STATUTORY INSTRUMENTS

2021 No. 745

The Ecodesign for Energy-Related Products and Energy Information Regulations 2021

PART 2

Ecodesign for Energy-Related Products

CHAPTER 6

ELECTRIC MOTORS AND VARIABLE SPEED DRIVES

Application and interpretation

33.—(1) This Chapter applies to—

(a) induction electric motors without brushes, commutators, slip rings or electrical connections to the rotor, which are rated for operation on a 50 Hz, 60 Hz or 50/60 Hz sinusoidal voltage and—

(i) have two, four, six or eight poles;

(ii) have a rated voltage ("U_N") above 50 V and up to and including 1,000 V;

(iii) have a rated power output ("P_N") from 0.12 kilowatts (kW) up to and including 1,000 kW;

(iv) are rated on the basis of continuous duty operation; and

(v) are rated for direct on-line operation;

(b) variable speed drives with 3 phase input which—

(i) are rated for operating with a motor falling within sub-paragraph (a), within the 0.12 kW-1,000 kW motor rated output range;

(ii) have a rated voltage above 100 V and up to and including 1,000 V AC; and

(iii) have only one AC voltage output.

(2) In this Chapter and Schedules 16 to 18—

"brake motor" means a motor equipped with an electromechanical brake unit operating directly on the motor shaft without couplings;

"continuous duty operation" means capable of continuous operation at a rated power with a temperature rise within the specified insulation temperature class, specified as specific duty types S1, S3 >=80 per cent or S6 >=80 per cent;

"cordless or battery operated equipment" means an appliance deriving its energy from batteries;

"declared values" means the values provided by the manufacturer, importer or authorised representative for the stated, calculated or measured technical parameters in the technical

documentation, in accordance with the conformity assessment procedure referred to in regulation 35;

"drive with sinusoidal input current" means a VSD with a sinusoidal waveform of the input current, characterised by a Total Harmonic Content below 10 per cent;

"electric motor" or "motor" means a device that converts electrical input power into mechanical output power in the form of a rotation with a rotational speed and torque that depends on factors including the frequency of the supply voltage and number of poles of the motor;

"Ex eb increased safety motor" means a motor intended for use in explosive atmospheres and certified "Ex eb", as specified in British Standard BS EN 60079, and

"other explosion-protected motor" means a motor intended for use in explosive atmospheres and certified "Ex ec", "Ex tb", "Ex tc", "Ex db", or "Ex dc" as specified in British Standard BS EN 60079;

"energy efficiency" of a motor means the ratio of its mechanical output power to the electrical active input power;

"equivalent model" means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;

"factory acceptance test" means a test on an ordered product where the customer uses witnessed testing to verify the product's full accordance with contractual requirements, before the product is accepted or put into service;

"hand-held equipment" means a portable appliance intended to be held in the hand during normal use;

"hand-guided equipment" means a non-road mobile appliance that is moved and guided by the user during normal use;

"mains" or "electric mains" means the electricity supply from the electricity grid;

"model identifier" means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's, importer's or authorised representative's name;

"motor with mechanical commutators" means a motor in which a mechanical device reverses the direction of the current;

"phase" means the type of configuration of the mains;

"pole" means a north or a south pole produced by the rotating magnetic field of the motor, whose total number of poles determines its base speed;

"regenerative drive" means a VSD that is able to regenerate energy from the load to the mains, and which induces a 180° +/- 20° phase shift of the input current to the input voltage when the load motor is braking;

"test load" of a VSD means the electrical device used for testing purposes that determines the output current and the output displacement factor cos phi;

"totally enclosed non-ventilated motor" means a motor designed and specified to operate without a fan, and which dissipates heat predominantly through natural ventilation or radiation on the totally enclosed motor surface;

"variable speed drive" or "VSD" means an electronic power converter that continuously adapts the electrical power supplied to a single motor to control the motor's mechanical power output, according to the torque-speed characteristic of the load driven by the motor, by adjusting

the power supply to a variable frequency and voltage supplied to the motor, and includes all integrated protection devices and auxiliaries;

"witnessed testing" means actively observing the physical testing of the product under investigation by another party, to draw conclusions on the validity of the test and the test results. This may include conclusions on the compliance of testing and calculations methods used.

Ecodesign requirements

34. An electrical motor or variable speed drive must conform to the ecodesign requirements set out in Schedule 16 when it is placed on the market or put into service.

Conformity assessment

35.—(1) For the purposes of the conformity assessment procedure referred to in Schedule 1A to the 2010 Regulations, a manufacturer assessing whether a product conforms with these Regulations must use either—

(a) the internal design control procedure set out in Part 1 of that Schedule; or

(b) the management system procedure set out in Part 2 of that Schedule.

(2) The technical documentation file required for the conformity assessment of a product must contain—

(a) a copy of the product information provided in accordance with paragraphs 6 or 8 of Schedule 16;

(b) the information specified in paragraph 9 of Schedule 16; and

(c) the details and results of any measurements or calculations carried out in accordance with regulation 37, Schedule 16 or Schedule 17.

Verification procedure for market surveillance purposes

36. The market surveillance authority must use the verification procedure set out in Schedule 18 when verifying conformity with the requirements of these Regulations.

Measurements and calculations

37.—(1) The measurements and calculations required by this Chapter, or necessary for demonstrating or measuring conformity with this Chapter, must be made in accordance with designated standards, where available.

(2) Where designated standards are not available, the measurements and calculations referred to in paragraph (1) must be made in accordance with methods which—

(a) can be demonstrated to be reliable, accurate, and reproducible by the person deploying them; and

(b) take into account the generally recognised state of the art.

Software updates

38.—(1) The energy consumption of the product and any of the other declared parameters must not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to update.

(2) The performance of a product must not change as a result of rejecting a software update.

(3) A software update must not have the effect of changing the product's performance in a way that makes it non-compliant with the ecodesign requirements applicable for the declaration of conformity.