LONGTIME®

CERTIFICATION STANDARDS

PASTRY ROBOT

ETHIKIS AD CIVIS
COOPERATIVE AND PARTICIPATIVE COMPANY WITH LIMITED LIABILITY - 828 520 874 00037 - RCS DE CASTRES
HEAD OFFICE : 433 CHE D'EMBROUYSSET 81370 ST SULPICE LA POINTE
PRO@ETHIKIS.COM - 09 72 17 05 61

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I. INTRODUCTION

Based on the standards of the EN 45550 series and in coherence with the EN 45552 and EN 45554 standards, the LONGTIME® specific reference documents specify the elements relating to the study of the robustness, reliability and reparability of the associated product family.
All the qualitative, semi-quantitative or quantitative data are the result of a research and consultation process, as required by the standards in force, and take into account the bibliographical references (scientific studies, regulations, standards, etc.) and all stakeholders, namely: marketers (manufacturers, importers, distributors), their suppliers and/or subcontractors, product experts (repairers, installers, professional testers), spare parts professionals, reconditioners, consumers, consumer associations, environmental associations and all stakeholders who can contribute, subject to added value and the availability of networks and information.
The definition of the pre-requisites in terms of quality, energy threshold, emission thresholds, classification of the parts as well as the definition of the thresholds of the scales are the result of the analysis of the consultations carried out and the taking into account of the best eco-design practices available on the market.
The specific LONGTIME® standards are revised at the latest every 3 years.

LONGTIME®'s vision

This project is part of a dynamic societal movement with the desire to go ahead of the regulations. This label is made by citizens, for citizens. It brings the certainty that the product bearing the label is made for a long term use, as 80% of the consumers wish and that it is economically repairable.
LONGTIME® is a simple, strong and efficient tool, created to inform the consumer concerned about the global impact of his purchases, but also the consumer who wants to acquire a product with a fair longevity/price ratio. It also tends to put on the front of the stage the manufacturers anxious to propose products whose lifespan is optimized.

Label's goals

The aim of this approach is to encourage a different type of consumption, thus aiming to produce differently. Almost all citizens want a transformation of the consumer society with a real change of technical-economic paradigm in order to consume better and more sustainably.
As demonstrated by the studies « Modelisation et évaluation environnementale de produits de consommation et biens d'équipement » and « Évaluation environnementale et économique de l'allongement de la durée d'usage de biens d'équipements électriques et électroniques a l'échelle d'un foyer » by the French Environment and Energy Management Agency (ADEME), the ecological interest is major.
In just a few decades, we have increased our consumption of raw materials worldwide to over 60 billion tonnes a year. The label helps to preserve the planet's resources by making better use of them and reducing waste.

Intuitively, therefore, buying a product with a longer lifespan limits the use of our planet's resources, reduces over-consumption and allows us to get away from disposable products and waste. It is not a question of looking for "immortal" products but of fighting against the short life span of products.

Assuming that the functional unit suggested by ADEME for multifunction food processors is also applicable to pastry processors, the UF adopted is therefore 52 annual preparations of 5 minutes each for 10 years. Extending the lifespan of a food processor will make it possible to reduce the results of indicators for categories of lifecycle impacts that are mainly linked to the production phases, upstream of the use phases and particularly when these robots do not have a heating function.
This is all the more true when the pastry robot has a large electronic component. On this point, there is considerable variability in the proportion of electronic components used in food processors. They fall somewhere between products considered to have a low electronic component and products considered to have a high electronic component.
It should also be pointed out that in the case of food processors with a heating function, the intensity of use has a strong influence on the impacts associated with the use phase, as is the case for small household electrical appliances equipped with a power circuit and a heating function.
In the other impact categories, the benefit of eco-design actions to extend the service life will largely depend on the energy efficiency of the replacement product. In countries whose energy mix is comparable to France's, working on product durability will systematically make sense. In some cases, replacing a food processor equipped with a heating function early (before 10 years) could prove to be environmentally advantageous if, and only if, the new model offers a clearly significant improvement in energy efficiency compared with the previous product. The data in our possession does not allow us to assess or quantify this situation precisely.

Scope of application

The label is applicable to different product families as soon as there is an assembly of parts. LONGTIME® tends to cover domestic appliances, electronics, portable electrical appliances, furniture, leisure equipment, professional equipment... The range of products is therefore very wide but excludes the automobile, textile products (except leather goods), food, cosmetics and chemicals.

Organization of the repository

The criteria are broken down into several categories and each criteria presentation follows the following scheme:

Criteria category => The criteria are grouped into 11 main categories

Number and name of the criteria => Each criterion has an identification number in I.X.X format and a name to define its topic

Requirement level (KO/Major/Minor) => See table below

Cross-cuting criteria => Criterion applicable to all product categories

Product Specific Requirement (PSR) => Specific criterion whose scope is adapted to the product category of the standard.

Mean of proof => Details of evidence required and/or relevant to the assessment of the criterion and its PSR

A level of requirement is assigned to each criterion of the label according to the classification indicated in the table below :

KO	These criteria must be met in order to qualify for the label after the initial audit (year N).
Major	These criteria must be met at least 80% during the audit. They will lead to the implementation of corrective actions to reach 100% in year N+1.
Minor	These criteria must be met at least 50% of the time during the audit. They will lead to the implementation of corrective actions to reach 80% in year N+1 and 100% in year N+2.

Control system

The evaluation of the respect of the criteria of the standard is carried out by an approved and independent control body.
Each criterion is evaluated according to a compliant/non-compliant approach.
More details on the control system in the labeling process are available on the LONGTIME® labeling conditions online : https://www.longtimelabel.com/conditionslongtime.

Standards and regulations

The standards or regulations cited in the reference system use the most recent versions and/or equivalences published in the Official Journal of the European Union.

II. DEFINITION OF THE PRODUCT SCOPE

For the purposes of these standards, food processors are defined as free-standing kitchen appliances, which in most cases are not pressurised and are powered solely by electricity. Food processors are equipped with a powerful motor and a mechanical arm, usually fitted at the top with accessories or interchangeable utensils (hook, whisk, paddle) which can be used to mix, knead, beat or whip using a rotary movement. A cooking function can be added for certain products.
Within the scope of these standards, food processors can be distinguished from other food processors (multifunction, cookers) by their specific pastry-making functions and a possible heating function. Domestic electrical food processors belong to the category of small domestic electrical appliances, known as PEM.

The present standard is devoted solely to domestic electric food processors included in the product scope II.1.

1. Product scope

- Domestic electric food processor without heating function
- Domestic electric food processor with heating function

2. Outside product scope

- Professional food processor (tertiary type CHR)
- Multifunction food processor without heating function
- Food processor
- Slow cooker
- Professional mixers, kneaders and blenders

In the rest of the reference manual, « **household electric food processor** » is replaced by « **food processor** » or « **pastry robot** ».

III. Terms and definition

Criticality
Degrees of resolution of the failure. Apprehended here by the detection (diagnosis and localization) and the severity (price of the parts and/or technical difficulty of the repair) of the breakdown.

External source parts
Parts external to the manufacturer's production facility, coming from an identified supplier.

FMEA
Tools for Failure Mode, Effects and Criticality Analysis.

IOT
Internet of Things; this function corresponds to the fact of being able to connect one's product to the internet in order to obtain additional remote control and/or regulation functionalities.

Not in use
It corresponds to a state of non-operation of the device.

Non-proven technology
Whose operation brings an innovation compared to the previous technologies and whose reliability is not proven.

O.S
Operating System is a set of programs that direct the use of a computer's resources by application software.

Permanent assembly
It is a set of components forming a single part or part of a product that cannot be disassembled without destroying or altering its intended use.
To remove the connection between two assemblies or parts, it is necessary to deform, degrade or destroy at least one of the parts forming the assembly. Example of permanent assembly techniques: welding, crimping, clinching, stamping, gluing and adhesives.

Product of "great use"
Product of very frequent use and which in case of failure causes
A significant disruption in the management of daily life: refrigerator, washing machine, boiler / water heater, telephone, computer, stove...

PSR
« Product Specific Requirement », corresponds to the specifications of the criterion applicable to the types of equipment specified in the scope of the standard.

Unit cost price « UCP »
Understood as the sum of the price of the parts composing a product.

Routine maintenance
Maintenance recommended by the manufacturer to keep the product in optimal working condition.

Serialization
Practice by which the producer limits the use of spare parts to original parts approved by the manufacturer by a software means.
E.g.: associate the serial numbers of the components of a product with the global serial number of the product.

Step (disassembly)
Operation leading to the removal of a part, fixture(s) or a tool change.

Sub-assembly
A set of inseparably connected components that form a block and perform a function. The sub-assembly can be separated from the product.

Usage constraint
It corresponds to the forces that apply to the part.

« General public » tools
Common tools, for general use, available to any public in classic distribution. (cf: EN 45554 standard tool list - screwdriver for slotted head, crosshead or internal 6-lobe screws, wrench for hexagon socket screws, combination wrench, universal pliers, half-round nose pliers, diagonal cutting pliers, multi-socket pliers, vice grip pliers, universal terminal stripping and crimping pliers, lever, tweezers, steel-headed hammer, universal knife (cutting pliers with retractable blade), multimeter, voltage tester, soldering iron, glue gun, magnifying glass.)

« Experienced public » tools
Tools requiring skills for their use and whose cost can represent a brake (torque wrench, soldering iron...).

« Professional » tools
Tools requiring specific knowledge or conditions of use and whose acquisition cost represents an investment.

Proprietary tool
A specific tool, not commercially available and exclusively owned by one party or company, by virtue of which its use by another party (end user, customer, repairer) involves a copyright, a license and/or a cost.

IV. Parts list

List of parts representative of the target product group, but not exhaustive.

- **Machine body assembly**
  - Frame
  - Baseplate, pedestal
  - Front panel
  - Control panel
  - Bonnet, covers, trim panels (front/rear, side, top/inf)
  - Feet

- **Display and control unit (start-up, settings, programmes, etc.)**
  - Analogue or digital display
  - Backlight unit(s)
  - Control button(s) (mechanical, tactile, touch-sensitive)
  - Programme selector, programmer, switch
  - Timer

- **Electrical and electronic assembly**
  - IOT module
  - Programme selector
  - Interference filter
  - Wiring
  - Electrical terminal block
  - Power electronics board
  - Electronic control board and/or module
  - Electronic display card and/or module
  - Electronic induction card and/or module
  - Analogue or digital display
  - Electric motor capacitor(s) (starting, permanent)
  - Triac electric motor
  - Relay (motor)
  - Microswitch (tank)
  - IGBT module (induction)
  - Electromechanical safety thermostat (bimetal type)
  - Thermal fuses (electric motor, drive mechanism, etc.)
  - Position or safety sensor or contactor (Hall effect sensor, microswitch, microswitch, etc.)
  - Temperature sensor and control (NTC, capillary, IR type)
  - Electronic interlock system (switch, microswitch, position contactor)
  - Torque limiter (electric motor)
  - Unbalance sensor

- **Electric motor assembly**
  - Motor (rotor, stator)
  - Axle bearings
  - Brushes, Brushes

- Torque transmission mechanism (permanent drive)
- Coupling and/or clutch mechanism (disengageable drive)
- Speed reduction/brake mechanism

- **Direct or indirect drive assembly**
  - Transmission shaft
  - Drive bearings
  - Drive bearings
  - Mechanical gearbox sealing element(s)
  - Pulley / Transmission belt (Indirect drive)
  - Mechanical gearbox, pinion, reducer, reduction gear (ind drive)
  - Coupling or drive element for bowl tools (square drive, drive finger, hub)
  - Arm tilting system
  - Tilting system locking/unlocking mechanism

- **Cooking assembly**
  - Induction module (Inducer)
  - Base heater
  - Pan power switch
  - Induction fan

- **Bowl and basin assembly**
  - Bowl/vat
  - Bowl/vat lid
  - Pastry bowl pressurisation system (electric or mechanical)
  - Bowl locking/unlocking mechanism
  - Bowl heating element
  - Bowl/bowl cover sealing system
  - Bowl support/heating assembly sealing system
  - Basic tools and/or accessories
  - Whisk
  - Dough hook
  - Flat beater
  - Mixer
  - Other tools with specific functions

- **Sealing and stabilisation of mechanical connections**
  - Sealing mechanism (O-ring, ring, lips, silicone, etc.)
  - Holding mechanism (screws, bolts, circlips, washers, etc.)
  - Stabilising mechanism (spring, spacer, bucket, bearing, etc.)

V. ACCESSIBILITY SCALES

The scale has 3 levels :

A	< 3 steps | < 10 min | every user | general public tools
B	< 8 steps | < 15 min | experienced user or repairer | tools for the general public, tools for the experienced public
C	< 10 steps | < 20 min | experienced user or repairer | tools for the general public, tools for the experienced public, professional tools

The scales shown in the table above are orders of magnitude that should not be exceeded, but these thresholds can be more precisely defined in the criteria calling for accessibility scales.

Dismantling starts when the product is disconnected from the power supply.

VI. Product exposure to exogenous failures

Définition

An exogenous failure of a manufactured product refers to a defect or problem that occurs due to external factors or conditions beyond the control of the manufacturer or producer. Unlike an endogenous failure, which is related to internal design, manufacturing or quality problems, an exogenous failure is generally the result of unforeseen or unexpected external circumstances.
For example, an exogenous failure of a manufactured product could be caused by factors such as extreme environmental conditions, transport accidents during delivery, inappropriate handling by the end-user, component failures from third-party suppliers, changing government regulations, natural disasters, etc.

Managing exogenous failures in the manufacture of products can involve putting in place quality control measures, rigorous testing, supply chain management, warranties and returns policies to deal with problems that may arise as a result of these external factors.

Exogenous failure criteria

User risk :

Reflects the ability to respect conditions of use in the face of the weight of the constraints of use.

- Associated levels :
  - Low: the user scrupulously respects the rules for using the product, particularly for reasons of quality and safety.
  - Medium: the user generally complies with the rules for using the product
  - High: the user may not follow the rules for using the product because of difficulties in using it.

System mobility :

Reflects the hazards associated with the system's ability to move (fixed environment, moving environment: movement in a vehicle, for example).

- Associated levels :
  - Low: Few hazards (fixed or stable environment)
  - Medium: Moderate risks
  - High: Strong hazards, great variability (transport by car...)

Product handling :

Reflects the possibility of mishandling, knocks and falls.

- Associated levels :
  - Low: Not handled
  - Medium: Handling without moving or dismantling
  - High: Handling with moving or dismantling

Exposure to weather :

Refers to exposure to rain, hail, frost, wind, sand, lightning, dust, salt spray, etc.

- Associated levels :

- Low: No exposure (indoors)
- Medium: Indirect exposure (hold, station concourse)
- High: Direct exposure (outdoors)

Phase	User risk	System mobility	Product handling	Weather exposure	Overall risk
Inactivity	Low	Low	Low	Low	Low
Insertion of ingredients	Low	Low	Medium	Low	Low
Preparation	High	Low	Low	Low	Medium
Use of tank	High	Low	High	Low	Medium
Cleaning	High	Low	High	Low	Medium

Assessment of overall risk of exogenous failure: Medium

The main exogenous default risks for this product category are as follows:

- Failure to follow instructions for use and overloading of ingredients in the food processor bowl
- Damage to the materials in the bowl due to non-compliance with cleaning instructions
- A part falls out when using the bowl and cleaning the bowl and pastry tools

VII. ELIGIBILITY

Commitment of the candidate

The applicant's eligibility for quality certification must be consistent with its existing values and strategies.

The company has not been accused or found responsible (information / material evidence, subpoena) for ethical violations, commercial practices clearly contrary to quality and ethics (practice of programmed obsolescence, industrial espionage, tax fraud) or major environmental during the last 10 years or considerable and adapted efforts have been put in place to: repair the damage caused, avoid its recurrence, reduce its impacts.

The manufacturer has all the necessary rights on the products and is the only holder of the property rights of any kind on the products including in particular as regards the drawings and models, patents and marks relating to it.

The products are not subject to any dispute of any kind from any third party.

The products are not likely to offend public order or morality, to provoke protests from third parties, or to contravene legal provisions in force.

For the marketing of products, the manufacturer agrees to its obligations and strictly complies with all legal provisions (directives, regulations, standards, laws) relating to the protection of human health, safety and environmental protection in force in the geographical areas of distribution of the products and in relation to its product categories. For the European Economic Area, the products must thus obey the European legislation and be in conformity with the "CE" marking for the products concerned.

VIII. LABEL CRITERIA

1. Environmental and/or energetic performance

PR.1. Health, safety and environmental protection

Criteria Pre-requisite

Within the framework of respect for human health, the safety of persons and installations and the protection of the environment, the producer proves that it deploys actions according to a level of requirement that complies at least with the prerogatives of the European directives 2011/65/EU and (EC) No 1907/2006 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

- The materials used in food processors intended to come into direct or indirect contact with foodstuffs, including water, are compatible with food use and comply at least with Regulation (EC) No 1935/2004.
- Preparation and/or cooking bowls and, more generally, all parts intended to come into direct or indirect contact with foodstuffs comply with the requirements of Regulation (EU) No 10/2011 and ban the use of Bisphenol A.

Method of proof: For food processors distributed in geographical areas potentially covered by regulatory prerogatives establishing requirements similar to the European market in terms of limiting the use of certain hazardous substances in EEE, proof of compliance with these regulatory requirements will be used as a method of proof in compliance with the RSPs of this criterion if necessary. Review of the composition of materials assessed by the Control Body appointed during the audit.

- For large companies (> 5000 employees), the main site(s) involved in the production of the product has (have) a certification linked to an international environmental management standard.

Method of proof: ISO14001:2015 certification issued by an accredited third-party inspection body.

PR.2. Energy efficiency

Criteria Pre-requisite

Within the framework of the reduction of impacts related to energy consumption or pollution emissions, the producer demonstrates the environmental and/or energy performance of its products.
It proves that it deploys actions according to a level of requirement that complies, at least, with the prerogatives of the European directives and/or regulations (EU) 2009/125/EC (including its implementing measures) on the ecodesign of energy-related products and (EU) 2017/1369 (including the delegated regulations) on the energy labeling of products if the product applying for the Longtime® label is concerned.

Method of proof: For products distributed in geographical areas potentially covered by regulatory prerogatives establishing requirements for energy efficiency, eco-design and

energy labelling similar to the European market, the proof of compliance with these regulatory requirements will serve as a mode of proof in the PSR compliance of this criterion if necessary.

- The food processors are equipped with an energy management system that results in a consumption of 0,5 Watts in "Off" mode thanks to :

  - An automatic switch-off device
  - And/or a deep sleep device
  - And/or a mains switch accessible to the user.

- When not in use, food processors consume a maximum of :

  - Maximum 0.5 Watt in standby mode
  - Maximum 1 Watt when providing information (time, error code)
  - Maximum 2 Watts in IOT mode

- The manufacturer clearly informs the user of the usage scenario(s) that will reduce the machine's energy consumption as much as possible and explains the differences in consumption between the different operating modes (ready to use, deep standby, complete shutdown, etc.).

Method of proof: Eco-design measures assessed by the Control Body appointed at the time of the audit and supplemented by the documentation and technical specifications referred to in Article 12(5) of REGULATION (EU) 2017/1369 present in the European Commission's Product Conformity Database.

PR.3 End-of-life management of equipment

Criteria Pre-requisite

As part of the management of end-of-life equipment, the producer proves that it deploys actions for the recovery, reclamation and effective treatment of used smartphones according to a level of requirement that complies at least with the prerogatives of the European directives 2012/19/EU of July 4, 2012 on the prevention and treatment of waste according to the target product group.

Method of Proof: In geographic distribution areas covered by regulatory prerogatives establishing product collection and recycling requirements, evidence of compliance with those regulatory requirements will serve as the mode of proof in meeting the PSR of this criterion if necessary.

2. Conception

I.1.1. State of the art and technical solutions

KO criteria

The builder identifies and records in a technical sheet the constraints of use of the product and its various parts. He/she justifies the choice of reliable and qualitative design and technical solutions with regard to these constraints.

General methods of proof of the criterion: Visual inspection by a third party auditor mandated during the in-situ audit completed by a set of data appropriate to the sub-criteria:

- *CE marking database*
- *Supplier quality data (technical specification sheet, iso 9001:2015, certification...)*
- *Test data (external/internal) for qualification, performance, aging, wear, endurance, resistance to limit conditions.*
- *Any documentation/software to support compliance such as:*
  - *Internal product data sheet*
  - *Functional analysis tool*
  - *Design study (operation, materials, usage constraints)*
  - *Performance and endurance tests*
  - *Qualification phase and test*
  - *Study of failure rates*
- *Application of product-related test standards:*
  - *EN 60335-2-15 (Household and similar electrical appliances - Safety - Part 2-15: Particular requirements for appliances for heating liquids).*
  - *EN 60335-2-14 and amendments (Household and similar electrical appliances - Safety - Part 2-14: Particular requirements for kitchen machines).*

❖ General resistance to operating and environmental conditions

- Protection of internal components against damage (crumbs, flour, liquid splashes, moisture, etc.)
  - Protection of electrical or electronic components, electric motors and transmission elements against damage
  - Dimensioning and choice of materials adapted to the constraints of use
  - Product design and/or selection of sealed or damage-resistant components (sealed compartment, optimised location of sensitive components, corrosion-resistant components, etc.)
- Conclusive durability of ferrous and non-ferrous materials under operating conditions, particularly for machine body parts, robot tanks, direct or indirect transmission elements, tools, etc:
  - Food residues
  - Salty or sweet liquids
  - Solid foods that may cause micro-scratches during kneading
- Corrosion resistance of pastry tools (acidic liquids, dishwashers) with a selection of martensitic or asthenic stainless steel depending on the stresses applicable to the tool or part.

Method of proof: Characterisation of processes and coatings using technical data, protection index, wear and ageing tests. Stainless steel class certificate

- Drop resistance of pastry tools and bowl/pan

Method of proof: Characterisation of the bowl/trough and pastry tools by conclusive IK impact protection tests.

Durability of electronic components

- Resistance of components to operating conditions
- Durability of capacitors (permanent, start-up) : Class B minimum (10000 hours)
- Reliability of position sensors (Hall effect sensor recommended)
- Thermal regulation (ventilation & cooling) and effective protection against overheating (ventilation, spacing, heat sink, etc.) of components
- Tightness of electrical and electronic contacts ensured by the product design or by design elements compatible with the objectives of promoting repairability
- Robustness of control modules with high resistance to repeated handling

Method of proof: Characterisation of parts and processes by technical data, wear and ageing tests. Characterisation of capacitors by technical data in accordance with IEC 60068-1 or equivalent standards or by ENEC type certification. Visual inspection and demonstration in real time to the inspection body appointed during the on-site audit for the thermal control section.

Durability of the electric motor(s)

- Reliability and robustness of the electric motor with resistance to prolonged use
  - Protection against overheating
  - Presence of an anti-blocking protection system (amperometric protector, protection drive, sensor, etc.)
  - Cooling fan
  - Thermal management by safety element (thermo-fuse, NTC sensor, etc.)
  - Stator: copper winding only
- Protection of the electric motor from external aggression with a protection class consistent with its location and product design

Method of proof: Characterization of materials and components, via technical data, motor quality certification, wear and aging tests or manufacturer's commitment to a long-term warranty (minimum 10 years).
Electric motor characterization via third-party quality certification
IP class and elements of class characterization.

Durability of the direct drive system

- Reliability of the drive system with transmission shaft and drive system durably resistant to wear under stress and in particular to friction (dimensioning, choice of material, lubrication)
- Durability of bearings adapted to shaft speed
- Robustness of the "drive system/tool" interface, with wear-resistant sizing and materials.

Method of proof: Characterization of materials and components, by technical data, quality certificate (bearing, bearing), wear and aging test or manufacturer's commitment to a long-term warranty (minimum 10 years).

Durability of the indirect drive system

- Reliability of the drive system with transmission shaft and indirect drive system durably resistant to wear under stress and especially to friction (dimensioning, choice of material, lubrication)
- Selection of bearings adapted to shaft speed
- Durability of mechanical gearboxes with sizing and choice of gear materials adapted to transmission torque

Method of proof: Characterization of materials and components, by technical data, quality certificate (bearing, bearing), wear and aging test or manufacturer's commitment to a long-term warranty (minimum 10 years).

Robot arm tilting durability

- Robust tilting mechanism and locking system

Method of proof: Characterization of materials and components, by technical data, quality certificate (bearing, bearing), wear and aging test or manufacturer's commitment to a long-term warranty (minimum 10 years).

Durability of the heating system

- Management of degradation risks due to overheating and/or thermal cycling
  - Management of thermal risk through systematic protection (thermal fuse, NTC sensor or equivalent device).
  - Selection of materials capable of withstanding high temperatures and fatigue caused by repeated temperature cycles.
  - Thermal regulation with effective protection of thermo-sensitive components against overheating via technical (ventilation & cooling) and/or product design solutions (aeration, spacing, decoupling, heat sink, etc.).
- Induction reliability
  - Management of the risk of IGBT and power circuit overheating (large heat sink and fan)
- Robust electrical resistance
  - Resistance to wear due to stress and/or mechanical deformation with resistor adjustment in its housing (clearance less than 0.5mm)
  - Protection of power connection systems against corrosion
  - Reliable, durable insulation of the resistance wire against exposure to air

Method of proof: Characterization of materials and components, by technical data, quality certificate, accelerated service life test (e.g. HAL, HAST) or by manufacturer's commitment to a long-term warranty (minimum 10 years). Thermal regulation test in boundary cases, heat storage test (e.g. ASTM C1784-20), CFD thermal simulation, thermal shock test (MIL-STD-202 and MIL-STD-810).

- *Inductor characterization via third-party quality certification.*
- *Characterization of IGBTs via technical data or ENEC-type certification.*

- *Resistance characterization via quality certification.*

❖ **Managing exogenous failures**
- Protection against the risk of overflows

❖ **Specific measures to promote repairs**
- No serialization practices
- Intuitive failure mode diagnostic interfaces

Method of proof: Visual inspection and real-time demonstration to the inspection body appointed during the on-site audit for the thermal control section.

I.1.2. Production

Major criteria

The manufacturer justifies processes allowing him to control and maintain a constant quality of manufacture and assembly in the production.

❖ The major site(s) related to the production of the product has a certification related to an international quality management standard, and :
- Site involved in the manufacture of the electric motor ISO 9001
- Site involved in the manufacture of electronic boards ISO 9001
- Site involved in induction module manufacture ISO9001

Method of proof: Demonstration of compliance with ISO 9001 principles by verification of quality procedures or equivalence with other certifications. For companies with more than 250 employees, ISO 9001 certification issued by an accredited third-party inspection body.

I.1.3. Consumable parts and accessories

Major criteria

Consumable parts, accessories and parts requiring regular maintenance comply with the accessibility scale A.

❖ **Accessibility scale limited to 3 steps and 5 minutes**

Consumable parts : parts due for replacement, subject to wear and tear during use.
- Robot bowl/tank assembly
  - Bowl/bowl cover sealing system
  - Bowl support/heating assembly sealing system

Accessory parts : parts useful for operation but not part of it.

- Food processor bowl/vat assembly :
  - Whisk
  - Dough hook
  - Flat beater
  - Mixer

- Other tools with specific functions

Maintenance parts : elements requiring regular maintenance to keep the product in optimum working order.

- Ensemble bol/cuve robot pâtissier
  - Bowl/pan without integrated resistance
  - Bowl/vat lid
  - Basic tools

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

I.1.4. Safety elements

KO criteria

Replacement and/or resetting of product and/or user safety components is provided for by the manufacturer. These elements comply with accessibility scale B.

These are all the active and passive parts needed to protect against the risks associated with using the product.

❖ **Accessibility scale limited to 8 steps and 15 minutes**

- Electrical and electronic assembly
  - Electromechanical safety thermostat (bimetal type)
  - Thermal fuses (electric motor, drive mechanism, etc.)
  - Position or safety sensor or contactor (Hall-effect sensor, microswitch, microswitch, etc.)
  - Electronic control (temperature sensor, regulation)
  - Temperature sensor (NTC, capillary, IR)
  - Electronic locking system (switch, microswitch, position contactor)
  - Torque limiter (electric motor)
  - Unbalance sensor

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

I.1.5. Vulnerable parts

KO criteria

Vulnerable parts are defined in the PSR. The replacement of these parts respects the accessibility scale B.

❖ **Accessibility scale limited to 5 steps and 15 minutes**

- Not identified according to LONGTIME® reference definition

Within this frame of reference, maintenance parts are exposed to high accidental breakage rates. However, the main characteristic of these parts is that they require frequent cleaning or maintenance, which takes precedence over their vulnerability.

I.1.6. Not in use

Minor criteria

The manufacturer identifies the consequences of not using the product and must inform the consumer in the recommendations for use of the minimum use necessary for the proper functioning of the product.

- Not Applicable

I.1.7. Non-proven technology

KO criteria

The manufacturer shall provide information on the proportion of unproven technology in its product. It must provide the means implemented to guarantee its reliability or ensure that the normal use of the product does not depend on this technology.

- IOT function
- Scale function: Considered as unproven technology if the use of the general functions of the device is no longer possible in the event of failure of the integrated scale (weighing, taring).
- Heater function: Considered unproven technology if the general functions of the device can no longer be used in the event of failure of the integrated heater.

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

I.1.8. External source parts

Minor criteria

The manufacturer shall keep records of externally sourced parts purchased and/or subcontracted. He must provide information on their origin and quality.

- Particularly for the following parts:
  - Electric motor assembly:
    - Armature
    - Carbon brushes
    - Capacitors
    - Bearings
  - Electronics and electronics assembly:
    - Electronic power supply boards
    - IGBT component
    - Capacitors (electric motor and power supply board)
    - Triac

- Cooking assembly:
  - Induction module (inductor)
  - Resistor
  - Direct or indirect drive assembly
  - Gears and/or pinions

Method of proof: Company quality organization. ISO9001 certification. Supplier audit

I.1.9. Reliability plan

Minor criteria

The manufacturer provides his own FMEA or internal audit and identifies the changes implemented to improve the reliability and/or repairability of the product. Corrections or improvements already made to the product are reported.

I.1.10. Sub-assembly

Major criteria

The design of the product must only use sub-assemblies on technical justification or on proof of reliability.

Without technical justification, the sub-assemblies must be the subject of a reconditioning and/or standard exchange route or the manufacturer must demonstrate the economic interest for the user.

- Particular attention will be paid to the following parts:

- Indirect drive system (gearbox)
- Heating system (induction)
- Electric motor
- Electronic board

Method of proof: Real-time demonstration to the inspection body during the on-site audit.

3. Evolutivity

I.2.1. Software

Major criteria

The manufacturer shall ensure that the original performance of its product is maintained during O.S. updates without time limit. The manufacturer identifies and records the means he uses to monitor the maintenance of these post-maj performances.

- Corrective and evolutionary updates must be unbundled
- Availability of security updates 7 years minimum
- Availability of operating system evolutionary updates 6 years minimum

4. Traceability

I.3.1. Study and failure rate

Minor criteria

The manufacturer provides failure rates and/or indicators to monitor the reliability of the product at least until the last unit of the model concerned is put on the market.

❖ Special attention will be given to the following failures via data sampling:

- Bowl/vat failure
  - Oxidation and/or corrosion (unsuitable or poor-quality stainless steel)
- Failure of electric motor(s)
  - Starting or permanent capacitor out of order
  - Power supply electronic board out of order
  - Poor-quality or faulty armature insulation
  - Unsuitable motor power
  - Worn, broken or faulty brushes (universal motor)
- Heating system failure
  - Resistor failure
  - Induction module failure (IGBT, fan)
  - Power transmission failure:
  - Drive system failure (premature wear of drive mechanism, belt/pulley, gear)
  - Premature deterioration of bearings
  - Premature deterioration of drive shaft
- Thermal control failure
  - Temperature sensor (NTC) faulty
  - Boiler or resistor failure
  - Electronic control board faulty
- Electronic failure
  - Short-circuit (electronic board, component, printed circuit)
  - Display circuit board or board component out of order
  - Display module malfunctioning (backlight, LED, etc.)
  - Control device failure (buttons, touch system, electronic board, programmer)
  - Method of proof: Real-time demonstration to the inspection body during the on-site audit, using the company's operating data and organization.

I.3.2. Identification number

Minor criteria

The manufacturer uses a number or method of identification on each product.

Method of proof: In geographical distribution areas covered by regulatory prerogatives establishing identification requirements, proof of compliance with these regulatory

requirements will be used as a method of proof in compliance with the RSPs of this criterion if necessary.

5. Disassembling

II.1.1. Packaging of the product

KO criteria

The body of the product is removable and allows access to the internal components in accordance with accessibility scale B. Permanent assemblies are not permitted unless justified by the nature or use of the product.

- Accessibility scale limited to 5 steps and 10 minutes
- Machine body assembly
  - Frame
  - Baseplate, pedestal
  - Front panel
  - Control panel
  - Hood, covers, trim panels (front/back, side, top/inf)
  - Feet
- Permanent assembly not justifiable, not allowed.
- In the case of assembly by clips, verification of the quality of the clips and the availability of the location information.

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

II.1.2. Access to functional parts

Major criteria

The accessibility of the functional rooms cannot exceed the accessibility scale C.

- Accessibility scale limited to 10 steps and 20 minutes
- Electrical and electronic assembly
  - IOT module
  - Program selector
  - Interference filter
  - Wiring
  - Electrical terminal block
- Display and control assembly
  - Analog or digital display
  - Backlight unit(s)
  - Control button(s) (mechanical, tactile, touch-sensitive)
  - Program selector, programmer, switch
  - Timer

- Motor assembly
  - Fan
  - Silentbloc
  - Thermal insulation material or heat insulating element

- Stabilizing and/or sealing element for mechanical connections
  - Sealing mechanism (O-ring, ring, lips, silicone, etc.)
  - Holding mechanism (screws, bolts, circlips, washers, etc.)
  - Stabilizing mechanism (spring, spacer, bucket, bearing, etc.)

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

II.1.3. Access to priority parts

Major criteria

Access to priority rooms meets accessibility scale B or has a reliability plan in place.

❖ **Accessibility scale limited to 8 steps and 15 minutes**

- Electrical and electronic assembly
  - Power electronics board
  - Electronic control board and/or module
  - Electronic display card and/or module
  - Electronic induction card and/or module
  - Analog or digital display
  - Capacitor(s) (electric motor (starting, permanent), induction/resistance power circuit)
  - Triac (electric motor)
  - Relay (electric motor)
  - Microswitch (tank)
  - IGBT module (induction)

- Electric motor assembly
  - Motor (rotor, stator)
  - Axle bearings
  - Brushes, Brushes
  - Torque transmission mechanism (permanent drive)
  - Coupling and/or clutch mechanism (disengageable drive)
  - Speed reduction/brake mechanism

- Bowl/vat assembly
  - Pastry bowl pressurization system (electric or mechanical)
  - Bowl locking/unlocking mechanism
  - Bowl heating element

- Cooking assembly
  - Induction module (Inducer)
  - Base heating element

  - Bowl power switch
  - Induction fan

- Direct or indirect drive assembly
  - Transmission shaft
  - Drive bearings
  - Drive bearings
  - Sealing element(s)
  - Pulley / Drive belt (ind. drive)
  - Mechanical gearbox, pinion, reducer, reduction gear (ind drive)
  - Bowl tool coupling or drive element (square drive, drive finger, hub)
  - Arm tilting system
  - Tilting system locking/unlocking mechanism

Method of proof: Visual inspection and real-time demonstration to the inspection body during the on-site audit.

- The fasteners of the various priority parts of the product having both a mechanical and an electrical function must be removable and reusable (Class A standard EN45554). If the fastening system cannot be reused, it must be supplied with the replacement part to enable the failure or maintenance scenario to be resolved.

Method of proof: Visual inspection and demonstration in real time to the inspection body during the on-site audit.

II.1.4. Sub-assembly connectors (internal parts)

Major criteria

Replacement subassembly connectors must not interfere with the repair of the product.

- All the connector fixing elements must be at least removable (class B standard EN45554:2020).

Method of proof: Visual inspection and real-time demonstration to the mandated inspection body during the on-site audit.

II.1.5. Batteries

KO criteria

The manufacturer justifies a solution for the replacement of the batteries of the devices with autonomous operation.

- Not applicable

II.1.6. Disassembly tools

Major criteria

No proprietary tools are required to disassemble the product, except for regulatory justification.

- As no regulations have been identified, the use of proprietary tools in terms of reparability is prohibited. A tolerance is allowed for tools made available by the company to all interested parties without conditions.

Method of proof: Evaluated by the control body appointed during the on-site audit.

- The list of tools for repairability of this product group shall be in accordance with the list in table A2 of EN 45554:2020 plus basic tools specific to the target product group.
  - Puller of bearings and/or bearings that may exist in electric motors or transmission systems
  - Extractor of seals
- Tolerance allowed for proprietary tools supplied on request at no extra cost with the spare part.

Method of proof: Evaluated by the mandated Inspection Body during the in-situ audit.

6. Documentation

II.2.1. Exploded view

Major criteria

The manufacturer makes available to users directly or indirectly through its partners or its network, diagram(s) or exploded view(s) of the product as well as a nomenclature of parts and sub-assemblies of the product.

II.2.2. Exploded view

Minor criteria

The manufacturer references and delivers more specific exploded views to help identify and name a part.

II.2.3. Default code

Major criteria

The user and repairer fault codes must be present in the respective documentation and/or accessible on the manufacturer's website.

II.2.4. Repair manual

Minor criteria

The manufacturer shall make available to repairers the information necessary to repair the product OR shall provide evidence of economically viable alternatives for the end user.

- All the documents necessary to solve the failure scenarios must be exhaustive and accessible (Class A Table A.10 of the EN 45554 standard) for all the professionals of the sector and as a priority :
  - Disassembly diagram(s) or exploded view
  - Technical manual with instructions for solving repair scenarios
  - List of repair and test equipment required
  - Information on priority components and their diagnostics (such as minimum and maximum theoretical values for measurements)
  - Wiring and connection diagrams
  - Error and diagnostic codes (including manufacturer-specific codes, where applicable)
  - Instructions for installing relevant software and firmware, including reset software
  - Information on how to access incident data

Method of proof: Visual inspection and real-time demonstration to the mandated inspection body during the documentary audit or on-site audit.

II.2.5. Fault diagnosis software

Minor criteria

Fault diagnosis software packages shall be free of charge after the end of the full warranty period with respect to the end of manufacture of the product.

7. Spare parts

II.3.1. Nomenclature

Major criteria

All spare parts or subassemblies are uniquely named and coded to facilitate identification and ordering of parts.

II.3.2. Availability time

KO criteria

The manufacturer commits in its GTC or via commercial communication to the availability of spare parts or replacement parts for the product for a minimum of 5 to 10 years from the date the last unit of the model concerned was put on the market. The minimum availability time required is determined in the PSR.

- Availability of spare parts 10 years minimum (Class A - Long-term accessibility. Table A9 according to EN 45554)

Method of proof: Demonstration to the inspection body during the documentary or on-site audit (general sales conditions).

II.3.3. Time of supply

Minor criteria

For functional parts or sub-assemblies, the manufacturer has a minimum reserve to meet the probability of demand for said part OR justifies a supply process within the same time frame.

II.3.4. Spare parts prices

Major criteria

The terms of purchase of spare parts are detailed (average price, distribution network, etc.). The manufacturer makes every effort to limit the total price of functional parts to the maximum recommended selling price of the product.

The value of one of these functional parts may not exceed the fixed percentage of the maximum recommended selling price of the product.

- Percentage fixed at 25%. A tolerance is allowed for parts whose unit cost price exceeds 25%.
- All replacement parts must be accessible.

Method of proof: Visual inspection and demonstration in real time to the inspection body appointed during the documentary or on-site audit. Justification of the price of parts whose PRU exceeds the 25% threshold, particularly for vulnerable or priority parts.

II.3.5. Price of shipping costs

Minor criteria

The manufacturer delivers the spare parts at the actual cost of shipping and preparation or offers alternative solutions that reduce the cost of receiving the spare parts.After sales-services under warranty

II.4.1. Customer service contact

Minor criteria

The maximum time for opening an after sales service file should not exceed 2 working days.

II.4.2. Customer service network

Major criteria

The manufacturer provides the end user with an after-sales service network in line with its direct distribution network.

II.4.3. Repair policy

Major criteria

Repair must take priority over replacement.

8. Out-of-warranty after sales service

II.5.1. After-sales service network

Minor criteria

The user benefits from means facilitating the repair of his product out of warranty. To take charge of the product to be repaired, the manufacturer must allow the user to benefit from its distribution and repair network.

9. Free long-term warranty

III.1.1. Warranty period

KO criteria

The warranty period with presumption of anteriority of the defect is determined in the PSR. This period cannot be less than 24 months.

- 24 months minimum

Method of proof: Demonstration to the mandated inspection body during the documentary audit or the in situ audit (general sales conditions).

III.1.2. Warranty conditions (beyond the legal period of conformity)

Major criteria

For the categories of product considered of "great utility", the manufacturer provides the provision of a replacement good to the user during the period of immobilization of the product for repair.

- Product not considered of great use.

III.1.3. Exclusion of warranty

Major criteria

Warranty exclusions must not be abusive with respect to the normal use of the product. They will be defined in the PSR.

- Warranty exclusions that may be identified as abusive:
  - Minor surface alterations (micro-scratch(es), oxidation(s))

Method of proof: Demonstration to the mandated inspection body during the documentary audit or the in situ audit (general sales conditions).

III.1.4. Warranty assignment

Major criteria

The manufacturer sets up a transferable warranty system.

III.1.5. Original packaging

Minor criteria

The return of the original packaging cannot be required for the warranty to be honored.

11. Use and maintenance advices

III.2.1. Usage informations provided

Major criteria

The manufacturer delivers with the product a manual with advice on the use and maintenance of the product. This information must be exhaustive and relevant in order to reduce the exogenous failure rate.

- The manufacturer clearly makes the user aware, via the manual and/or its website, of the responsible use of the machine
  - Maintenance
  - Use
  - Recovery of consumables
  - Repair and maintenance
  - Energy-saving operation

Method of proof: Visual inspection and demonstration in real time to the mandated inspection body during the documentary audit or the in situ audit (physical and/or digital user manual).

III.2.2. Usage informations provided

Major criteria

The use and maintenance advice booklet is clear, simple and accessible (adapted font size, vocabulary, language and print quality), in order to be easily understood by the end users.

III.2.3. Informations access

Minor criteria

Information on the use and maintenance of the property must be available in digital form on request or freely available on the manufacturer's website.

IX. Acknowledgements

Ethikis, the cooperative society in charge of writing this standard, would like to thank the different stakeholders who took part in our study and particularly the repair ecosystem. Thanks also to the consumers who took the time to answer our survey.

Editor: Florent Preguesuelo - florent@ethikis.com

X. Bibliographic resources

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NF EN 60335-1 COMPIL 15 Household and similar electrical appliances Safety Part 1: General requirements

NF EN 60335-2-15 Household and similar electrical appliances Safety - Part 2-15: Particular requirements for appliances for heating liquids

NF EN 60384-14 Fixed capacitors for use in electronic equipment - Part 14: intermediate specification - Fixed interference suppression capacitors and power supply connection

DIRECTIVE 2009/125/EC of 21/10/09 establishing a framework for the setting of ecodesign requirements for energy-related products

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