



Welcome, to EMT Electric Motor, Drives & Engineering Newsletter

PLEASE PASS ALONG TO YOUR:

PURCHASING

MAINTENANCE

ENGINEERING

PROCUREMENT

Opportunities for Savings — Motors, Drives, Pumps & Fans

Consider the system ...

The greatest savings can be achieved by seeing the electric motor as part of a system. Although the difference in efficiency between a standard and efficient motor may not be great by itself, the cumulative effect of all parts of the operating system can create a significant difference in overall efficiency. For example : see table 1.

Reduce operating time

There are many ways to reduce the operating time of motors and these are usually cheap to

implement. Examples include:

- a simple time-switch to restrict the hours of the day or week that the motor runs;
- a calendar time-switch will prevent a motor (in an air-conditioning system, for example) from running on public holidays;
- an ambient air temperature sensor can be used to prevent cooling equipment from running in cold weather.

INEFFICIENT SYSTEM	MOTOR	EFFICIENT SYSTEM
Standard motor, e.g. 90% efficiency		Efficient motor, e.g. 93% efficiency
No variable-speed drive, so motor runs too fast most of the time—wastes 50%	Drive control	Variable speed drive to match motor speed to task
Inefficient fan design wastes 20%	Fan design	Efficient fan design means as little energy as possible is wasted
Ducts under-sized, so 50% of fan energy wasted due to high flow resistance	Ducts	Ducts optimally sized (and variable speed cuts duct losses by average of 40%)
Outcome: Overall system efficiency 20%	SYSTEM	Outcome: Overall system efficiency 50%

Table 1.

Select the right motor for the job

Consider all the costs

The cost of an electric motor will usually be overtaken by electricity costs in the first one to four months of operation. Even without considering maintenance costs, the operating cost of a motor over a life of just 20 years can be up to 200 times the original purchase price.

Factoring in all the costs and selecting the motor with the lowest cost over its full operating life will be better for the environment and for your organisation.

Size

Size does matter. Usually, motors are oversized. This is understandable, as erring on the small side would be more obvious than selecting a motor that is too large. But there is a hidden cost in this conservative approach, because the efficiency of an electric motor is reduced as load is reduced. For example:

- while a 10 kW motor driving a 10 kW load may be 90 per cent efficient, when driving a 4 kW load it will have an efficiency of about 75 per cent, so the electrical load will be 5.3 kW;
- a 5 kW motor driving the same 4 kW load will have an efficiency of 90 per cent, so the electrical load would be 4.4 kW—a saving of 0.9 kW or 17 per cent.

For a motor which is part of the air-conditioning system in a typical office building, the second option would save 2,250 kg of CO2 equivalent every year. An oversized motor is sometimes specified to allow for high load during motor start, but a variable-speed drive or a 'soft starter' device is a more appropriate way of handling this situation.



Three Phase Motors all Types & Sizes

Part 2 will be continued in the June edition issue of our newsletter.

Did You Know ?

- EMT can help you with Variable Frequency Drives . Call us on (02) 9838 8181 to see how we can serve you better.



Visit our website at: www.emtmotor.com.au

The Man Who Electrified The World

Today is Part 6 of a story about one of the world's greatest geniuses—Nikola Tesla.

THE WAR OF THE CURRENTS

"One of the requirements was that Westinghouse get rid of the contract with Tesla calling for royalty payments of \$1.00 per horsepower on all alternating current articles sold under his patents. Financial advisers pointed out that if the business which Westinghouse expected the company would do under the Tesla patents in the ensuing year was anywhere near as great as estimated, the amount to be paid out under this contract would be tremendous, totalling millions of dollars; and this, at the time of reorganization, appeared a dangerous burden, imperilling the ability which they were trying to attain for the new organization. Westinghouse strenuously objected to the procedure. This patent-royalty payment, he insisted, was in accordance with usual procedures and would not be a burden on the company, as it was included in costs of production, was paid for by the customers, and did not come out of the company's earnings. Westinghouse, himself an inventor of first magnitude, had a strong sense of justice in his dealings with inventors." In one of the most magnanimous acts ever recorded in human history, Tesla tore up his royalty contract with George Westinghouse in order to save his company from bankruptcy and the AC system from destruction. Tesla stood to lose over 12 million dollars in royalty payments: "It would be a tough job for any executive, no matter how shrewd or clever, to talk a man out of a contract that would net many millions of dollars, or induce him to accept a reduction in rates amounting to millions. Westinghouse called on Tesla, meeting him in the same South 5th Avenue laboratory where he had purchased the patents four years before. Without preliminaries or apologies Westinghouse explained the situation. "Your decision," said the Pittsburgh magnate, "determines the fate of the Westinghouse Company." "Suppose I should refuse to give up my contract; what would you do then?" asked Tesla. "In that event you would have to deal with the bankers, for I would no longer have any power in the situation," Westinghouse replied.

This story continues in our June Newsletter.



Tesla Monument at Niagara Falls. Tesla standing atop an AC motor one of 700 he patented.



Tesla Monument at Goat Island, Niagara Falls, New York. A gift of Yugoslavia to the United States in 1976.

Our People

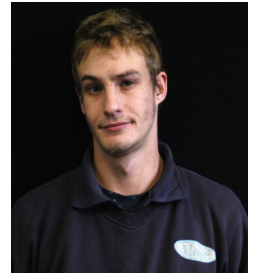
ALAN O'NEILL

Alan completed his apprenticeship as an Electrical Fitter in Cairns QLD. He then worked for ABB ASEA in Sydney for 10 years and Westinghouse for 13 years. Alan has worked on various projects including the Snowy Mountains Hydro Electric Scheme. Alan has been with EMT for over 9 years and is our 3 phase Electric Motor Expert on our Internal Sales Team.



JESSIE KRASINSKI

Jessie completed his apprenticeship as a Electrical Fitter at Dowding & Mills where he spent some time working on Motor Alternators for Main Track. Jessie has been with EMT for nearly 3 years and has undergone extensive training in our Engineering Machine Shop.



WOULD YOU LIKE MORE INFORMATION ?

- Please send me a Product Catalogue CD Rom
- Please send me a Single Phase Motor Catalogue
- Please send me a Three Phase Motor Catalogue
- Please send me a VSD Catalogue

Have you relocated? Please help us keep our records up to date by including your new details.

NEW DETAILS:

Name: _____

Position: _____

Company: _____

Address: _____

Suburb: _____ State: _____ Post Code: _____

Tel: _____ Fax: _____

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Photocopy this form and mail or fax to:

EMT Pty. Ltd. 1/114 Station Road, Seven Hills NSW 2147
Tel: (02) 9838 8181 Fax: (02) 9838 8421

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