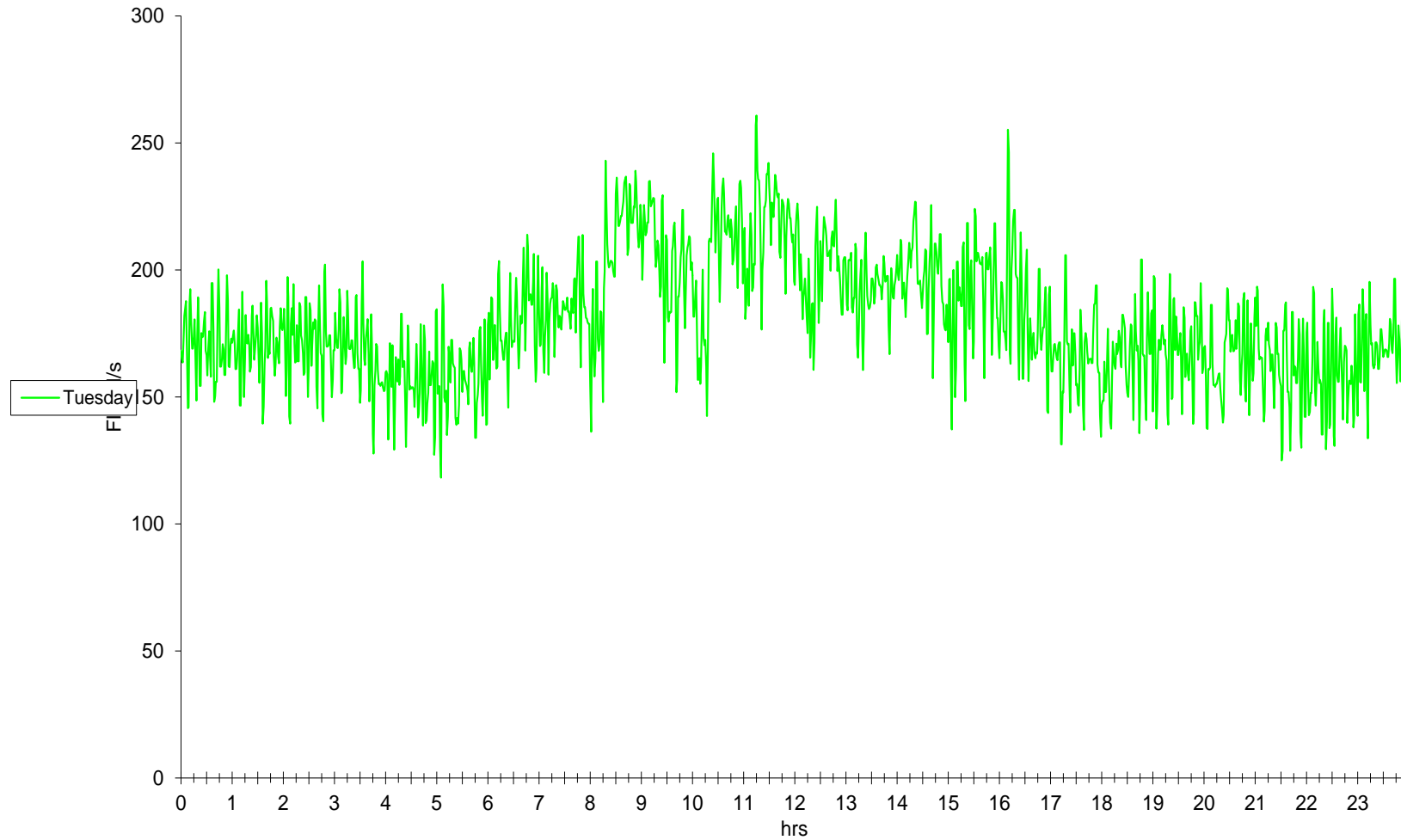
MONDAY AIR CONSUMPTION

Day1 demand profile



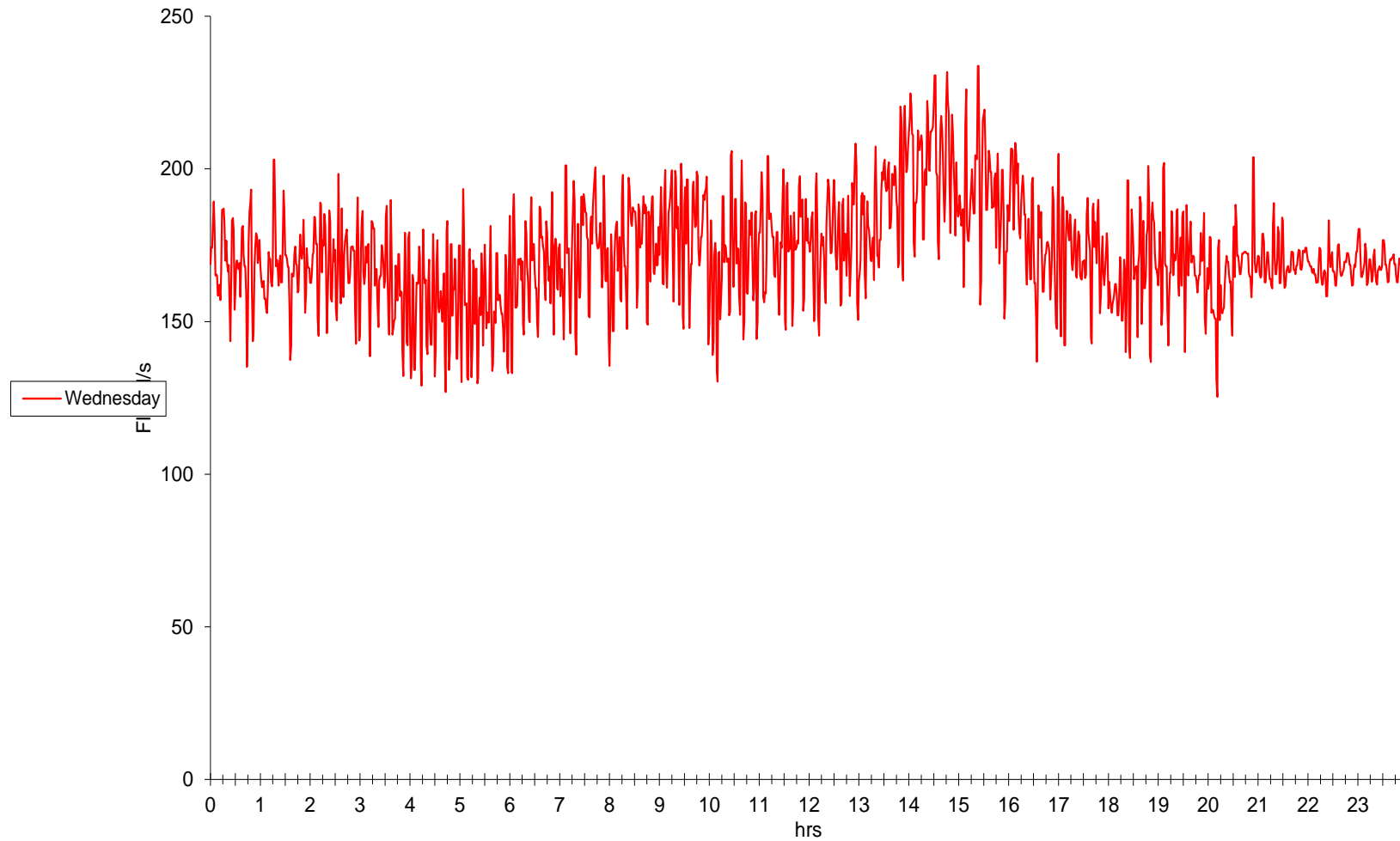
TUESDAY AIR CONSUMPTION

Day2 demand profile



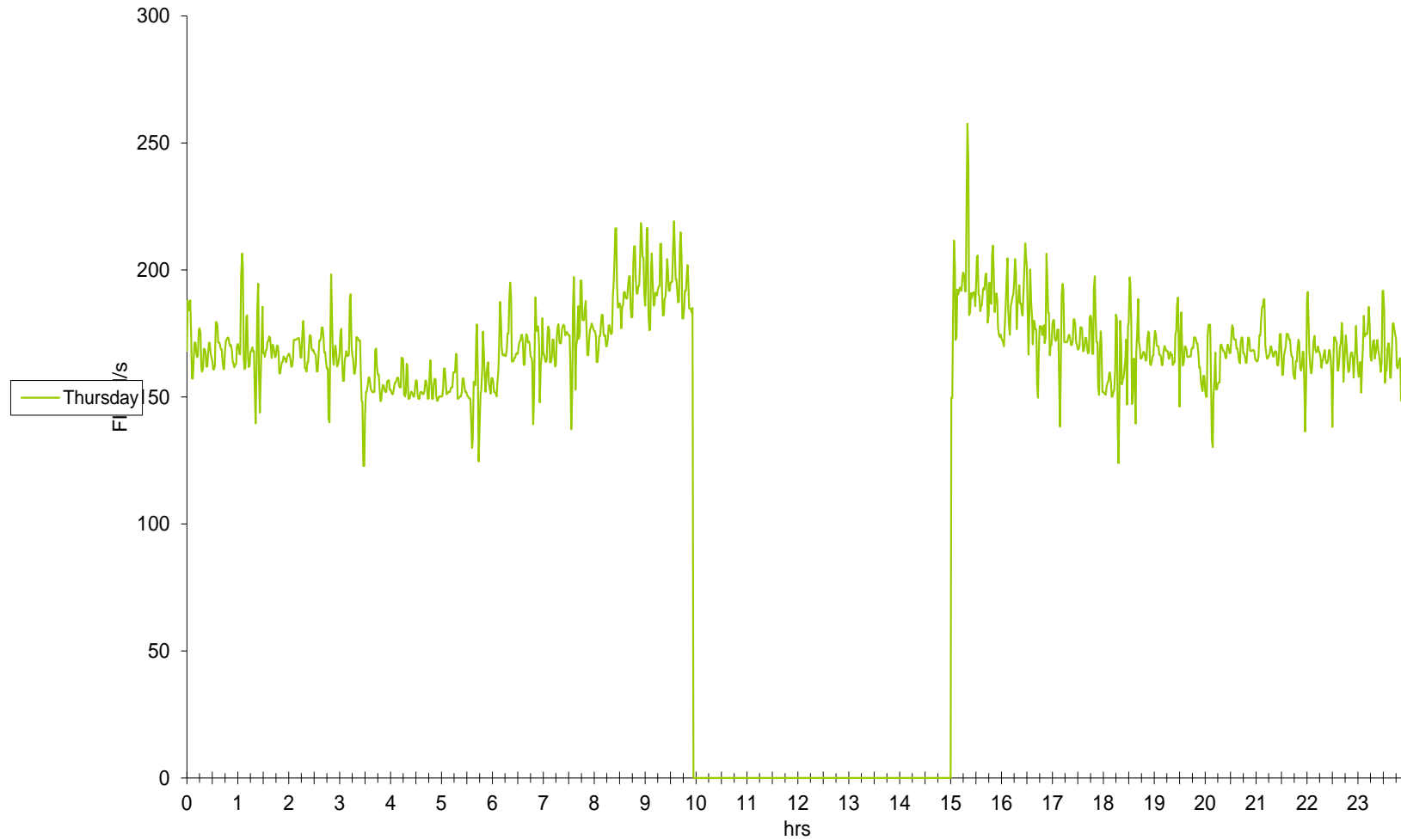
WEDNESDAY AIR CONSUMPTION

Day3 demand profile



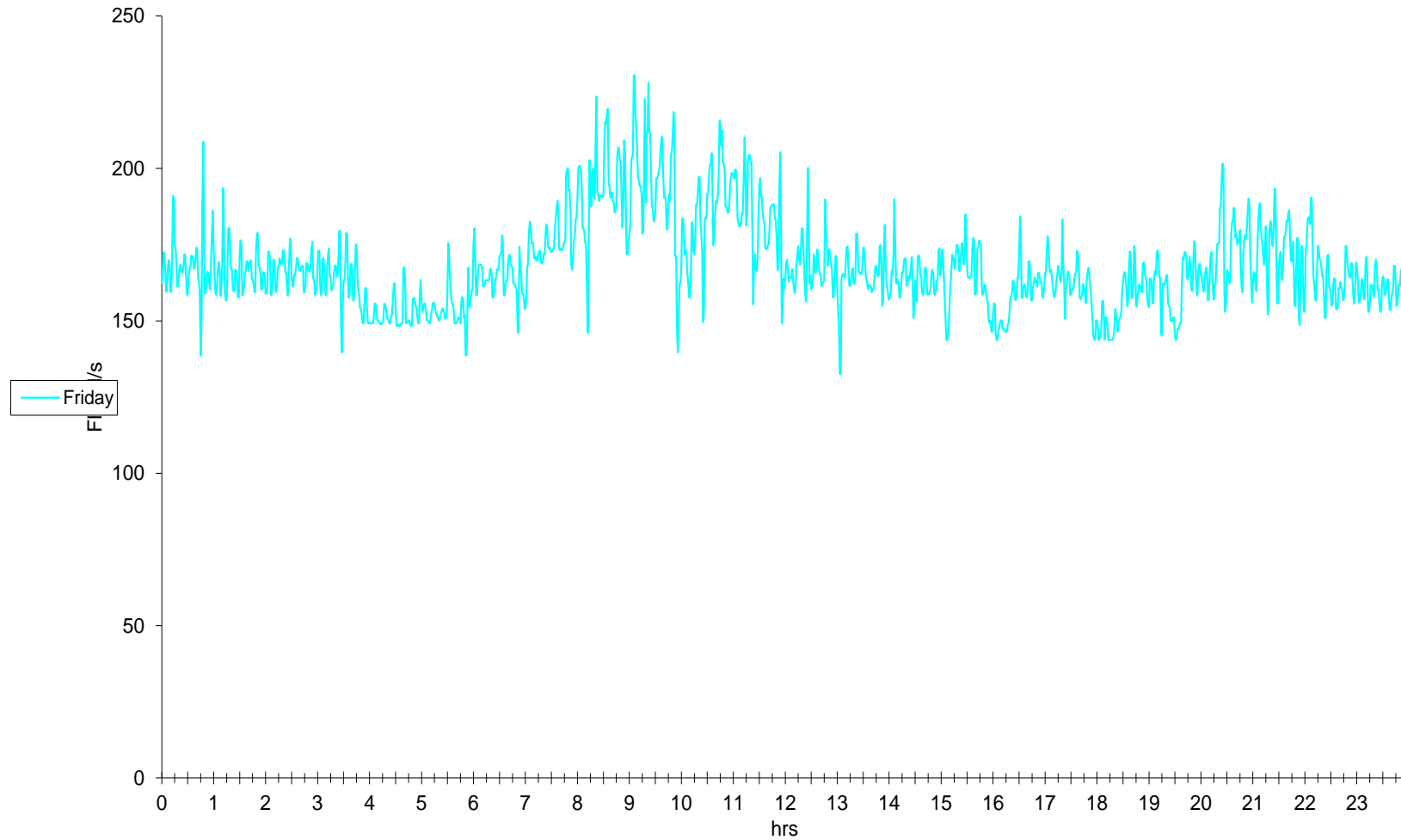
THURSDAY AIR CONSUMPTION

Day4 demand profile



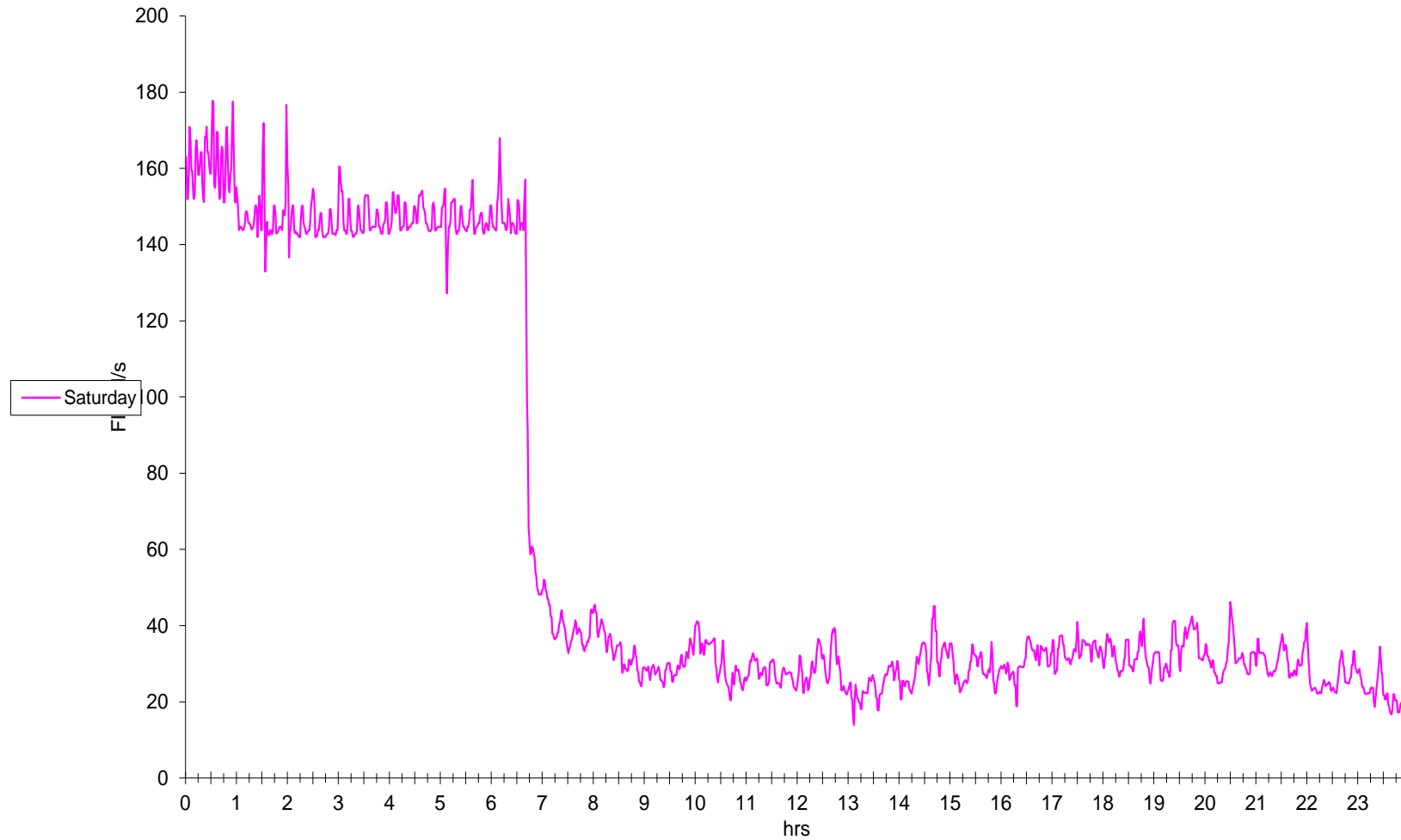
FRIDAY AIR CONSUMPTION

Day5 demand profile



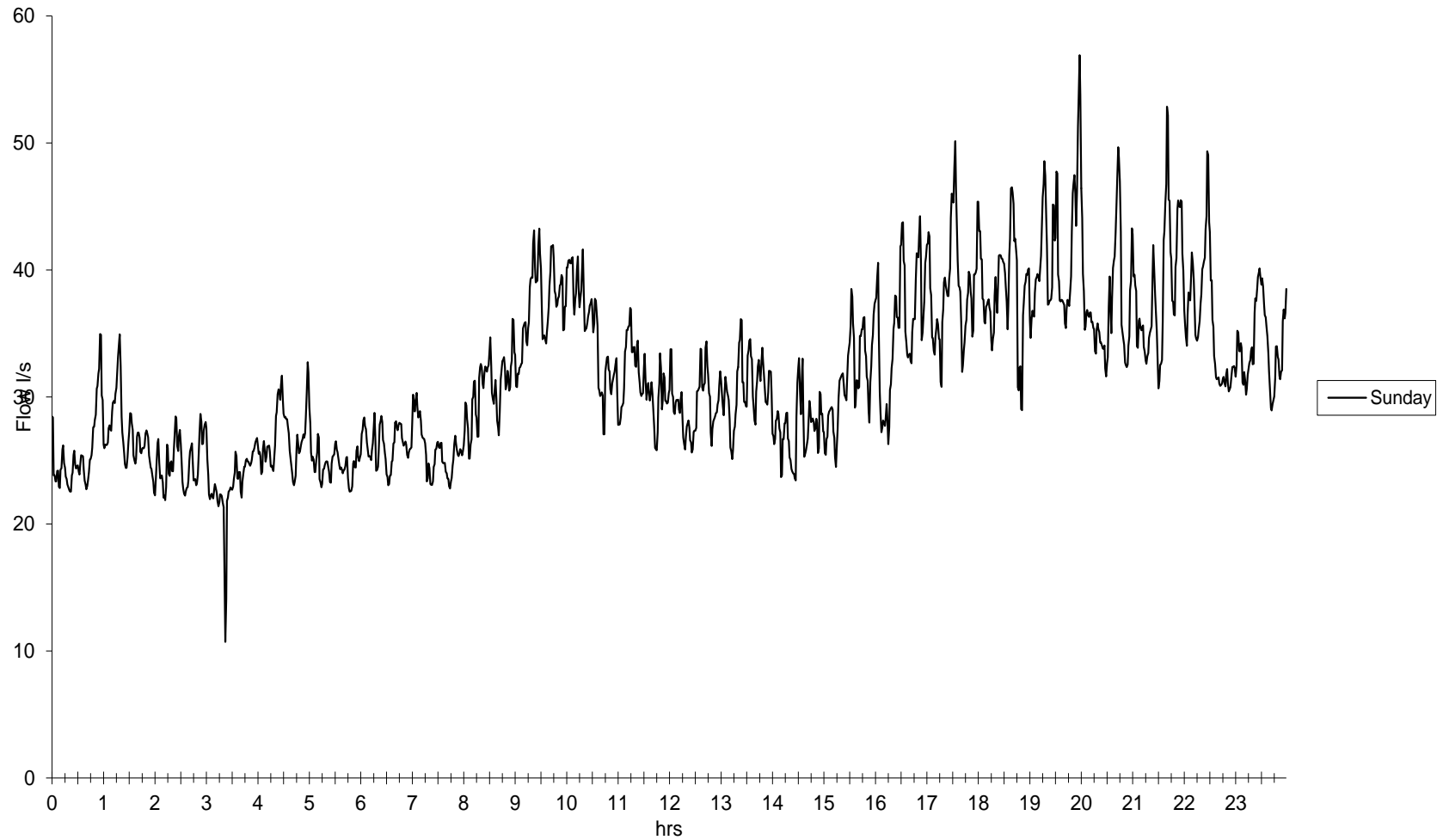
SATURDAY AIR CONSUMPTION

Day6 demand profile



SUNDAY AIR CONSUMPTION

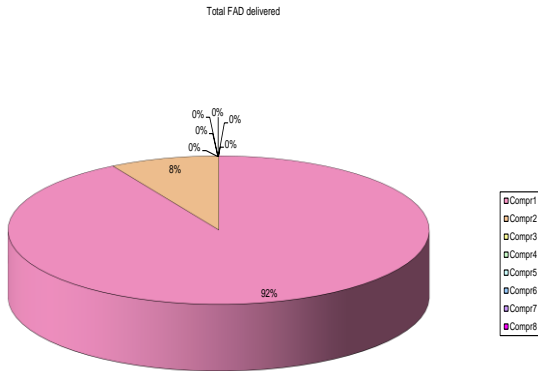
Day7 demand profile



BT Compressor Services
Specialists in Compressed Air

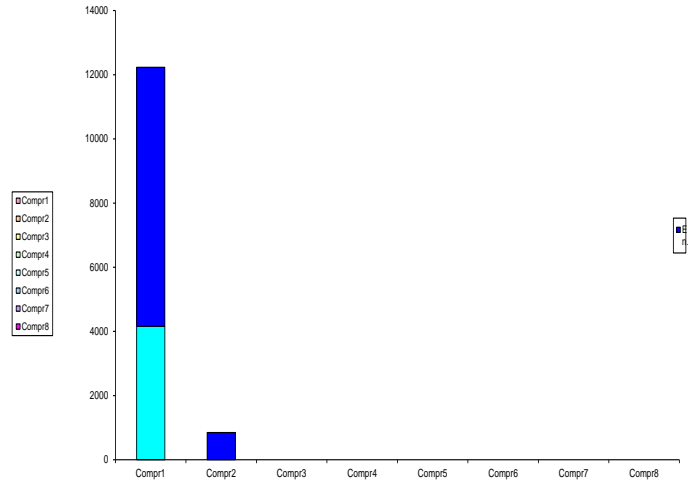
Tel:01902 497696
Fax: 01902 354071
Service@btcompressors.co.uk

FREE AIR DELIVERY



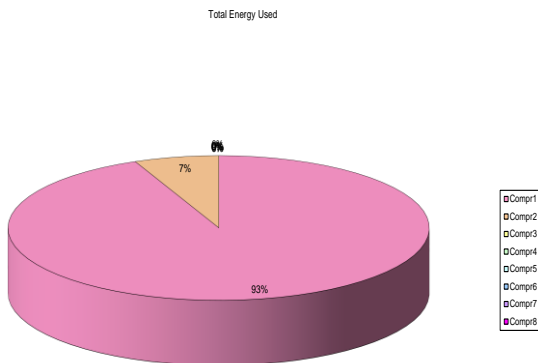
The Free Air Delivery graph shows the amount of compressed air produced by each compressor.

LOAD vs. UNLOAD ENERGY



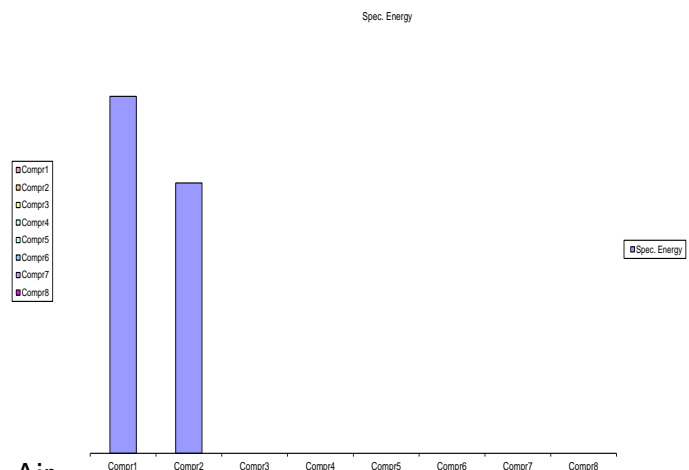
Unloaded energy is energy put into the compressor when the latter is not producing compressed air. This means that, if you can limit this energy to a minimum, your total energy cost will go down together with unload energy.

ENERGY CONSUMPTION



Comparing the energy to the Free Air delivery of the compressors will give you indication to the efficiency of each compressor. This efficiency is expressed in the specific energy of the compressors.

SPECIFIC ENERGY



A lower specific energy shows better efficiency of the compressor.

SIMULATED INSTALLATION

After analyse, we have selected the following installation as best fit for your needs:

1. ALLEGRO 90-10
2. -, - ---
3. -, - ---
4. -, - ---
5. -, - ---
6. -, - ---

Technical data of the best fit installation

Compressor number	1	2	3	4	5	6	7	8
FAD (l/s)	---	---	---	---	---	---	---	---
Min FAD (l/s)	---	---	---	---	---	---	---	---
Unload Power (kW)	---	---	---	---	---	---	---	---
Load Power (kW)	---	---	---	---	---	---	---	---
Min Load Power (kW)	---	---	---	---	---	---	---	---
Unload Pressure (Bar)	---	---	---	---	---	---	---	---
Load Pressure (Bar)	---	---	---	---	---	---	---	---
Min Load Pressure (Bar)	---	---	---	---	---	---	---	---
Pressure Set point (Bar)	6.8	---	---	---	---	---	---	---
Indirect Stop Level (Bar)	7	---	---	---	---	---	---	---
Direct Stop Level (Bar)	7.5	---	---	---	---	---	---	---
Idling Time (min)	---	---	---	---	---	---	---	---
Prog.Stop Time (s)	---	---	---	---	---	---	---	---
# Starts	---	---	---	---	---	---	---	---

Simulated data on the best fit installation

Compressor number	1	2	3	4	5	6	7	8	Total
Loaded Time (h)	148.9	---	---	---	---	---	---	---	
Unloaded Time (h)	0	---	---	---	---	---	---	---	
Stopped Time (h)	14	---	---	---	---	---	---	---	
Load/Unload Cycles-VSD Stops	7755	---	---	---	---	---	---	---	
Energy Loaded (kWh)	8841	---	---	---	---	---	---	---	8841
Energy Unloaded (kWh)	0	---	---	---	---	---	---	---	0
Total Energy Cons. (kWh)	8841	---	---	---	---	---	---	---	8841
Energy Cost (£)	884	---	---	---	---	---	---	---	884

Average compressed air demand per compressor

Compressor number	1	2	3	4	5	6	7	8	Total
Monday	133.2	---	---	---	---	---	---	---	133.2
Tuesday	179.8	---	---	---	---	---	---	---	179.8
Wednesday	172.6	---	---	---	---	---	---	---	172.6
Thursday	134.6	---	---	---	---	---	---	---	134.6
Friday	168.1	---	---	---	---	---	---	---	168.1
Saturday	63.7	---	---	---	---	---	---	---	63.7
Sunday	31.6	---	---	---	---	---	---	---	31.6
Weekly	110.4	---	---	---	---	---	---	---	110.4

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Graphical demand simulation

