

**TÜV NORD CERT GmbH**  
**Am TÜV 1**  
**45307 Essen**

**TN-H2 002 Criteria catalog**  
for testing products in the areas  
Generation, storage, transport and use  
to determine hydrogen capability.

This document has been approved according to CERT-401-VA-007. Details are available from the QM-Department.

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**1. NOTE**

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This catalog of criteria is based on laws, standards, regulations, etc. as of December 2023.

If changes to legal requirements, standards, technical regulations or other fundamentals relevant to testing and/or certification arise as part of the certification, these must be taken into account accordingly and will be promptly incorporated into the updated version of this standard.

In such a case, certificates that have already been issued remain valid because the test statement is created based on the applicable and current version of the standard.

**1.1. Revision history**

<b>Revision Date</b>	<b>Description of changes</b>
00/12.23	Initial creation / translation

## 2. PREAMBLE

Hydrogen will become increasingly important in the future global energy supply. In addition to proving the product properties, e.g. the requirement for the generation of hydrogen, it is particularly important that the products used or implemented projects can be used safely in the application chain and can be used for the element hydrogen. The application chain includes generation, storage, transport and use. In addition, an assessment of the planning of projects can be particularly important for external parties.

This catalog of criteria TN-H2 002 was developed to provide products, plans and projects with objective proof of use with regard to hydrogen capability.

The criteria catalog enables the user to receive a report if the evaluation is successful and, after successful certification, to receive a certificate that entitles the user to use a test mark (TÜV NORD-H2-Readiness-Label) in the relevant scope.

This means, for example, that the manufacturer of products can provide proof of compliance with the requirements that the tested product, tested planning or tested project is H2-Ready and can demonstrate this to its interested groups. The certificate issued is valid for five years and is monitored annually. Below we only talk about the TÜV NORD-H2-Readiness-Label, which always includes a certificate.

The process for obtaining the TÜV NORD-H2-Readiness-Label is based on various services from the TÜV NORD Group or equivalent evidence as well as on the basis of this catalog of criteria including appendices. When using services from the TÜV NORD Group, these are carried out according to criteria that are defined in individual norms and in-house standards, as well as the necessary norms, standards and guidelines that are referenced by the in-house standard. Further details about the procedure are described in the individual chapters.

The TÜV NORD-H2-Readiness-Label includes three different certificate types:

1. Product certificate (Applies to a specific product)
2. Planning certificate (applies to a project before implementation)
3. Project certificate (applies to a project after implementation)

The scope and certificate type is selected and requested by the customer. The application is confirmed by the certification body. The individual certificate types of the TÜV NORD-H2-Readiness-Label are not constructive; rather, they are individual completed services.

This catalog of criteria does not apply to the verification of the product properties of hydrogen.

### 3. EXTENDED DESCRIPTION OF THE PROCESS

#### 3.1. General

The testing or certification and the associated issuance of the TÜV NORD-H2-Readiness-Label are carried out on the basis of various criteria in this criteria catalog as well as on the basis of various services from the TÜV NORD Group or equivalent evidence. The individual services of the TÜV NORD Group can be found in Annex 1 of the criteria catalog. The criteria listed in Annex 1 define the minimum requirements and differ depending on the certificate type of the desired TÜV NORD-H2-Readiness-Label. As part of the inquiry process, the criteria that must be met are determined, in particular from Annex 1 of the criteria catalog. Certification cannot be completed until all requirements that have been set have been successfully assessed. Certification is voluntary but provides excellent evidence to interested parties.

#### 3.2. Structure of the TÜV NORD-H2-Readiness-Label

The TÜV NORD-H2-Readiness-Label includes three different Labels. As a result, there are three different certificate types, which are listed in the table below:

Certificate Types	Description
Product certificate	The product certificate applies to a specific product in the scope. This can be, for example, an electrolyser.
Planning certificate	The planning certificate applies to a draft plan of a storage facility or a power plant based on manufacturer information on how the corresponding project should be implemented.
Project certificate	The project certificate applies to a completed project, e.g. a functioning storage facility or power plant.

Regardless of the certificate type selected, the scope of application must be specified by the customer. The scope includes generation, storage, transport and use. The table below shows the scope of application in more detail:

<b>Scope</b>	<b>The following products, for example, belong to the scope:</b>
Generation	Electrolysis, steam reforming, autothermal reforming, ...
Storage	Stationary and mobile pressure vessels, underground compressed gas storage, ...
Transport	Ship, truck, pipeline, network, gas surfaces, ...
Use	Heating, CHP, fuel cell, power plant, gas stations, ...

The tables above show the following options for the TÜV NORD-H2-Readiness-Label:

<b>Certificate types within the Label</b>	<b>TÜV NORD-H2-Readiness-Label</b>		
	<b>Tested product</b>	<b>Tested planning</b>	<b>Tested project</b>
Name of the Label	<b>Product</b> for the application scope <b>X<sup>2</sup></b>	<b>Planning</b> for the application scope <b>X<sup>2</sup></b>	<b>Projekt</b> for the application scope <b>X<sup>2</sup></b>
<b>X<sup>2</sup></b> application scope	Generation, storage, transport, use		
Essential test criteria:	<b>General criteria according to Chap. 6 depending on the scope</b>		

### 3.3. Required tests and certifications to obtain the TÜV NORD-H2-Readiness-Label

The tests required to obtain a TÜV NORD-H2-Readiness-Label depend on various factors. First, the certificate type (product, planning, project) and the scope (generation, storage, transport, use) must be specified. Based on the information, we define which tests must be carried out in accordance with the TN-H2 002 criteria catalog and Annex 1 of the TN-H2 002 criteria catalog.

The result of the evaluation and assessment is summarized in an assessment report. Based on the scope of the offer, certificate types, scope and the successful testing and evaluation of the criteria in this criteria catalog and, if necessary, other services, it is determined which certificate will be issued. The product certificate is valid for five years and is monitored annually. Project and planning certificates are excluded from monitoring.

#### 4. APPLICABLE DOCUMENTS

Nr.	Beschreibung
1.	<p><b>ISO/IEC 17065:2012</b> <i>Konformitätsbewertung – Anforderungen an Stellen, die Produkte, Prozesse und Dienstleistungen zertifizieren/</i> Conformity assessment –Requirements for bodies certifying products, processes and services (ISO/IEC 17065:2012); German and English version EN ISO/IEC 17065:2012</p>
2.	<p><b>ISO/IEC 17067:2013</b> <i>Konformitätsbewertung – Grundlagen der Produktzertifizierung und Leitlinien für Produktzertifizierungsprogramme/</i> Conformity assessment –Fundamentals of product certification and guidelines for product certification schemes (ISO/IEC 17067:2013); German and English version EN ISO/IEC 17067:2013</p>
3.	<p><b>A75-S042-MU-001 Attachment 1</b> Overview of services</p>
4.	<p><b>A75-S042-VA-001</b> Certification procedure for the criteria catalog A75-S042-MU-001</p>
5.	<p><b>A75-S042-VA-002</b> Procedural instructions for the project process for the criteria catalog A75-S042-MU-001</p>
6.	<p><b>Testing and certification regulations of TÜV NORD CERT GmbH</b> for the area of product testing and certification</p>

**5. DEFINITIONS**

TÜV NORD-H <sub>2</sub> -Readiness-Label	The TÜV NORD-H <sub>2</sub> -Readiness-Label is proof that the requirements of the TN-H2 002 criteria catalog are met. Evidence is provided through evaluation and assessment. If the assessment is positive, certification is then carried out in accordance with the referenced requirements of the criteria catalog.
Scope	The scope defines whether a customer wants to generate, transport, store or use hydrogen.
Generation	Generation refers to the generation of hydrogen regardless of the generation process. The system boundary begins with the raw materials used and ends with the hydrogen produced, depending on the pressure level. Generation also includes the processing of hydrogen. Note: This is hydrogen that can be stored, transported or used.
Storage	The system boundary begins after generation or transport to storage and ends with the start of further transport. This process also includes the compression or relaxation of the product for storage purposes.
Transportation	The system boundary begins after generation or storage and ends with the customer who has received the finished product. This process includes the compression or expansion of hydrogen if necessary.
Use	Beinhaltet einen Prozess, mit dem unter der Anwendung von Wasserstoff z.B. elektrische Energie erzeugt wird.

**6. NOTE ON THE INDIVIDUAL REQUIREMENTS**

The following chapters 6.1 to 6.4 specify the criteria or requirements that must be met in order to be allowed to use a TÜV NORD-H<sub>2</sub>-Readiness-Label as a customer. It describes which requirements must be met for which type of TÜV NORD-H<sub>2</sub>-Readiness-Label.

**6.1. General criteria for fulfilling the TÜV NORD-H<sub>2</sub>-Readiness-Label**

The following table lists the requirements that must be adhered to or implemented, regardless of the type of Label or the scope:



Nr.	Description
6.1.1	<p><b>Pre-conditions</b></p> <p>The client grants the inspector access to the documents affected by the scope and, if necessary, access to the production or facilities in the scope of the TÜV NORD-H2-Readiness-Label. The client is responsible for ensuring that the TÜV NORD-H2-Readiness-Label and the certificate are only used in competition in such a way that a statement corresponding to the certification is made about the certified scope, such as the client's scope, certificate type, etc.</p>
6.1.2	<p><b>Basic requirements</b></p> <p>If the information has not already been provided, the following information must be provided for each individual location (production facility, storage, transport, use) in the scope before the test:</p> <ul style="list-style-type: none"> <li>Organization name</li> <li>Commercial register extract</li> <li>Number of productions, plants</li> <li>Products depending on the scope including the quality of the products</li> <li>Technical data of the products, systems</li> <li>Address and, if applicable, GPS coordinates of the system</li> <li>Description of the system concept</li> <li>Network connection point (electricity and gas)</li> </ul> <p>If required:</p> <ul style="list-style-type: none"> <li>Changes to the facilities</li> <li>Operating license for the facilities</li> <li>Planned or commissioning of the systems</li> <li>Proof that the state of the art is maintained for the locations.</li> </ul> <p>The standard can be applied worldwide, taking country-specific requirements into account.</p>
6.1.3	<p><b>Determination of the scope and certificate type</b></p> <p>The customer must inform TNC for which scope and certificate type the TÜV NORD-H2-Readiness-Label should apply. A distinction is made between the areas of generation, storage, transport and use. The customer must provide all information required for certification.</p>

6.1.4	<p><b>Verwendung des Siegels</b> The TÜV NORD-H2-Readiness-Label may only be used for products, plans and projects for which there is a certificate. The rules for use according to the PZO apply [6]</p>
6.1.5	<p><b>Changes to the certified object</b> If changes have been made to the certified product or object, these must be reported to TNC immediately by the certificate holder.</p>
6.1.6	<p><b>Extension of the Certificate</b> The issued certificate can be expanded or changed if necessary. The TNC must be informed about this. The TNC checks the information and gives the customer feedback. In order for the expansion to be recognized by TNC, the TNC must be involved at an early stage. Approval of the extension will be communicated in writing and the certificate will be adjusted.</p>
6.1.7	<p><b>Retention period</b> The evidence required to obtain the TÜV NORD-H2-Readiness-Label must be kept by the customer for at least 10 years after the certificate expires.</p>
6.1.8	<p><b>Incorrect evidence</b> If the customer submits incorrect evidence, e.g. data gaps, it must first be estimated how high the influence and impact of the individual evidence is. If there are serious deviations, the TIC manager must decide whether the evidence can be accepted.</p>
6.1.9	<p><b>Obligation to cooperate</b> The customer undertakes to only submit data, documents and measured values (information) to TNC that are legally binding. If it becomes apparent at a later date that the information is incorrect, TNC must be informed immediately. Based on the new information, it must be checked whether the information has an impact on the TÜV NORD-H2-Readiness-Label. The analysis and the associated expenses must be borne by the customer.</p>
6.1.10	<p><b>Requirements</b> All specified requirements from the inquiry process, in particular from Annex 1 of the criteria catalog TN-H2 002, must have been successfully evaluated.</p>
6.1.11	<p><b>Marketing</b></p>

	Before the products, projects, etc. are marketed, all relevant criteria must be met depending on the scope and the category of the TÜV NORD-H2-Readiness-Label. Furthermore, the certificate and the corresponding TÜV NORD-H2-Readiness-Label must have been issued by the TNC in the area of validity.
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**6.2. Detailed requirement for the Label tested product**

The table below describes the requirements for which the TÜV NORD-H2-Readiness-Label tested Product can be issued:

Nr.	Description	Scope
6.2.1	<p><b>Test statement of the certificate</b></p> <p>The product meets the requirements of the TÜV NORD CERT criteria catalog TN-H2 002 and can be used for hydrogen applications within the scope of application and, if necessary, further requirements of the tests in accordance with TN-H2 002 Annex 1.</p>	Generation, storage, transport, use
6.2.2	<p><b>Certification stakeholders</b></p> <p>The main stakeholder group is manufacturers of products who want to provide proof of H2 Readiness to potential customers.</p> <p>In addition, network operators, for example, can test existing products for which there is no test statement of H2 Readiness, and the manufacturer is unknown or has gone out of business.</p>	
6.2.3	<p><b>Scope of the certificate</b></p> <p>The scope is selected by the customer and confirmed as part of the application review.</p>	
6.2.4	<p><b>Required testing for certification</b></p> <p>The tests required to issue a certificate in accordance with the TN-H2 002 criteria catalog are based on the services of Annex 1 of the TN-H2 002 criteria catalog. As part of the application review, the required tests and certifications are determined and communicated to the customer. These are requirements and must be met.</p>	

	<p>After successful testing and certification of the services in Annex 1, a certificate and thus a label can be issued on this basis.</p> <p><b>Note:</b> Restrictions or requirements from Annex 1 tests and certifications remain in effect.</p>	
6.2.5	<p><b>Certificate type</b></p> <p>According to ISO/IEC 17067, the certificate type is a TYPE 5 certificate with a term according to 6.2.6 and monitoring according to 6.2.7.</p>	
6.2.6	<p><b>Period of validity of the certificate</b></p> <p>The certificate is valid for five years and must be monitored regularly in accordance with 6.2.7.</p>	
6.2.7	<p><b>Monitoring of the certificate</b></p> <p>The products that use the TÜV NORD-H2-Readiness-Label must be monitored regularly. This can be done, for example, via production monitoring at the manufacturer. Alternatively, there is the option of confirming to TNC every 18 months that no changes have been made to the product.</p> <p>Furthermore, the monitoring can, for example, be combined with the services on which the TÜV NORD-H2-Readiness-Label was issued.</p>	

**6.3. Detailed requirement for the Label tested plan**

The following table describes the requirements for which the TÜV NORD-H2-Readiness-Label tested Plan can be issued:

Nr.	Description	Scope
6.3.1	<p><b>Test statement of the certificate</b></p> <p>The planning meets the requirements of the TÜV NORD CERT criteria catalog TN-H2 002 and therefore the planning object can be used for hydrogen applications within the scope of application and, if necessary, further requirements of the tests in accordance with TN-H2 002 Annex 1.</p>	<p>Generation, storage, transport, use</p>
6.3.2	<p><b>Certification stakeholders</b></p> <p>The main interest group are planners or project developers who want to provide proof of H2 Readiness to potential customers or clients.</p> <p>In addition, for example, system modifications to existing systems can be checked for modifications.</p>	
6.3.3	<p><b>Scope of the certificate</b></p> <p>The scope is selected by the customer and confirmed as part of the application review.</p>	
6.3.4	<p><b>Required tests for certification</b></p> <p>The tests required to issue a certificate in accordance with the TN-H2 002 criteria catalog are based on the services of Annex 1 of the TN-H2 002 criteria catalog. As part of the application review, the required tests and certifications are determined and communicated to the customer. These are requirements and must be met. After successful testing and certification of the services in Annex 1, a certificate and thus a label can be issued on this basis.</p> <p>Note: Restrictions or requirements from Annex 1 tests and certifications remain in effect.</p>	
6.3.5	<p><b>Certificate type</b></p> <p>According to ISO/IEC 17067, the certificate type is TYPE 1b with a batch = 1. There is no monitoring. If the planning changes, the certificate loses its validity.</p>	
6.3.6	<p><b>Period of validity of the certificate</b></p>	

	The certificate has no expiration date.	
6.3.7	<b>Monitoring of the certificate</b> n.a. see 6.3.5	

**6.4. Detailed requirement for the Label tested project**

The following table describes the requirements for which the TÜV NORD-H2-Readiness-Label tested Project can be issued:

Nr.	Description	Scope
6.4.1	<p><b>Test statement of the certificate</b></p> <p>The project meets the requirements of the TÜV NORD CERT criteria catalog TN-H2 002 and therefore the project can be used for hydrogen applications within the scope of application and, if necessary, further requirements of the tests in accordance with TN-H2 002 Annex 1.</p>	<p>Generation, storage, transport, use</p>
6.4.2	<p><b>Certification stakeholders</b></p> <p>The main interest group are planners or project developers who want to provide proof of H2 Readiness to potential customers or clients.</p> <p>In addition, for example, system modifications to existing systems can be checked for modifications.</p>	
6.4.3	<p><b>Scope of the certificate</b></p> <p>The scope is selected by the customer and confirmed as part of the application review.</p>	
6.4.4	<p><b>Required tests for certification</b></p> <p>The tests required to issue a certificate in accordance with the TN-H2 002 criteria catalog are based on the services of Annex 1 of the TN-H2 002 criteria catalog. As part of the application review, the required tests and certifications are determined and communicated to the customer. These are requirements and must be met. After successful testing and certification of the services in Annex 1, a certificate and thus a label can be issued on this basis. In case of successfully tested Plan in accordance with TN-H2 002 for the project, this will affect the effort involved in checking the project. Individual details must be determined on a project-specific basis as part of the offer phase.</p> <p><b>Note:</b> Restrictions or requirements from tests and certifications in Annex 1 remain in effect.</p>	
6.4.5	<p><b>Certificate type</b></p>	

	According to ISO/IEC 17067, the certificate type is TYPE 1b with a batch = 1. There is no monitoring. If the planning changes, the certificate loses its validity.	
6.4.6	<b>Period of validity of the certificate</b> The certificate has no expiration date.	
6.4.7	<b>Monitoring of the certificate</b> n.a. see 6.3.5	

**7. CERTIFICATION PROCESS**

The certification body carries out the certification and, if necessary, monitoring in accordance with the regulations set by TÜV NORD CERT GmbH. The certification body undertakes to treat all information made available to it about the client's company confidentially and to only evaluate it for the agreed purpose. Documents made available will not be passed on to third parties.

The description of the certification process is described in A75-S042-VA-001. The project process is described in A75-S042-VA-002. The individual services on which the test is based can be found in Annex 1 of the TN-H2 002 criteria catalog. The procedure and the project process must be taken into account for a positive certification and therefore for the TÜV NORD-H2-Readiness-Label to be issued.

The individual services of the TÜV NORD Group can be found in Annex 1 of the criteria catalog. Only services listed in Annex 1 of the TN-H2 002 criteria catalog can be taken into account when issuing a Label.

**7.1. Further details can be found in the service description A75-S042-MU-002**