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May 5, 2014

California Energy Commission
Appliances and Existing Building Office
Efficiency Division
1516 Ninth Street
Sacramento CA 95814

Subject: Pool Pumps and Motors Standards Development Data Request
March 3, 2014
Docket No. 12-AAER-2F

To whom it may concern,

This correspondence is being submitted to the California Energy Commission in response to the March 3, 2014 data request for further development of the California pool pumps and motors standards.

As background, Grundfos has a global annual production of more than 16 million pumps, and is the global leader in advanced pump solutions, specializing in circulator pumps for heating and air conditioning as well as centrifugal pumps for industrial applications, fire protection, water supply, waste water and water treatment. In addition to pumps, Grundfos produces standard and submersible motors, as well as state-of-the-art electronics for monitoring and controlling pumps. Since its inception in 1945, the company has flourished from one small factory in Bjerringbro, Denmark to a global corporation comprising more than 80 companies and over 18,800 employees. In 2013, Grundfos reported net revenues totaling more than $4 billion. In North America, Grundfos employs more than 1,600 people – 1,300 in the U.S. alone – and is continually expanding its regional expertise. Grundfos USA maintains operations, sales and service facilities in Olathe, KS; Allentown, PA; Fresno, CA; Brookshire, TX; Aurora, IL; and Indianapolis, IN.

Specifically related to pool pumps and motors, Grundfos provides 378 products that are listed as certified under NSF/ANSI 50 – Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities. These products are typically used in large, commercial water recreation facilities.

Following are responses to your request for additional information:

1. Test Procedure

Grundfos recommends that the California Energy Commission (CEC) utilize standards developed by the Hydraulic Institute (http://pumps.org/). The Hydraulic Institute (HI), established in 1917, represents the pump manufacturing industry in North America. HI is a recognized authority with regard to pumps and pumping systems and is an ANSI accredited standards developing organization. HI represents 105 members, pump manufacturers and leading suppliers to the pump industry.

Specifically, we recommend that the CEC consider the American National Standard for Rotodynamic Pumps for Hydraulic Performance Acceptance Tests – ANSI/HI 14.6-2011. As per the HI web site, "this standard covers hydraulic performance tests for acceptance of rotodynamic pumps (centrifugal, mixed flow, and axial flow pumps)." It specifies how test facilities should be constructed and performance tests conducted. The information in ANSI/HI 14.6 can "be applied to pumps of any size and to any pumped liquids behaving as clear water". For vertical pumps, a modified version of ANSI/HI 11.6-2012 should be utilized. It should also be noted that HI currently has a working committee developing standard 40.6 as a normative acceptance standard for the testing of rotodynamic pump efficiency. It is harmonized with ANSI/HI 14.6.

The requirements of NSF 50 should also be considered by the CEC in updating their rulemaking. Any requirements for performance or testing of swimming pool pumps should not interfere with the sanitary and safety requirements of NSF 50.

2. Additional Efficiency Data from Updated Test Procedure

With regards to pool pumps certified under NSF 50, performance and test data is available from all manufacturers. As required by NSF 50, the manufacturer provides a pump performance curve for certification, and the actual pump curve is with specific tolerance found in their Annex C. In addition, if energy efficiency performance testing is requested, it is also evaluated in accordance with NSF 50, Annex C.

3. Proposed Efficiency Standards

The U.S. Department of Energy (DOE) is conducting a rulemaking for commercial and industrial pumps (docket EERE-2011-BT-STD-0031). In addition, the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) has a Commercial/Industrial Pumps Working Group that is negotiating an energy conservation standard for commercial and industrial pumps (docket EERE-2013-BT-NOC-0039) in parallel with DOE docket EERE-2011-BT-STD-0031. The efficiency standards that come from the final rulemaking from DOE for commercial and

industrial pumps will be preempt any other efficiency regulations that may be considered. In the case of the pool pumps under NSF 50, the DOE rules will apply.

It must be also noted that the rulemaking underway with the DOE includes the consideration of an efficiency standard for an extended pump/motor.

Further information on this DOE activity can be found at their web site and within the applicable dockets at http://regulations.gov.

4. Market for Rebuilt or Refurbished Pool Pump Motors

It is possible to maintain or improve the efficiency of electric motors used with pool pumps during their refurbishment. It is recommended that the CEC contact the Electrical Apparatus Service Association (EASA) (http://www.easa.com/MaintainingMotorEfficiency). EASA has developed ANSI/EASA AR100-2010 – Recommended Practice for the Repair of Rotating Electrical Apparatus (AR100). This standard specifies and details good practices for the repair, rewind, and testing of electric motor that assists in maintaining or improving the efficiency of AC and DC electric motors.

We hope that the information provided in this letter will provide additional guidance in further development of CEC's rulemaking. Please do not hesitate to contact us if you have any questions or require additional information.

Sincerely,

Greg Towsley
Director, Regulatory and Technical Affairs
GRUNDFOS