SERIES COOLING TOWER
WITH HIGH EFFICIENCY FAN DRIVEN BY EC MOTOR

Modular Design Counterflow Type

EC MOTOR DRIVEN

ULTRA LOW NOISE • ENERGY SAVING • PLUG & PLAY CONTROL
SERIES COOLING TOWER
WITH HIGH EFFICIENCY FAN DRIVEN BY EC MOTOR

INTRODUCTION
EC (Electronically Commutated) motors are permanent magnet motors which are running on high voltage direct current (DC) electricity with built in AC to DC conversion allowing them to run direct from single phase or three phase mains supplies. They are more efficient, quieter and more reliable compared to AC motors.

Truwater has revolutionized the control of the fan in cooling tower industry by integrating the EC motors technology in the new series of cooling tower which is the Open Type Mechanical Induced Cooling Tower driven by EC Motors. Truwater has developed this new range together with ebm-papst SEA Pte. Ltd., a subsidiary of ebm-papst GmbH & Co from Germany, a worldwide innovation leader in fans and motors.

The EC motors have built in starter, controller, motor protection and EMI filters. It will directly drive the high efficient impeller with speed control and inputs from sensors for water temperature and ambient temperature for control & monitoring capacity. The EC motors will be directly connected to computer with minimum set up as ‘plug and play’ concept. This will eliminate the need of using Motor Starters and Programmable Logic Controller (PLC) or Variable Frequency Drive.

ADVANTAGES OF iEC-S SERIES

- Significant reduction of wiring and starter/control panel cost
- Plug-and-play control option with intelligent control system for monitoring & control.
- Installation cost & time will be significantly reduced.
- Modular arrangement which can be easily installed with no belt & pulley or gear reducer drive.
- Speed can be easily controlled without the need of using Variable Frequency Drive.
- CTI Certified full and part load operation with high efficiency direct drive fan system.
- Ultra-low noise type and further energy saving (up to energy savings of 30 % on average)
### Features

The EC microprocessor-based commutation provides further features:

- Alarm outputs/speed monitoring
- Simple speed control (no inverter required)
- Closed loop sensor control
- Reduced starting current with soft starting

There are several factors that combine to deliver this efficiency, cost-effectiveness, and operational superiority:

- No need to induce current in the rotor
- Simpler winding means reduced copper losses
- Lower running temperature leading to increased life expectancy
- Quiet operation even at low rotational speed

### Outline Drawing (Single Cell)

<table>
<thead>
<tr>
<th>Tower Model</th>
<th>Motor kW</th>
<th>Fan Diameter mm</th>
<th>Overall Dimension (mm)</th>
<th>Piping Dimension (mm)</th>
<th>Make Up Auto &amp; Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS 0606X-1U</td>
<td>1.5</td>
<td>915</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606Y-1U</td>
<td>2.2</td>
<td>915</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606Z-1U</td>
<td>3</td>
<td>915</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606A-1U</td>
<td>4</td>
<td>915</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606B-1U</td>
<td>5.5</td>
<td>915</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606X-1V</td>
<td>1.5</td>
<td>1220</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606Y-1V</td>
<td>2.2</td>
<td>1220</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606Z-1V</td>
<td>3</td>
<td>1220</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606A-1V</td>
<td>4</td>
<td>1220</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0606B-1V</td>
<td>5.5</td>
<td>1220</td>
<td>1890</td>
<td>1890</td>
<td>2500</td>
</tr>
<tr>
<td>ECS 0707X-1V</td>
<td>1.5</td>
<td>1220</td>
<td>2195</td>
<td>2195</td>
<td>3000</td>
</tr>
<tr>
<td>ECS 0707Y-1V</td>
<td>2.2</td>
<td>1220</td>
<td>2195</td>
<td>2195</td>
<td>3000</td>
</tr>
<tr>
<td>ECS 0707Z-1V</td>
<td>3</td>
<td>1220</td>
<td>2195</td>
<td>2195</td>
<td>3000</td>
</tr>
<tr>
<td>ECS 0707A-1V</td>
<td>4</td>
<td>1220</td>
<td>2195</td>
<td>2195</td>
<td>3000</td>
</tr>
<tr>
<td>ECS 0707B-1V</td>
<td>5.5</td>
<td>1220</td>
<td>2195</td>
<td>2195</td>
<td>3000</td>
</tr>
</tbody>
</table>

If 2 cells in multiple, example modelling as ECS 0707B3-2V

---

Counterflow Type: Single Cell

Counterflow Type: Multi-Cell, 4-Cells
AVAILABLE COOLING TOWERS TYPE

COUNTERFLOW

CROSSFLOW

Crossflow Type: Top Discharge, Single Cell

Crossflow Type: Top Discharge, Multiple Cells

Crossflow Type: Side Discharge, Single Cell

Crossflow Type: Side Discharge, Multiple Cells
**BENEFITS**

**ENERGY SAVINGS AND NOISE REDUCTION**

The graphs below illustrate the possible energy savings and noise reduction in a direct comparison between on/off operation and infinitely variable speed control:

Lower energy consumption: The bars show the power consumption of fans which are switched in gradually as required. The air performance drops by 50% if two fans are switched off. The blue curve shows the power consumption with infinitely variable speed control.

Less noise generation: Whereas switching off half the fans (halving the air flow) only reduces noise generation by approx. 3 dB, speed reduction to half the air flow yields an improvement of 15 dB.

**INTELLIGENT NETWORKING AND RELIABLE CONTROL**

Remote desktop software
Host computer
Interface converter
Ethernet
Art. No. 21488-1-0174
Art. No. 21489-1-0174 (UL)

Remote monitoring
Approved controller

RS485 (MODBUS RTU)
Master

Laptop

VIBRATORY AND RELIABLE
ENERGY SAVING AND NOISE REDUCTION

LpA = Sound pressure level
qV = Air flow

P = input power
Q = Air flow

Benefit of continuous speed adjustment

Benefit of continuous speed adjustment
...providing solution to your cooling needs