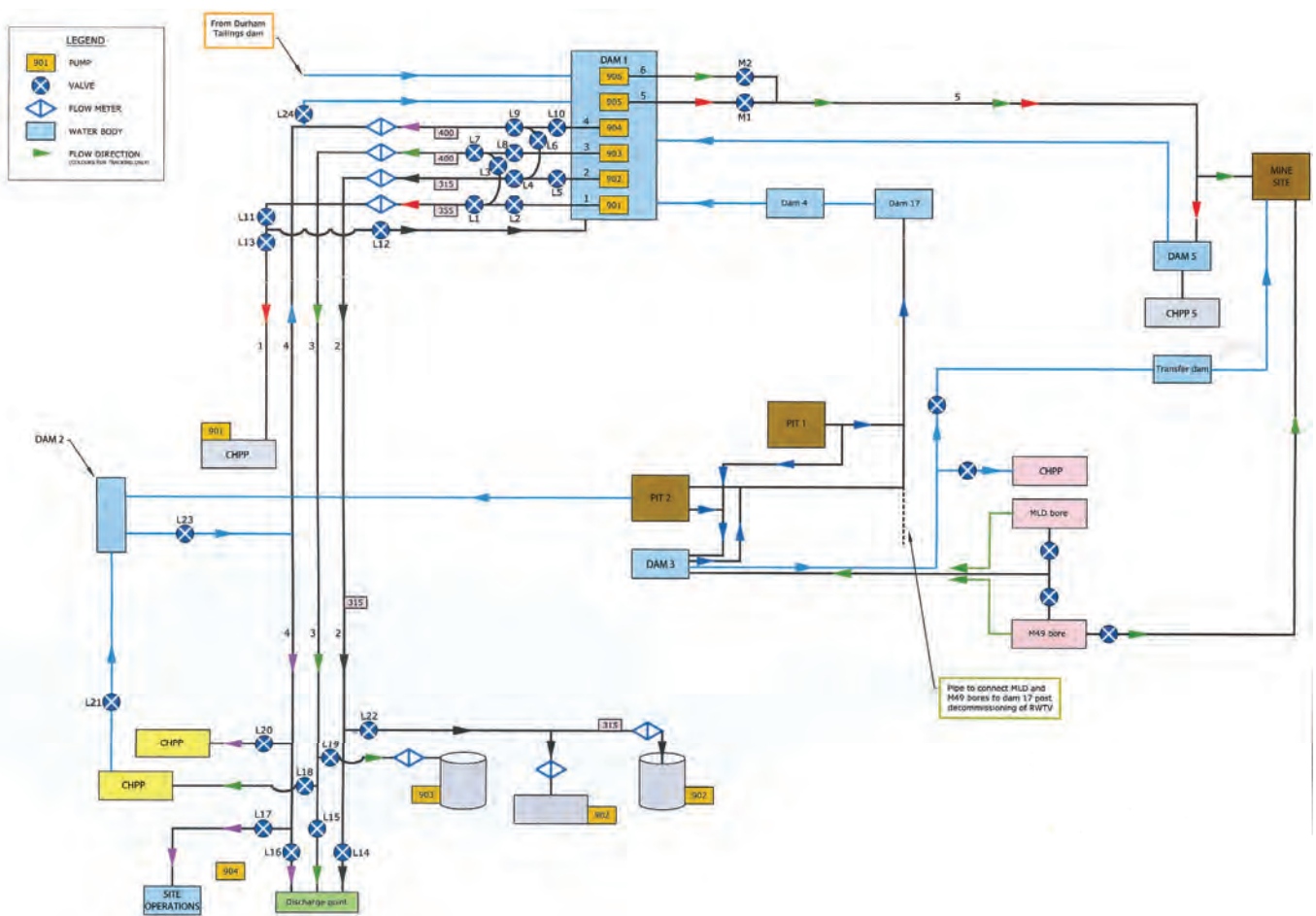


Harmonics Mitigation using Vacon Drives

A large open cut mining operation in the Hunter Valley was faced with a problem of on-site water management and re-use of such water in 3 of its Prep Plants. After careful consideration and an eye on the purse strings it was decided to construct a new water storage facility.

This new dam was to hold 2 gigalitres of water which would be reticulated around the facility as per the diagram below.



Schematic Diagram

To facilitate this requirement it was calculated that 6 500KW pumps would be required. This would allow acceptable redundancy within the plant and manage the water level during any flood situations. A new 11KV supply was required at the remote site, which would be stepped down to 415 volts for the 500 KW motors driving the pumps. As this supply was to be shared by other industrial and rural users the supply authority stipulated that a harmonic distortion level (THDu) at 11 KV at less than 0.9115% must be achieved.

R&D Technology was invited to present a solution using the Vacon range of Low Harmonic Variable Voltage Variable Frequency Drives. Vacon engineers analysed the schematic drawing and the supply authorities requirement, and with various in house design tools engineered a drive solution that would achieve the harmonic distortion requirement.

So sure of the solution Vacon also offered to return to site after installation to test and confirm the harmonic distortion was within the supply authorities' requirement. R&D Technology also provided installation guidance and commissioning of the solution. The solution was based on the Vacon Low Harmonic Drive

The low-harmonic cabinet drive offers an excellent total solution to meet even the most demanding power quality requirements. The drive also complies with the IEEE-519, G5/4 harmonic standards.

The low THDu reduces supply currents and allows supply transformers, protection devices and power cables to be dimensioned according to the actual active power. It creates savings for both new and retrofit projects as there's no need to invest in expensive 12- or 18-pulse transformers.



Features

- Clean power with total current harmonics THDi < 5 %
- Over-dimensioning of power transformer or input cables is not required
- Regenerative function available
- Reducing system complexity
- No need for special 12-pulse transformers
- Well-suited for retrofit projects
- Increased flexibility with a wide range of standard options

Benefits

- Over-dimensioning of input components is not needed, reducing the total costs
- Voltage boost function for maximum output power
- Braking energy can be fed back to network saving energy costs
- Reduces overall investment costs and optimizes the use of available space

The project required 6 X 500Kw Drives all with Active Front Ends. These achieved a THDu of less than 1.34% at 415V which convert's to a THDu of 0.67% at 11 KV, well below the energy authority's requirement of 0.9115%. These figures were measured on site, post installation and commissioning and authenticated the calculated re-



sults, proving the in house tools are accurate and reliable.

This solution also offers a Power Factor of unity and is also generator compatible.

Vacon Drives Installed

The remote location made for a challenging Installation



Simply contact R&D Technology to obtain the product that suits you...!!

Note: all information is subject to change & images are for illustration purposes only.



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