



PERMANENT DOCUMENT

ENEC 307

**Shipment control
as an alternative
for periodic factory inspection
in production locations**

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Introduction

One of the requirements for manufacturers for obtaining an ENEC licence is to operate a Quality System in compliance with at least ISO 9001.

In practise it has been experienced sometimes that this requirement is not the most effective means for certain types of products to ensure that the required safety level is met. Examples are seasonal articles, articles produced during short periods only, articles being assembled in home work and articles for which the factory location easily can be switched from one place to another. The procedure in this document replaces the periodic factory inspection. All other certification conditions remain unchanged, in particular all requirements listed in PD ENEC 301 Annex B must be fulfilled.

Objective

The objective of this document is to appoint products or product categories that may be considered for shipment control and to determine inspection requirements for the appointed products or product categories. The specific requirements per product category are given in annexes to this document.

Procedure

The right to use the ENEC certification mark will only be granted to a manufacturer or trading company after the following conditions have been met:

1. Type testing with positive result.
2. Pre-licence inspection and/or pre-shipment inspection of the whole shipment(s), as indicated in the relevant Annex, with positive result.
3. Signed and valid certification agreement.

The text below describes each of the conditions separately.

Type testing

ENEC certification means compliance with European Standards; this implies that the product shall be type tested against all clauses of the relevant standard. Also the essential requirements of the Low Voltage Directive shall have been taken into account. It is advisable to have the type testing completed before production starts.

Pre-shipment inspection of the whole shipment(s)

After the production sample (representative for the whole shipment) has been evaluated with positive result, the (total of) shipment(s) will be subject to a pre-shipment inspection to verify whether the products in the shipment are identical to the production sample and comply with the requirements of the type testing.

For this inspection a number of samples will be taken from the shipment according to standard ISO/DIS 2859-1, General inspection Level II, starting with Single Normal Inspection. The Acceptable Quality Level is given in the Annexes.

The sample selection has to be carried out by engineers of an ENEC Certification Body and the test shall be carried out by or under supervision of engineers of an ENEC Certification Body.

When the shipment passes the above inspection a certificate will be issued by the ENEC Certification Body to accompany the shipment. Certificates are only valid for one shipment and contain relevant information about shipment contents and size.

During the pre-shipment inspection samples for re-examination, in order to gain information to improve future shipment controls, may be selected as well.

Signed and valid certification agreement:

It may be necessary to modify existing certification agreements or to conclude new certification agreements to have this system introduced between the individual Certification Bodies and their licensees.

Records

Records shall be kept from all pre-shipment inspections. These records shall include a clear identification of the total shipment(s). Lot size, sample size and results shall be indicated. These records shall be kept available to all signatories of the ENEC agreement for a period of at least ten years.

INSPECTION SYSTEM FOR CHRISTMAS TREE LIGHTING CHAINS
WITH REPLACEABLE LAMPS

For certification of Christmas tree lighting chains with replaceable lamps, a pre-licence inspection is not required.

To verify whether the products correspond to the certified model, the tests and inspections specified below shall be made on each sample that has been taken from the shipment according to standard ISO/DIS 2859-1.

1. Function test - AQL 2,5

The chain is operated at rated voltage in order to verify that it is in working order. Also function of controller box, if applicable, shall be checked.

2. Measurement of the input - AQL 2,5

The input of the chain at rated voltage and steady conditions, shall not deviate from the rated input by more than +/-10%.

3. Comparison with the type tested model as to: - AQL 0,65

- a. Completeness of the markings on the product and the package.
- b. Appropriate plug (markings, critical dimensions as engagement face, length of pins, etc.).
- c. Wiring (visual check of the used type of cable, length of wiring between plug and first lampholder, outer diameter etc.).
- d. Lampholder and lamp bulb (shape etc.).
- e. Visual check of the correct assembling of the lampholder (in particular in respect to the accessibility of live parts).
- f. Gaskets providing protection against moisture.
Besides, it shall be checked that such gaskets will remain in position (to the lampholder) if the lamps are removed.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

4. Divisible plugs - AQL 0,65

The critical dimensions of the connector of divisible plugs are checked according to Standard Sheet III of EN 60320.

5. Fixation of the wiring - AQL 0,65

- a. Compliance is checked by a pull test of 60N during **10** seconds on supply connection. After the test, the supply connection shall not have displaced by more than 2 mm and the supply connection shall not be damaged.
- b. Compliance is checked on three lampholders, taken in the beginning, in the middle and at the end of the light chain, by subjecting each single-core cable of the chain to a pull of 30 N during **10** seconds. After the test the cable shall not have displaced by more than 2 mm and the cable shall not be damaged.
- c. Compliance, if applicable, is checked by a pull test of 30N during 10 seconds on internal connection to the flasher unit (controller box, if any). After the test, the internal connection shall not have displaced by more than 2 mm and the internal connection shall not be damaged.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

6. Protection against electric shock - AQL 0,65

- a. Protection against electrifying tinsel or other metallic decorations. Compliance is checked by means of a flat probe, 0.5 mm thick and 8 mm wide, with a rounded tip having a radius of 4 mm. It shall not be possible to touch live parts with this probe, when it is applied in every position with a force not exceeding 0.5 N. During the test the chain is fitted with the lamps as delivered.
- b. Protection against electric shock of E14, E10, E5 and other small lampholders. Compliance is checked by means of the standard test finger during insertion of the lamp in any way and by means of the Go and Not Go gauge, as far as applicable.
- c. Reliability of the fixation of the lampholder contacts in the lampholder body. Compliance is checked by the following test:
The lamps of six lampholders of the chain are removed and a force of 15 N is applied for **10 seconds** to each conductor connected. Following this, a force of 30 N is applied for **10 seconds** to the two connectors together. The forces are applied at a distance of 3 mm +/-0.8 mm from the insertion points in the lampholders, so as to try to move the contacts from the lampholders. During the test the contacts shall not move more than 0.8 mm.
This requirement is not applicable for SELV parts.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

7. Mechanical strength - AQL 0,65

- a. Three non-standardised lamp bulbs shall withstand the impact test with impact energy of 0.2 Nm.
This requirement is not applicable for SELV parts and the series connected lamps.
- b. The lamp glass of the push-in lamps shall not rotate in relation to the lamp cap. Compliance is checked on three lamp glasses by applying a torque of 0.025 Nm for 2 seconds between the glass envelope and the lampholder. No displacement shall be occurred.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

8. Flasher Unit (controller box) - AQL 0,65

- a. Verify that the marking is correct, if applicable.
- b. Visual check of the flasher unit, printed circuit board and the connections.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

9. Transformer - AQL 0,65

- a. Verify that the marking is correct.
- b. Visual check of the transformer.
- c. High voltage test between the primary and secondary transformer windings. (1 second of 4000 V between pins of 230 V plug and SELV output).
- d. Transformer output short-circuited test. After the test, the transformer shall not emit flame, molten material, glowing particles, or burning drops of insulating material and the operation of the thermal fuse is checked.

Note 1: The Acceptable Quality Level (AQL) is applicable to each item individually.

Note 2: 10% of the selected samples are subjected to high voltage test and transformer output short-circuited test.

**INSPECTION SYSTEM FOR CHRISTMAS TREE LIGHTING CHAINS
WITH NON-REPLACEABLE LAMPS**

For certification of Christmas tree lighting chains with non-replaceable lamps, a pre-license inspection is not required.

To verify whether the products correspond to the certified model, the tests and inspections specified below shall be made on each sample that has been taken from the shipment according to standard ISO/DIS 2859-1.

10. Function test - AQL 2,5

The chain is operated at rated voltage in order to verify that it is in working order. Also function of controller box, if applicable, shall be checked.

11. Measurement of the input - AQL 2,5

The input of the chain at rated voltage and steady conditions shall not deviate from the rated input by more than +/-10%.

12. Comparison with the type tested model as to: - AQL 0,65

- a. Completeness of the markings on the product and the package.
- b. Appropriate plug (markings, critical dimensions as engagement face, length of pins, etc.
- c. Wiring (visual check of the used type of cable, length of wiring between plug and first holder, outer diameter etc.).
- d. Lamp (shape etc.).
- e. Visual check of the correct assembling of the lamp connection (in particular in respect to the accessibility of live parts).
- f. Sleeving and similar parts.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

13. Divisible plugs - AQL 0,65

The critical dimensions of the connector of divisible plugs are checked according to Standard Sheet III of EN 60320.

14. Fixation of the wiring - AQL 0,65

- a. Compliance is checked by a pull test of 60N during **10** seconds on supply connection. After the test, the supply connection shall not have displaced by more than 2 mm and the supply connection shall not be damaged.
- b. Compliance is checked on three lamps, taken in the beginning, in the middle and at the end of the light chain, by subjecting each single-core cable of the chain to a pull of 30 N during **10** seconds. After the test the connections shall not have displaced or damaged.
- c. Compliance, if applicable, is checked by a pull test of 30N during 10 seconds on internal connection to the flasher unit (controller box, if any). After the test, the internal connection shall not have displaced by more than 2 mm and the internal connection shall not be damaged.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

15. Mechanical strength - AQL 0,65

The lamp bulbs shall withstand the impact test with an impact energy of 0,2 Nm. This requirement is not applicable for SELV parts.

16. Flasher Unit (controller box) - AQL 0,65

- a. Verify that the marking is correct, if applicable.
- b. Visual check of the flasher unit, printed circuit board and the connections.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

17. Transformer - AQL 0,65

- a. Verify that the marking is correct.
- b. Visual check of the transformer.
- c. High voltage test between the primary and secondary transformer windings. (1 second of 4000 V between pins of 230 V plug and SELV output).
- d. Transformer output short-circuited test. After the test, the transformer shall not emit flame, molten material, glowing particles, or burning drops of insulating material and the operation of the thermal fuse is checked.

Note 1: The Acceptable Quality Level (AQL) is applicable to each item individually.

Note 2: 10% of the selected samples are subjected to high voltage test and transformer output short-circuited test.

INSPECTION SYSTEM FOR SEALED CHAINS

For certification of sealed chains, a pre-licence inspection is not required.

To verify whether the products correspond to the certified model, the tests and inspections specified below shall be made on each sample that has been taken from the shipment according to standard ISO/DIS 2859-1.

18. Function test - AQL 2,5

The sealed chain is operated at rated voltage in order to verify that it is in working order. Also function of controller box, if applicable, shall be checked.

19. Measurement of the input - AQL 2,5

The input of the sealed chain at rated voltage and steady conditions shall not deviate from the rated input by more than +/-10%.

20. Comparison with the type tested model as to: - AQL 0,65

- a. Completeness of the markings on the product and the package.
- b. Appropriate plug (markings, critical dimensions as engagement face, length of pins, etc.
- c. Supply cable and pipe (visual check of the used type of cable, outer diameter and surface etc.).

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

21. Couplers - AQL 0,65

The critical dimensions of the couplers are checked according to the report.

22. Fixation of the supply wiring and endcap - AQL 0,65

- a. Compliance is checked by a pull test of 60 N during **10** seconds on supply connections. After the test the cable shall not have displaced by more than 2 mm and the cable shall not be damaged..
- b. A pull test of 80 N during **10** seconds on endcap. After the test the endcap shall not been moved or damaged.
- c. Compliance, if applicable, is checked by a pull test of 30 N during 10 seconds on internal connection to the flasher unit (controller box, if any). After the test, the internal connection shall not have displaced by more than 2 mm and the internal connection shall not be damaged.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

23. Protection against electric shock - AQL 0,65

The frame to which the pipe is fitted, if applicable, shall be free from sharp edges and burrs.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

24. Flasher Unit (controller box) - AQL 0,65

- a. Verify that the marking is correct, if applicable.
- b. Visual check of the flasher unit, printed circuit board and the connections.

Note: The Acceptable Quality Level (AQL) is applicable to each item individually.

25. Transformer - AQL 0,65

- a. Verify that the marking is correct.
- b. Visual check of the transformer.
- c. High voltage test between the primary and secondary transformer windings. (1 second of 4000 V between pins of 230 V plug and SELV output).
- d. Transformer output short-circuited test. After the test, the transformer shall not emit flame, molten material, glowing particles, or burning drops of insulating material and the operation of the thermal fuse is checked.

Note 1: The Acceptable Quality Level (AQL) is applicable to each item individually.

Note 2: 10% of the selected samples are subjected to high voltage test and transformer output short-circuited test.

Annex D to ENEC 307 (information)

INSPECTION LEVEL - General Level II
 SAMPLING PLAN - Single Normal
 Sample Sizes and Reject Levels
 Acceptable Quality Level (AQL)

Lot size	Code letter	Sample size	0.65	2.5
2 to 8	A	2		
9 to 15	B	3		
16 to 25	C	5		1
26 to 50	D	8		↑
51 to 90	E	13		↓
91 to 150	F	20	1	2
151 to 280	G	32	↑	3
281 to 500	H	50	↓	4
501 to 1200	J	80	2	6
1201 to 3200	K	125	3	8
3201 to 10000	L	200	4	11
10001 to 35000	M	315	6	15
35001 to 150000	N	500	8	22
150001 to 500000	P	800	11	
500001 over	Q	1250	15	

↓ = use first sampling plan below arrow
 ↑ = use first sampling plan above arrow