



## MILIEUKEUR CERTIFICATION SCHEME DATA CENTRE CLIMATE CONTROL

Established by: SMK  
Valid from: 1 July 2018  
Product group code and revision number: DCK.8  
Committee code and scheme number: MK.74



Publication of this scheme is subject to change. The most recent certification scheme and any 'additional provisions' are published at [www.milieukeur.nl](http://www.milieukeur.nl).

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This document is a translation of the Milieukeur scheme 'Klimaatbeheersing bij datacenters'; the official Dutch text prevails in cases of disagreement and indistinctness.



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## Introduction

All Milieukeur certification schemes are designed and administered by SMK (Stichting Milieukeur). The certification for Milieukeur is carried out by independent certification bodies (CBs) with whom SMK has signed a licensing agreement. The certification scheme describes the requirements which the Milieukeur applicant (or holder) must meet and how the CBs must inspect and evaluate. The document further contains specific conditions for the certification procedure (these apply in conjunction with general certification requirements of SMK).

The certification scheme is designed in such a way that companies that want to obtain (or retain) the Milieukeur certificate for their products or services, or other interested parties, can quickly form an idea of the requirements which the product or service has to meet.

This certification scheme concerns Milieukeur climate control at data centres. It may possibly form part of certification for data centres to be developed in the future, in which a broad range of sustainable measures are integrated. Measurements and key figures utilised in this certification scheme coordinate with those of Blue Angel (Der Blaue Engel), the German environmental certification for data centres. However, the product group to be certified under Blue Angel is a complete data centre, not only the data centre climate control, as is the case with Milieukeur.

Chapter 1 describes in greater detail which products can be awarded a Milieukeur certificate: climate control systems tasked with providing the required conditioning in a data centre or parts of it consisting of separate data rooms, and keeping them within the tolerance of the ICT equipment and UPS. Climate control for server rooms managed for private use is also included; ventilation as an integral part of the ICT equipment itself is not included. A product can only be certified if it falls within the scope of the product group.

The core of the certification scheme for data centre climate control consists of the Milieukeur requirements which the product must meet (Chapter 2). The Milieukeur product criteria for data centre climate control consist of environmental criteria (paragraph 2.1) and criteria for external communication by Milieukeur applicants and holders (paragraph 2.2). These criteria are important in the first place for Milieukeur applicants and holders. Each criterion mentions the subject (this is sometimes expressed as a goal), the requirement, and the method to comply. The Milieukeur requirements are non-statutory; only in special cases is legislation referred to. It is a condition for Milieukeur certification that a business adheres to the (inter)national and regional legislation and regulations.

Chapter 3 describes the requirements of the certification procedure. Of particular importance for Milieukeur applicants (and holders) are the conditions set for the CBs procedures (paragraph 3.1) and the evaluation method (paragraph 3.2).

Questions about the application and certification process can best be addressed to one of the CBs. Information on the CBs is published on [www.milieukeur.nl](http://www.milieukeur.nl). The certification costs consist of an application fee, the costs of the CB, and a fee to SMK for using the label (the rates of SMK can be found on the website).



## 1. The scope of the product group 'data centre climate control'

### **The product group data centre climate control concerns:**

- climate control systems (refrigeration, ventilation, (de)humidification) tasked with providing the necessary conditioning in a data centre or in parts of it consisting of separate data rooms and to keep them within the tolerance of the ICT equipment and UPS. This concerns a mixture of measures to be taken, of which the climate control installation units themselves form part. Differentiation is made between existing and new build situations;
- the installations that support the functioning of the climate control systems;
- the climate control of server rooms that are managed by a business, government organisation or educational establishment themselves for their own use.

### **Definition of a data room**

A data room is a separate computer room within a data centre, for which climate control is arranged separately and for which energy provision can be measured separately.

### **Products that do not qualify for Milieukeur**

Ventilation of the servers (ventilators in the ICT equipment) themselves specifically do not fall under the product group; that is an integral part of the ICT equipment.

### **Definition of a new build situation**

A new build situation with regard to a data centre is a situation in which the data centre, or parts of it in the form of separate data rooms, were not constructed prior to 1 January 2009. This concerns data centres in wholly new buildings or a new data centre being created in an existing building.

### **Milieukeur applicant**

The applicant is the party that manages the climate control system, the data centre.



## 2. Milieukeur product criteria

### 2.1 Environmental criteria

Environmental aspect	Requirement	Method	Type	Level <sup>a)</sup>
2.1.1 Energy performance existing situation	<ul style="list-style-type: none"> <li>- the climate control system has an <math>EUE_{climate}</math> of maximum 1.25 and an <math>EUE_{total}</math> of maximum 1.4</li> <li>- the applicant must show in writing that a new build situation does not apply for the data centre or the separate data rooms for which Milieukeur is being applied</li> </ul>	<ul style="list-style-type: none"> <li>- inspection of annual test report measurements according to measuring protocol (see Appendix 1)</li> <li>- if measurements are being taken for the first time: inspection of test report measurements according to 'Measurement protocol of averages' (see Appendix 1), a reduced procedure lasting two months</li> <li>- inspection of measurement set-up (see Appendix 1) at the location</li> <li>- inspection of current state of data centre, or parts of it in the form of separate data rooms for which Milieukeur is requested, with regard to the conformity with dated construction drawings and a determination as to whether it does indeed concern an existing situation</li> </ul>	Obligatory	Major
2.1.2 Energy performance new build situation	<ul style="list-style-type: none"> <li>- the climate control system has an <math>EUE_{climate}</math> of maximum 1.15 and an <math>EUE_{total}</math> of maximum 1.3</li> </ul>	<ul style="list-style-type: none"> <li>- inspection of annual test report measurements according to measuring protocol (see Appendix 1)</li> <li>- if measurements are being taken for the first time: inspection of test report measurements according to "Measurement protocol of averages" (see Appendix 1), a reduced procedure lasting two months</li> <li>- inspection of measurement set-up (see Appendix 1) at the location</li> </ul>	Obligatory	Major
2.1.3 Coolants in existing situation	<p>Only coolants with the following properties are permitted in data rooms to be certified and the associated technical areas:</p> <ul style="list-style-type: none"> <li>- Ozone Depletion Potential = 0</li> <li>- Global Warming Potential <math>\leq 5</math>; with the exception of HFKs (hydrofluorcarbons), under the condition that no more than 5% of the refrigerant leaks away annually</li> </ul> <p>There are no criteria with regard to this aspect for the other rooms of the data centre.</p>	<p>Inspection of product specifications of technical file</p> <p>Inspection of compliance with the 'European directive on standard leakage checks for stationary refrigeration' (EC no. 842/2006) via the 'Regulation on certain fluorinated greenhouse gasses and regulated substances in refrigeration units' (VROM no. DGM/K&amp;L200905964).</p>	Obligatory	Major

a) Nonconformities are subdivided into the levels major and minor. In the event of a major nonconformity, a period of three months will be agreed for adapting the situation, with a minor a period of a maximum of six months (see paragraph 3.3).



Environmental aspect	Requirement	Method	Type	Level
2.1.4 Refrigerants in new build situation	<p>Only refrigerants with the following properties are permitted in data rooms to be certified:</p> <ul style="list-style-type: none"> <li>- Ozone Depletion Potential = 0</li> <li>- Global Warming Potential <math>\leq</math> 5</li> </ul> <p>For the remaining technical areas directly associated with the room(s) to be certified, HFKs are permitted under the condition that not more than 5% of the refrigerant leaks away annually. For other refrigerants the following continues to apply: ODP=0, GWP <math>\leq</math> 5.</p> <p>There are no criteria with regard to this aspect for the other rooms of the data centre.</p>	<p>Inspection of product specifications of technical file</p> <p>Inspection of compliance with the 'European directive on standard leakage checks for stationary refrigeration' (EC no. 842/2006) via the 'Regulation on certain fluorinated greenhouse gasses and regulated substances in refrigeration units' (VROM no. DGM/K&amp;L200905964), including for the presence of leakage detection equipment in the event of a minimum of three kilograms of refrigerant per unit.</p>	Obligatory	Major
2.1.5 Water consumption	The annual process-related drinking water consumption is lower than 6 m <sup>3</sup> per kW of installed IT capacity.	<p>Inspection of presence of water meter that complies with EN 14154</p> <p>Inspection of annual water consumption and energy use of IT (see measurement protocol in Appendix 1)</p>	Obligatory	Major
2.1.6 Compliance with the Environmental licences of the Activity resolution	<ul style="list-style-type: none"> <li>- The applicant has all the required environmental licences and/or meets the Activity resolution.</li> <li>- The applicant has no outstanding instructions from the competent authority concerning determination by the competent authority of failure to comply or not sufficiently with the environmental regulations.</li> </ul>	<p>Inspection of presence of environmental licenses</p> <p>Information from the data centre applicant and/or check with the competent authority.</p>	Obligatory	Major
2.1.7 Green electricity	The electricity system demonstrably meets the applicable Environmental criteria for green electricity of 15 May 2018 (MK67, GE.13) <sup>b)</sup> .	Inspection of demonstrable compliance with Environmental criteria for green electricity of 15 May 2018 (MK67, GE.13) <sup>c)</sup> . A valid Environmental certificate for the green electricity consumed suffices as proof.	Optional	Major

b) The environmental criteria for green electricity can be downloaded from the following website:

<http://www.milieukeur.nl/36/m/certificeren/index.html?product=578> (only in Dutch)

c) It must be demonstrated that the electricity used meets the environmental requirements of the Milieukeur certification scheme for green electricity of 15 May 2018 (MK, GE.13), but the electricity does not have to be Milieukeur-certified. A declaration of conformity is required from a CB that has a licence agreement with SMK for the certification of Milieukeur green electricity.



Environmental aspect	Requirement	Method	Type	Level
2.1.8 Green electricity	Of the total energy consumption, the data centre generates a minimum of 25% of green electricity itself.	Inspection of demonstrable self-generation of green electricity by means of separate registration of such generation via a kWh meter, which must meet IEC 62053-22 as a minimum. Determination of the amount of total energy consumption. Visual inspection for the presence of equipment used for self-generation.	Optional	Major
2.1.9 Natural refrigerants	For climate control of the data rooms only refrigerants on the basis of air and water are used.	Inspection of product specifications of technical file	Optional	Major
2.1.10 Fire retardants	No brominated fire retardants are used in the plastics of the data centre climate control system.	Inspection of product specifications in technical file on the basis of a declaration from the supplier that the plastics are bromine-free.	Optional	Major
2.1.11 Use of chemicals in cooling water	<ul style="list-style-type: none"><li>- The treatment of cooling water takes place without chemicals or with agents that are easily biodegradable.</li><li>- An exception is statutory legionella control: for this purpose it is permissible to treat the cooling water with a control agent based on active chlorine.</li></ul>	<p>Inspection of product specifications of technical file Ready biodegradability must be proven according to test method OECD-301/EU C.4</p> <p>If active chlorine is used: inspection that it is used only for compliance with the statutory requirements concerning legionella control from the Activities resolution.</p>	Optional	Major

## 2.2 Communication requirements

Communication aspect	Criteria	Method	Level
<p>2.2.1 Milieukeur logo</p> 	<p>Milieukeur is a registered quality mark of SMK and is intended for Milieukeur certified products and services. Use of the logo by quality mark holders is not obligatory. The following conditions apply to the use of the Milieukeur (logo) and wording:</p> <ul style="list-style-type: none"> <li>- <b>Application of the Milieukeur logo and wording is only permitted after prior written permission from the certification body (CB).</b> Permission will be granted to the Milieukeur holder responsible for the correct use of the Milieukeur logo and wording;</li> <li>- The use of the Milieukeur logo and wording is permitted on invoices and letterheads, on service-related communications and on promotional material such as websites, brochures and catalogues. <b>A condition for this is that there is a clear relationship with the certified products or services.</b> Their use for instance on the letterhead is not possible if the letterhead is also used to communicate non-Milieukeur-certified products and services:             <ul style="list-style-type: none"> <li>- Permitted (for example): <i>'Business X has Milieukeur for product/service Y';</i></li> <li>- Not permitted (for example): <i>'Business X has Milieukeur';</i></li> </ul> </li> <li>- If a Milieukeur logo is used, the unique registration number allocated by the CB must also be shown;</li> <li>- The unique registration number must always show the name or abbreviation of the CB;</li> <li>- The use of the Milieukeur logo and the unique registration number is only permitted in a business's own communications in relation to their own products or services with Milieukeur; the Milieukeur logo can be used with or without <i>'Een duurzame keuze'</i> by the certificate holder in communications.</li> <li>- The Milieukeur logo or wording must not exceed the size and impact of the product, brand and/or trade name. Only communication and presentation as a quality mark is permitted. Any suggestion that Milieukeur is a trade mark is not permitted.</li> </ul> <p>For requirements for (graphic) depictions of the logo please consult the 'Milieukeur logo guidelines'. These can be downloaded at: <a href="http://www.milieukeur.nl">www.milieukeur.nl</a> or requested at <a href="mailto:smk@smk.nl">smk@smk.nl</a>.</p>	<p>Detection by inspection by observation of:</p> <ul style="list-style-type: none"> <li>- websites</li> <li>- advertising brochures</li> <li>- advertisements</li> <li>- posters</li> <li>- etc.</li> </ul> <p>Supervision by CB and SMK: In order to retain trust in the Milieukeur quality mark (for both buyers, consumers and other quality mark holders) the rules lodged for the use of the Milieukeur name and logo are adhered to. In this context see the Milieukeur Certification System Regulation of 11 March 2010, Articles 4 (Image) and 5 (Legal protection of Milieukeur) and lodging of the collective word/image at the Benelux Trademarks Office (12-08-1992/registration number 0516647). The general terms and conditions of the Environmental Advertising Code also apply.</p>	<p>Minor</p>



	<p>Milieukeur product information If text about Milieukeur is placed on a product or in relation to a service, the following may be stated: 'The criteria of Milieukeur were developed by SMK and are realised with the cooperation and input from producers, retailers, government, scientists, environmentalists and consumer organisations.' If you would like more information about Milieukeur please contact SMK, Alexanderveld 7, 2585 DB Den Haag, or visit our website at <a href="http://www.smk.nl">www.smk.nl</a>'.</p> <p>Milieukeur logo Milieukeur is a registered quality mark of SMK and is intended for Milieukeur certified products and services. The conditions of this certification scheme apply to any application of the Milieukeur logo and wording.</p> <p>Milieukeur - a sustainable choice The slogan '<i>Milieukeur - een duurzame keuze</i>' (Milieukeur - a sustainable choice) is registered with the Slogan Committee of the Advertising Association (GvR) under number 1001033.</p>		
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Communication aspect	Requirement	Method	Level
2.2.2 Other environmental claims and environmental logos	If any environmental claims other than Milieukeur or other environmental logos are shown with the Milieukeur logo, prior written approval from SMK is required. The environmental advertising code <i>Milieu Reclame Code</i> must be complied with, in particular with regard to designations and symbols in Article 7, ' <i>aanduidingen en symbolen</i> '.	Detection by inspection by observation of: - websites - advertising brochures - advertisements - posters - etc.	Minor
2.2.3 Provision of information about EUE <sub>climate</sub> (optional)	The value for EUE <sub>climate</sub> - as determined in accordance with the measurement protocol contained in Appendix 1 - may be stated on the Milieukeur certificate (optional), in the form of the energy performance EUE <sub>climate</sub> measured over the course of a year (existing situation: requirement 2.1.1, new build situation: requirement 2.1.2).	Inspection of annual research report measurements (over the course of a year) in accordance with measurement protocol (see Appendix 1)	Major
2.2.4 Provision of information about the use of green electricity (optional)	The following may be stated on the Milieukeur certificate (optional): - the fact that the electricity used meets the applicable Milieukeur criteria for green electricity, if requirement 2.1.7 is satisfied; - the percentage of the total energy consumption that the data centre generates itself (at least 25%), if requirement 2.1.8 is satisfied.	- nspection of the demonstrable compliance with the Milieukeur criteria for green electricity of 15 May 2018 (MK67, GE.13) and/or - nspection of the demonstrable self-generation of green electricity by means of separate registration of such generation via a kWh meter, which must meet the requirements of IEC 62053-22 at a minimum; determination of the share of the total energy consumption; visual inspection for the presence of equipment used for self-generation.	Major



Communication aspect	Requirement	Method	Level
2.2.5 Provision of information about Milieukeur	<p>If only parts of the data centre, rather than the whole data centre, can meet the Milieukeur requirements, the data centre must show explicitly in all its communications which parts do and do not fall under Milieukeur.</p> <p>On request the data centre must be able to provide a floor plan showing which parts do and do not fall under Milieukeur.</p> <p>If only certain parts of the data centre fall under the Milieukeur certification, the following applies:</p> <ul style="list-style-type: none"> <li>- the uniquely numbered computer racks, hired or to be hired in this room must be unequivocally linked to the floor plan;</li> <li>- such computer racks must be shown (whether or not anonymised) on invoices and/or contracts.</li> </ul> <p>Every year the Milieukeur holder must make a list (whether or not anonymised) of customers who rent computer racks in the room that falls under the Milieukeur certification.</p> <p>If an informative text about a product with Milieukeur is published on the website, prior written permission from SMK is required.</p>	The certification body must randomly check at the annual inspection, via invoices and/or contracts, whether anonymised or not, that there are no more rack rooms hired under Milieukeur certification that what is in fact available in terms of space.	Minor
2.2.6 Complaints file	<p>The Milieukeur holder has a complaints file pertaining to Milieukeur products, concerning as a minimum:</p> <ul style="list-style-type: none"> <li>- A documented procedure for registering complaints.</li> <li>- An obligatory registration, handling and settlement of complaints about products/services with the Milieukeur logo / in direct relation to the certification scheme in question.</li> <li>- Complaints recorded within two working days of receipt.</li> <li>- Complaint is recorded with serial number, date, complainant's name, brief description of the settlement incl. time limit, date of settlement.</li> <li>- Registrations filed for two years.</li> </ul>	Inspection presence of and adherence to execution of procedure <sup>a)</sup>	Minor
2.2.7 Changes in product specifications	The Milieukeur holder must, for control purposes, tell the CB of his intention to change (specifications of) the certified product, or to carry out other changes which may affect the conditions of certification <sup>b)</sup> .	Annual reassessment whether changes in product specifications have been passed on beforehand.	Minor

a) In the event of a complaint the CB is entitled to instigate an independent investigation.

b) The CB will determine whether an additional investigation is necessary. If a change has been implemented which still needs to be investigated, the CB will suspend the certification. If a change is contrary to the certification conditions or outside the scope of the certification scheme the CB will terminate or withdraw certification according to the general procedure.



### 3. Requirements for the certification procedure

#### 3.1 Certification body's inspection method

If reference is made to a 'standardized testing method', the sampling method and sample size shall also be according to the 'standardized testing method'. If no sample size method is mentioned, the following applies (in general): two samples shall be taken; one of these samples shall be used for the purpose of determining the test results. The second sample shall serve as a reference sample in case the assessment results are questioned and doubted. The assessment report shall establish sufficient proof that the used samples are representative for the to-be-certified product. To this end, the sample shall be taken by the CB, or by an independent organisation under the supervision of, or commissioned by the CB. The CB possesses a documented procedure for taking and managing samples. The general inspector or product inspector concerned must be able to take samples according to this procedure. If questions arise on the test results, the results obtained with the analyses of the reference sample shall take precedence over the first test results.

If examination is based on administrative records of the applicant, the sample shall cover a period of at least one month.

A 'technical file' contains laboratory research carried out by third parties and/or data checked by a third party (and registered by the manufacturer) about the design, construction, specifications of materials, certification of suppliers, etc. When the applicant is required to provide declarations, documentation, analyses, test reports or other evidence to demonstrate compliance with the criteria, these may originate from the applicant and/or their supplier(s). Should all or part of the investigation focus on laboratory investigation, the CB must verify whether the laboratory concerned:

- is recognised by the Dutch Accreditation Council or an equivalent certifying body that is affiliated with the International Accreditation Forum (IAF), and/or the European co-operation for Accreditation (EA) according to ISO 17025 or an equivalent international standard. As part of this, at least the scope of the accreditation in terms of field of action, technology, and testing methods must correspond to the tests specified in this certification scheme
- or
- demonstrably complies with the applicable ISO 17025 standards. The CB maintains a record of laboratories that have not been accredited. This record includes a reasoning and account as to why these laboratories feature in the record. The CB carries out a test in these laboratories twice a year in order to ensure that the laboratory continues to operate according to the applicable ISO 17025 standards.

The CB uses a procedure which monitors and assesses how the laboratories operate. The concerned product inspector is able to identify any risks to the independence of the investigation.

Laboratory results received prior to the request for certification are valid for a maximum period of three years prior.

If necessary, the certification body may request additional documentation, carry out independent inspections or send a witness to a laboratory for verification purposes, or reference can be made to specific laboratory results. At the initial inspection the CB must determine that all the



requirements have been met. Initial inspection that may consist of a number of part-inspections means the inspection prior to certification. Thereafter, an annual inspection must be held by the CB. It must be demonstrated at that it still concerns the same product.

It must be demonstrated at the annual inspection that it still concerns the same product. The energy performance must be checked annually for the purpose of the inspection report according to the measuring protocol (see Appendix 1). The certification body must also make random checks at the annual inspection, via invoices and/or contracts, whether anonymised or not, that there are no more rack rooms hired under Milieukeur certification than inspection what is in fact available in terms of space (communication requirement 2.2.5). In every case, the complaints file must be assessed (communication requirement 2.2.6).

The inspection takes place by means of an inventory with, for example, raw materials, suppliers, identification/entry checks and checks on administrative data, for example in respect of procurement. After Milieukeur has been granted, business inspections can be carried out in the framework of controls.

### **3.2 Certification body's assessment method**

For Milieukeur climate control at data centres, both **obligatory**, and **optional** criteria apply. **The applicant must comply at all times with all the obligatory criteria and a minimum of two optional criteria.**

The requirements are subdivided into three levels, **minor**, **major** and **critical major**. A deviation established in the environmental requirements during the annual and interim inspections for this certification scheme constitutes a major deviation. A deviation concerning requirements 2.2.3 and 2.2.4 for the communications constitutes a major deviation. For the other communication requirements, a deviation is considered a minor deviation. In this certification scheme there are no deviations that constitute a critical major.

### **3.3 Milieukeur certificate**

The following may be stated on the Milieukeur certificate (optional; requirements 2.2.3 and 2.2.4):

- a. the value for  $EUE_{climate}$  - as determined in accordance with the measurement protocol contained in Appendix 1 - in the form of the energy performance  $EUE_{climate}$  measured over the course of a year (existing situation: requirement 2.1.1, new build situation: requirement 2.1.2);
- b. - if requirement 2.1.7 is satisfied, that the electricity used meets the applicable Milieukeur criteria for green electricity;  
- if requirement 2.1.8 is satisfied, the percentage of the total energy consumption that the data centre generates itself (at least 25%).

### **3.4 Period of transition**

No transition period applies for this prolonged certification scheme. The CB shall issue certificates only on the basis of this scheme at the latest after three months from the effective date of the current schedule.



## Appendix 1 Measurement protocol $EUE_{climate}$ , $EUE_{total}$ and water consumption

The applicant or certificate holder of Milieukeur data centre climate control must use the following measurement protocol with regard to environmental aspects 2.1.1, 2.1.2 and 2.1.5:

- in the case of an existing situation:
  1. the applicant must demonstrate by means of dated drawings that the data centre or the individual data rooms for which Milieukeur is being applied do not constitute a new build situation;
  2. the applicant must present the results of measurements of the  $EUE_{climate}$ ,  $EUE_{total}$  and the water consumption, measured during one year according to the measurement set-up below and calculated with the formulas below, to the CB; if the data centre has to perform such a measurement for the first time, the special 'Measuring protocol averages' must be used to determine at least the  $EUE_{climate}$  and the water consumption, whereby a shortened procedure with a measurement during a period of two months is followed;
  3. within 12 months after the Milieukeur certificate was awarded, it must be demonstrated on the basis of data measured over the course of a few months (Measurement protocol averages) that the  $EUE_{total}$ , the  $EUE_{climate}$  and the water consumption meet the requirements set. If this is successfully demonstrated, the Milieukeur certificate remains in effect;
  4. after that, the results of the measurements (annual energy consumption or year-average capacities and annual water consumption) must be presented annually to the certification body in order to demonstrate that the requirements are still being met;
  5. when circumstances are such that the data centre is in a partial-load situation<sup>1</sup> step 3 may be repeated one time: within 12 months after the Milieukeur certificate was awarded, it must be demonstrated on the basis of data measured over the course of at least two months (Measurement protocol averages) that the  $EUE_{total}$ , the  $EUE_{climate}$  and the water consumption meet the requirements set. If this is successfully demonstrated, the Milieukeur certificate remains in effect.

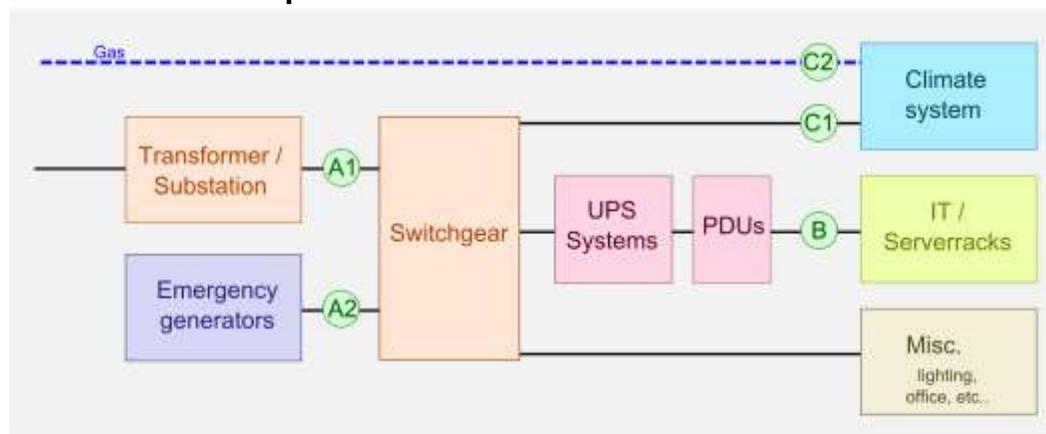
A situation is considered a case of partial load when the electrical installation uses less than 25% of the available capacity. In future revisions of the Milieukeur certification scheme, the situation in cases of partial load will be re-evaluated.
- in the case of a new build situation:
  1. the applicant must present the results of measurements of the  $EUE_{climate}$ ,  $EUE_{total}$  and the water consumption, measured during one year according to the measurement set-up below and calculated with the formulas below, to the Certification Body; if the data centre has to perform such a measurement for the first time (as is often the case with new-builds), the special 'Measurement protocol averages' must be used to determine at least the  $EUE_{climate}$  and the water consumption, whereby a shortened procedure with a measurement during a period of two months is followed;
  2. within 12 months after the Milieukeur certificate was awarded, it must be demonstrated on the basis of data measured over the course of at least two months (Measurement protocol averages) that the  $EUE_{total}$ , the  $EUE_{climate}$  and the water consumption meet the requirements set. If this is successfully demonstrated, the Milieukeur certificate remains in effect;
  3. after that, the results of the measurements (annual energy consumption or year-average capacities and annual water consumption) must be presented annually to the certification body in order to demonstrate that the requirements are still being met;
  4. when circumstances are such that the data centre is in a partial-load situation<sup>1</sup> step 2 may be repeated one time: within 12 months after the Milieukeur certificate was awarded, it must be demonstrated on the basis of data measured over the course of at least two months (Measurement protocol averages) that the  $EUE_{total}$ , the  $EUE_{climate}$  and the water consumption meet the requirements set. If this is successfully demonstrated, the Milieukeur certificate remains in effect.

A situation is considered a case of partial load when the electrical installation uses less than 25% of the available capacity. In future revisions of the Milieukeur certification scheme, the situation in cases of partial load will be re-evaluated.

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<sup>1</sup> In a partial-load situation, the technical installations in a data centre or server room are used so little that these installations show poorer energy performance. This can come about, for instance, because the number of users/clients is limited in the beginning phase of a data centre, or the construction/delivery takes place in phases, or a major client leaves.

## Measurement set-up



 Energy meter

## Formulas

$$EUE_{\text{total}} = (A1 + A2 + C2) / B$$

$$EUE_{\text{climate}} = 1 + (C1 + C2) / B$$

Self-generated electricity also falls under the input at A2.

## Measurement protocol averages

- Installation of measuring equipment to determine the average recorded capacity of ICT equipment (B), climate units (C1 and C2) and the whole data centre or the individual data rooms for which Milieukeur is being applied (A1 and A2) by means of energy meters (kWh). Electronic energy meters (kWh) must comply with IEC 62053-22 as a minimum. This also applies to the annual measurements.
- If a data centre applies for Milieukeur in parts in the form of individual data rooms, the climate control must be regulated separately for such data rooms and it must be possible to measure the energy provision separately for such data rooms.
- If natural gas is used, this must be recorded with a gas meter (Nm<sup>3</sup>) that complies with EN 1359 (balg) or EN 12261 (rotor).
- The conversion factor for gas is the same as the upper value of Slochteren gas: 35.17 MJ/Nm<sup>3</sup>.
- Determining the average capacity over six hours (intervals of 0-6, 6-12, 12-18 and 18-24 hours) with the installed meters.
- Collecting measurements over a period of at least two months.
- Reporting the relationship between PUE<sub>total</sub> and PUE<sub>climate</sub> and the outside temperature.
- Determining the theoretical EUE<sub>total</sub> and EUE<sub>climate</sub> by means of the extrapolation of the measured PUEs and the annual temperature distribution according to the 'De Bilt reference' standard climate year.
- The annual reports of EUE<sub>total</sub> and EUE<sub>climate</sub> on the basis of the measured annual electricity consumption. It may be necessary to develop a correction factor, to be determined, in the event that a year is exceptionally warm or cold.
- The annual reports of the water consumption for climate control during the measurement period per kW of installed IT capacity.
- The outside temperature in the measured period is based on measured hour values of the nearest KNMI weather station. These are averaged over six hours according to the defined time periods.