

PROJECT SHEET

Air Compressor Supply Survey

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Carnot performed two logger surveys on a system with 3 x 250 kW air compressors operating 24/7.

These surveys:

- » Resulted in power savings of 9% by addressing compressor maintenance and control issues identified by Carnot.
- » Showed that the site was wasting 74% of the average air flow. One area alone was wasting 28% of all air being used. This knowledge will allow the site to target the right projects in the future and not waste money.

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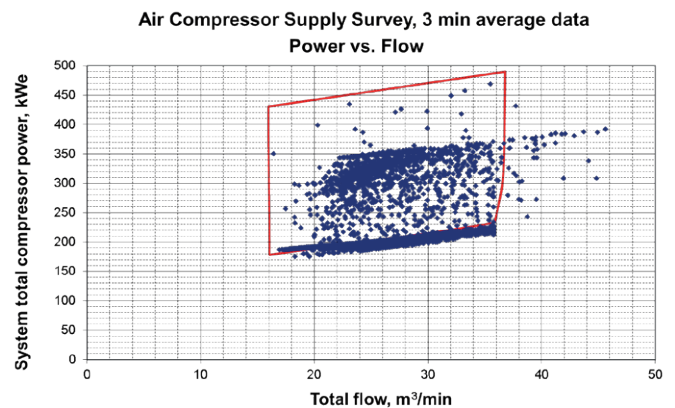
For more information visit carnot.com.au

Phone +61 3 9013 9397
Mobile +61 408 108 018
Email nwoodman@carnot.com.au

The first survey identified:

- » Maintenance problems with one of the compressors causing high unloaded power use.
 - » Poor control mode selection for two of the compressors resulting in:
 - Two compressors running when often only 1 was needed to meet the demand.
 - High part load power consumption for these two compressors.
- The third compressor was operating in a different and more efficient control mode.
- » A system controller issue was loading compressors for only seconds that then ran unloaded for minutes.

This is the system efficiency curve from the first survey. Power was being wasted by any point within the "red box".



A routine service had been planned for the compressors a few weeks after the survey.

During this service and based on the findings of the Carnot survey report:

- » The compressor maintenance fault was investigated and repaired.
- » The compressor control modes were changed to more efficient settings.
- » The system controller settings were changed to prevent the short loading.

Shortly after the compressor service work, the second survey took place across a planned site power shut. This was a rare opportunity to identify what areas on site were wasting the most air.

As planned by Carnot, during the site restart the restoration of the compressed air supply to different areas of the site was staggered. The step increase in air flow as each area was restored being the waste flow of that area.

Air Compressor Supply Survey

This work found that:

- » The total site was wasting 74% of the average air flow.
- » One area was wasting 28% of all air compressed.
- » Wastage by other areas ranged from 1.3 to 14%.

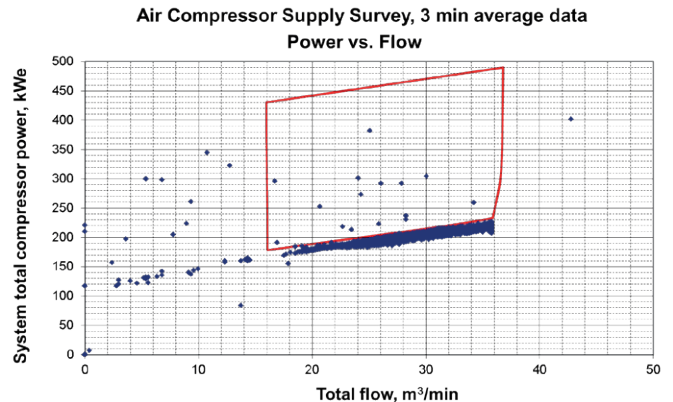
Having this data will allow management to target the areas of biggest wastage for the fastest return with minimum wasted effort and money.

The efficiency curve for the second survey is shown to the right. Note the reduced number of points in the "red box".

The second survey also allowed calculation of the savings made by addressing the issues found in the first survey.

Good practice requires the survey data be reviewed to ensure it is suitable to do this comparison. A check of the flow data showed that the differences in the flow scatter ($< 17 \text{ m}^3/\text{min}$ and $> 36 \text{ m}^3/\text{min}$) were infrequent and of short duration. Hence they had little effect on how the power was saved. This was supported by the average air flows being very close (27.8 and $27.2 \text{ m}^3/\text{min}$).

So the power savings of 9% were due to fixing the issues identified by Carnot's first survey.



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