

## PUMP SYSTEM EVALUTION

When evaluating a pump system, it is important to look at 3 things:

1. Is the system capable of getting the job done?
2. Look at the entire system's efficiency.
3. Look at the quality and longevity of the components.

This can be summarized as - The Total Cost of Ownership

The first item to be looked at in evaluating a system is - will the system get my job done? You need to look at the static head to ensure you will get the lift required and the flow to ensure enough water is pumped to keep your pond and koi healthy.

People look at the horsepower or amps on a motor to judge the quality of the pump system. The thought is that if one motor draws more current (amps), then it is bigger and better. This is an inaccurate statement - in fact, it may be the opposite. It may just be very inefficient - not produce more power. Additionally, the horsepower on a nameplate might be misleading. Many OEMs want the "biggest" horsepower on the nameplate as possible for marketing reasons. The motor could never produce that amount of power continuously, therefore special "duty cycles" are applied. The motor is not rated at that horsepower continuously - it will be something like a 15 min, 30 min, intermittent or special duty.

Some people look at the efficiency on the motor to judge the design of the motor. While this is one factor, it certainly isn't the only factor. Additionally, the efficiency of the motor is only one component of the system. If we are running an engine on a car, and trying to determine how good the car will do on gas mileage, but ignore the square tires we aren't doing a good

job of evaluating. The proper unit for pump system efficiency should be \$/gallon. This will include the pump efficiency, coupling efficiency, and system losses. The best method of evaluating this is to look at your watts input to the motor and the gallons output at the end of the pipe and evaluating the ration between system manufacturers.

Of course, product life should also be evaluated. If you have an extremely efficient system that lasts two weeks - it is not a good investment. When evaluating pump systems, several things should be taken in consideration.

1. What kind of paint and coating is on the motor - will it withstand the outdoors, the environment?
2. What is the insulation level and degree of protection from the environment on the starter and rotor?
3. Is the motor laced at every slot and on both sides?
4. What type of bearing is used? Will it need to be relubricated?
5. Is the motor enclosed to keep water, dust, etc. out of the motor?
6. Is there a slinger to keep water from riding down the shaft into the motor?
7. Is the grease suitable for long continuous operation with ambient conditions changing?
8. Is the motor residential grade (lowest), commercial grade (middle) or industrial grade (top end)?

The Marathon Motor is painted with epoxy paint and has a special insulation to protect itself from harsh environments. Every slot on both sides are laced -

we use a sealed bearing with Polyrex EM polyurea based grease that doesn't need relubricating. The motor is totally enclosed to prevent ingress of foreign matter - a shaft slinger is provided to keep water from creeping in along the shaft. The motor is rated for continuous operation and built as an industrial grade motor.

We have developed a new motor with Marathon Motor Manufacturing, giving you a bigger fan allowing more air flow and keeping motor cooler. This gives longevity to the pump.

All this is coming from the impeller design combined with Marathon Motor Manufactory. That is why we have more efficient pumps. Some of our pumps have been running for 20 years and still operating.