BLUE ANGEL

The German Ecolabel

Construction Machinery

DE-UZ 53

Basic Award Criteria

Edition February 2015

Version 9

The Environmental Label is supported by the following four institutions:

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.

Umwelt Bundesamt

The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labelling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.

Jury Umweltzeichen

The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.

RAL gGmbH

The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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Version 5 (05/2022): Changes in Chapter 3.2.1 and 3.2.2
Version 6 (01/2023): Prolongation for 1 year without any change, until 31.12.2024
Version 7 (01/2024): Prolongation without changes, Expiry date: December 31, 2025
Version 8 (05/2024): Change in Chapter 3.1 (further compliance verification accepted)
Version 9 (12/2024): Extension of the scope for electrical construction machinery

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

1 Introduction

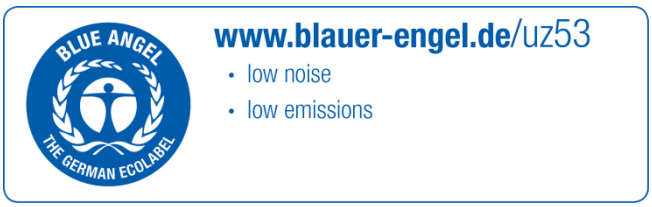
1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.
Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.
The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

1.2 Background

The objective of awarding the environmental label to low-noise and low-emission construction machinery is to achieve a reduction in noise, exhaust and particle emissions. Most construction machinery is powered by combustion engines, which generate significant levels of noise, exhaust and particle emissions in the process. The local air quality and health of those persons affected are strongly impaired as a result, especially in urban areas. At the same time, many people find that construction machinery and construction sites are the source of considerable noise pollution.
In order protect people's health and the environment, statutory limits for the permissible levels of noise, exhaust and particle emissions from construction machinery are defined within European regulations. These are determined and marked (CE Mark) based on harmonised procedures.
The Blue Angel ecolabel is based on the methodology used in the statutory procedures and, at the same time, takes into account state-of-the-art technology for the reduction of exhaust, particle and noise emissions. Therefore, the requirements and test values in these Basic Award Criteria for exhaust, particle and noise emissions are more stringent than the statutory limits.

Therefore, following benefits for the environment and health are stated in the explanatory box:



2 Scope

These Basic Award Criteria are valid for those types of construction machinery de-fined in accordance with Annex 1 of Directive 2000/14/EC[1] and listed in Table 1. This also includes construction machinery that is electrically powered and is otherwise similar to the types listed in the above standard and table. The scope may be expanded in agreement with the Federal Environmental Agency, insofar as other types of construction machinery are offered in low-noise and low-emission versions.
Construction machinery that exceeds a guaranteed sound power level of 104 dB in accordance with the calculation guidelines (3.1.1) is excluded.

3 Requirements

The products named under Paragraph 2 can be labelled with the environmental label illustrated on the first page of these Basic Award Criteria if they fulfil the following requirements.

3.1 Noise emissions

The assessment procedure for the operating noise of construction machinery is based on the measurement[2] and marking of the guaranteed sound power level in dB.
The assessment procedure for workplace noise is based on the emission sound pressure level at the workplace in dB(A)[3] , measured during the same operating cycle.

3.1.1 Determining the guaranteed sound power level

Type-based application: The sound power level measurements[2] are generally carried out on five or more identical construction machines. The guaranteed sound power level L_{WAd} is the sum of the arithmetic mean of the measured sound power levels L_{WAm} and the uncertainty factor K, which is then commercially rounded to the nearest whole number:

$$L_{WAd} = L_{WAm} + K$$

K is calculated in accordance with RfU 07-003 R2[4] . If it is only possible to carry out one measurement on one single construction machine, K = 3 dB.

Single application: A sound power level measurement[2] is carried out on the construction machine. The guaranteed sound power level L_{WAd} is the sum of the measured sound power level L_{WA1} and the standard deviation of reproducibility σ_R, which is then commercially rounded to the nearest whole number.

$$L_{WAd} = L_{WA1} + \sigma_R$$

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1 Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors.
2 The measurement methods to be used in each case for the relevant construction machine are described in Annex III of the Directive 2000/14/EC.
3 The emission sound pressure level at the workplace is determined in accordance with DIN EN ISO 11201.
4 Guidelines for determining and inspecting the guaranteed sound power level (Working Group of Notified Body's 2000/14/EC Recommendation for Use No. 07-003 R2)

σ_R for the relevant type of construction machine is taken from Table 1 of RfU 07-003 R2[4].

3.1.2 Test values for operating noise and workplace noise

The guaranteed/declared A-weighted sound power level $L_{WA,d}$ for the operating noise of construction machinery holding the Blue Angle ecolabel must not exceed the test values stated in Table 1.
The sound pressure level at the workplace of the operator of the construction machine must not exceed 80 dB(A). This requirement does not apply to machines without a defined workplace/operating position.

Compliance verification:

The applicant shall submit a test report from a testing institution (notified body) accredited according to ISO 17025 for measurements carried out in accordance with 2000/14/EC and ISO 11201 or ISO 6396 or from a testing institution (notified body) according to Article 15 of 2000/14/EC and confirm that the machine carries the relevant CE marking and an indication of the guaranteed sound power level in accordance with Article 11 of 2000/14/EC by submitting the EC Declaration of Conformity and specifying the section of the machine where the guaranteed sound power level is indicated (e.g. with photographic evidence) and, where relevant, the section of the product documentation where this value can be found.

Table 1: Test values for the operating noise of construction machinery

Type of construction machinery (in brackets: no. corresponding to Annex I of Directive 2000/14/EC)	**Net installed power *P* in kW Electric power P_{el} in kW**	**Maximum test value for the guaranteed sound power level* L_{WAd} in dB** $L_{WAd} \leq 104$ dB
(8) Vibratory plates, vibrating rollers, vibration rammers	$P \leq 8$	103
	$P > 8$	104
(1) Aerial access platforms with combustion engines (16) Tracked dozers (21) Tracked excavator-loaders (37) Tracked loaders (43) Pipelayers with chain drives	$P \leq 55$	101
	$P > 55$	82 + 11 lg P
(8) Non-vibrating rollers (13) Conveying and spraying machines for concrete and mortar (16) Dozers on wheels (17) Drill rigs (18) Dumpers (21) Excavator-loaders on wheels (23) Graders (29) Hydraulic power packs (36) Lift trucks with combustion engines (37) Loaders on wheels (38) Mobile cranes (41) Paver-finishers (43) Pipelayers with wheel drives	$P \leq 55$	99
	$P > 55$	80 + 11 lg P
(3) Builders' hoists for the transport of goods	P ≤ 15	91

Type of construction machinery (in brackets: no. corresponding to Annex I of Directive 2000/14/EC)	**Net installed power *P* in kW Electric power P_{el} in kW**	**Maximum test value for the guaranteed sound power level* L_{WAd} in dB** **L_{WAd} ≤ 104 dB**
(12) Construction winches (20) Excavators	P > 15	78 +11 lg P
(14) Conveyor belts (55) Truck mixers	All	98
(4) Building site band saw machines (5) Building site circular saw benches (10) Concrete-breakers and picks, hand-held (28) Hydraulic hammers (30) Joint cutters (48) Road milling machines	All	104
(53) Tower cranes	All	94 + lg P
(45) Power generators (57) Welding generators	Pel ** ≤ 5	91
	5 < Pel ** ≤ 10	94
	Pel ** > 10	95
(9) Compressors (11) Concrete or mortar mixers	P < 15	95
	P > 15	93 + 2 lg P

* The test value applies as a whole number. It must be commercially rounded.

** P_{el} for welding generators; conventional welding current multiplied by the conventional load voltage for the lowest value of the duty factor given by the manufacturer.
P_{el} for power generators: continuous power at variable load according to ISO 8528-1:1993, Section 13.3.2

3.2 Exhaust emission requirements

3.2.1 Limits for air pollutants

The construction machinery types listed in Table 1 must comply with the pollutant limits of emission stage V according to Regulation (EU) 2016/1628[5], with examination of the emission behavior during the entire actual working operation according to Regulation (EU) 2017/655[6] Annex 8.

Compliance verification:

The applicant shall submit the registration certificate of the engine approved according to exhaust stage V as proof of the requirements.

3.2.2 Continuous compliance with the emission levels

The manufacturer of the construction machine shall submit a declaration guaranteeing the durability of the technology used for reducing emissions, in the case of proper use and maintenance, for 5 years or for the prescribed number of operating hours[7] in accordance with

[5] Regulation (EU) 2016/1628, Annex II, Table II-1: Stage V emission limit values for engine class NRE as defined in Article 4(1)(1)

[6] Commission Delegated Regulation (EU) 2017/655 supplementing Regulation (EU) 2016/1628 as regards the monitoring of emissions of gaseous pollutants from internal combustion engines, when in use, in non-road mobile machinery.

[7] Regulation (EU) 2016/1628, Annex V, Table V: EDP for engine class NRE

Directive (EC) 2016/1628. During this period, the manufacturer shall submit verifications that CoP (conformity of production) inspections of the proper functionality of the exhaust gas handling system have been carried out based on the Swiss Guidelines[8]. A technical service provider is to be commissioned to carry out these inspections. At least 5 construction machines of each type must be inspected every year. The reports shall be submitted to RAL on request.

Compliance verification:

The manufacturer shall submit the declaration guaranteeing the durability of the technology used for reducing emissions. On request from RAL, the manufacturer shall al-so submit the annual CoP verifications for at least 5 construction machines of each type for type-based applications. In the case of single applications, the manufacturer shall submit verification of the annual inspection of the exhaust gas handling system based on the Swiss Guidelines.

3.3 Avoidance of manipulation

No changes may be made to the construction machine that lead to an increase in the noise emissions or the exhaust emissions. The manufacturer shall point out this fact in the operating instructions.

Compliance verification:

The applicant shall declare compliance with the requirement.

4 Applicants and Parties Involved

Manufacturers, importers and operators of construction machinery shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

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[8] Exhaust inspections and maintenance for machines and equipment on construction sites (Abgaswartung und Kontrolle von Maschinen und Geräten auf Baustellen)
Technical instructions for the implementation of the Ordinance on Air Pollution Control (Technische Anleitung zur Umsetzung der Luftreinhalteverordnung LRV) (based on the amendment to the LRV on 19 September 2008 and the adapted Air Pollution Control at Construction Sites Guideline (Baurichtlinie-Luft) of 1 January 2009)

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2025. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2025 or March 31 of the respective year of extension.
After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (manufacturer, importers and operators)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.