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Fachbereich AKTUELL

Automated driving vehicles on company premises

Subcommittee Automotive Engineering, Propulsion Systems, Maintenance, Status: 11.03.2026

- Translation – In any case, the German original shall prevail -

The development and application of automated or autonomous driving vehicles are being promoted by manufacturers and users in a wide variety of areas and is already being practised in part.

In public road traffic, however, automated driving is currently still subject to strict limits. The use on company premises often involves uncertainties regarding the requirements and the conditions to be met.

This Fachbereich AKTUELL is primarily intended to support operators in the preparation and implementation of the risk assessment (operator) and the determination of requirements for company premises, vehicles, systems and persons. It is also intended to assist manufacturers in carrying out the risk assessment (manufacturer) and determining the safety requirements.

This Fachbereich AKTUELL describes the current state of the art. It deals with the automated or autonomous driving of vehicles on the following company premises:

- areas accessible to the public and equivalent areas
- restricted areas with limited access
- restricted areas without access

Figure 1 - Driverless transport system in operational use

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Only highly automated or autonomous driving operations (usually driverless) with the associated hazards (primarily collisions with people and other traffic objects) are considered. Following the vision zero goal, the approach is to avoid harm to people, in particular through suitable protective measures. It is assumed that this goal can be achieved in restricted company areas through technical and organisational measures to a greater extent than in public road traffic.
This Fachbereich AKTUELL covers mechanically driven, non-rail-bound land vehicles and their trailers as well as mobile work machines.

> **Applicable regulations for specific vehicle types, as dealt with in DIN EN ISO 3691-4 "Driverless industrial trucks and their systems" [1], remain unaffected by this Fachbereich AKTUELL. If such vehicles are used in more complex traffic situations (e.g. crossing traffic, overtaking, mixed traffic, special road users), this Fachbereich AKTUELL may be used as a basis for the extended risk assessment (operator and manufacturer).**

1 Company premises (areas)

Different traffic conditions in different company areas and the resulting hazards, require a subdivision. The hazard situation and thus the requirements for automated vehicle traffic strongly depend on whether, for example, only automated vehicles with defined properties (maximum speed, specified route, ...) or a wide variety of traffic objects with various degrees of freedom (as in public road traffic) are encountered in an area.

1.1 Areas accessible to the public and equivalent areas

This involves areas of companies and factory premises where the traffic situation is comparable to public road traffic. Access is available to different people and vehicles. The traffic situation includes vehicles as well as pedestrians, cyclists or persons moving by other means.

This may include public traffic areas (accessible to everyone) or non-public traffic areas (access control by means of barriers or traffic lights, mandatory registration if applicable, no special internal regulations for automated vehicles). Agricultural land and production areas as well as construction sites without access restrictions should also be considered in this sense.

It is significant that access is not limited to a restricted group of people and certain vehicles or road users with defined characteristics.

1.2 Restricted areas with limited access

The term "restricted areas with limited access" refers to company premises to which only authorised persons or vehicles have controlled access. Vehicles may be subject to certain requirements (e.g. equipment for automated driving or defined communication levels). Persons must be appropriately instructed or qualified.

Such areas may be, for example:
- production areas, assembly halls
- airport aprons
- loading areas harbour/logistics areas
- non-public test fields/trial facilities
- depots
- maintenance areas, workshops
- gravel pits, quarries

It is essential that the expected traffic objects and their behaviour are known or can be narrowed down, and that the requirements for automated driving vehicles can thus be determined.

1.3 Restricted areas without access

For the purposes of this document, "restricted areas without access" refer to company premises with automated vehicle traffic to which persons normally do not have access.

If access by persons is necessary (e.g. due to an accident, maintenance, ...), they must be protected from hazards by special measures (shutdown, secured areas, special operating conditions, ...).

Automated driving vehicles are to be regarded as part of the production line, if applicable.

2 Requirements for traffic areas

Depending on the traffic area under consideration, different requirements apply which are differentiated and presented below.

2.1 Areas accessible to the public and comparable areas

For areas the traffic situation of which is comparable to public road traffic and in which automated vehicles operate, identical rules must apply in accordance with public traffic regulations (Straßenverkehrsgesetz/StVG [2], Straßenverkehrsordnung/StVO [3], …). This is necessary since automated driving vehicles authorised for use on public roads are designed in accordance with these rules and regulations.

In addition, relevant national occupational safety regulations, in particular the requirements of the Arbeitsstättenverordnung (ArbStättV) [4], the Arbeitsstättenregeln ASR A1.8 „Verkehrswege“[5], ASR A1.3 „Kennzeichnung“[6], ASR A3.4 „Beleuchtung“[7], ASR A2.3 „Fluchtwege“[8], ASR A1.7 „Türen und Tore“[9] and occupational safety regulations and rules of the accident insurance institutions must be observed.

2.2 Restricted areas with limited access

Access to the company premises with automated vehicle traffic designated herein, may only be possible for the vehicles and persons intended for this purpose. Vehicles must fulfil the technical requirements for automated operation determined in accordance with section 3.2 of this "Fachbereich AKTUELL".

Depending on the hazard potential and traffic concept, the necessary access restrictions for persons must be defined and implemented (if necessary, limiting the group of persons, number of persons, wearing warning clothing or transponders, implementing rules of behaviour, etc.). Persons with access authorisation must be specially instructed. The scope of instruction depends on the extent of the hazards and rules of behaviour to be observed and their deviation from public road traffic. The instruction must be documented in writing and repeated regularly, but at least once a year.

The requirements of ASR A 1.8 "Verkehrswege" must be implemented.

Relevant measures can be, for example:
- marked traffic routes for vehicles and pedestrians
- pedestrian crossings
- separate directional lanes

Requirements from other relevant national occupational health and safety regulations (see section 2.1) and rules of the accident insurance institutions must be fulfilled (for example, driving only on driveways and in areas that allow safe driving and have sufficient load-bearing capacity – see also § 45 Fahrwege DGUV Regulation 70 "Fahrzeuge [10]).

2.3 Restricted areas without access

Access by persons to restricted areas without access, in which automated driving vehicles operate, must be safely prevented by means of guards or structural partitions. Opening the access doors must influence the control of the operating vehicles in such a way that the safety of persons entering with special access authorisation, for example for maintenance work, is ensured. All doors to the area must be designed as escape doors. The operating status of the area must be clearly displayed. Persons with special access authorisation must be specially instructed.

The area or defined parts thereof and the automated vehicles located therein must be capable of being put into a defined maintenance mode by the personnel which enables safe working in the area. The maintenance mode must be displayed in a clearly recognisable manner.

3 Requirements for automated driving vehicles

Automated driving vehicles must neither directly nor indirectly endanger persons under all expected operating and environmental conditions. When determining the protective measures, the current state of the art, for example with regard to the sensor system, control technology, communication, cyber security, etc., must be taken into account. It is accepted that direct or remote-controlled intervention may be necessary if technical protective measures cannot be adequately implemented.

In addition to the requirements set out here, relevant requirements in national occupational health and safety regulations, in particular the requirements of the Betriebssicherheitsverordnung (BetrSichV) [11] and the Technische Regel für Betriebssicherheit TRBS 2111 Part 1 [12] as well as the occupational safety regulations and rules of the accident insurance institutions must be observed.

Figure 2 – Container loading with driverless transport systems

3.1 Publicly accessible and comparable areas

Automated vehicles driving in publicly accessible or comparable company premises must either be authorised for use on public road traffic or meet the technical requirements for use on public roads.

In deviating cases, any remaining risks must be assessed as part of the risk assessment (operator) and suitable measures must be taken to establish a comparable level of safety.

The same applies if company premises have relevant deviations from public road traffic (e.g. in the design of the traffic infrastructure).

The vehicles must be operated in these areas in accordance with the requirements of the StVO.

Additional requirements may apply to agricultural machinery in publicly accessible or comparable areas.

3.2 Restricted areas with limited access

The basic requirements for automated driving vehicles operating in restricted company premises with limited access must be determined as part of a risk assessment (operator) depending on the existing boundary conditions (including expected obstacles or road users, complexity or level of automated driving, for example depending on lane guidance, ...). The basic requirements determined must comply with the intended use within the manufacturer's risk assessment.

Automated driving vehicles must not leave the restricted area; automated operation is only permitted in this area. This does not apply to vehicles that fulfil the requirements of section 3.1.

The vehicles used must entirely fulfil the basic requirements determined in the risk assessment (operator). The following requirements must be implemented, depending on the type of vehicle:

- Directive 2006/42/EC [13] (machinery) or, as far as motor vehicles are concerned,
- Regulation 2018/858/EC [14] (motor vehicles)
- Regulation (EU) No 168/2013 [15] (two-, three- wheel vehicles and quadricycles in category L)
- Regulation (EU) No 167/2013 [16] (agricultural and forestry vehicles and systems, components, separate technical units, parts and equipment designed and constructed for such vehicles).

Furthermore, emergency stopping facilities must be provided if required in one of the aforementioned European directives and regulations. Emergency stopping facilities (if necessary also external) are also recommended over and above legal requirements.

The vehicles must be clearly recognisable as automated driving vehicles in every situation. The driving speed must be limited for the respective area in such a way that, depending on the relative speed to the obstacle, braking to a standstill of the vehicle is ensured under foreseeable conditions without collision. For additional personal protection, sharp or pointed outer contours on automated vehicles should be avoided.

In accordance with Section 42 of DGUV Regulation 70 "Fahrzeuge", persons are only permitted to ride on vehicles in the seats, standing places or lying positions intended for them. Foreseeable misuse must be taken into account as part of the risk assessment. Measures must be taken to prevent persons from unauthorised travelling on automated driving vehicles.

DIN EN ISO 3691-4 provides the requirements for driverless industrial trucks. As there are comparable hazards to driverless industrial trucks in automated driving - regardless of the design of the vehicles - the basic requirements for object detection of this standard are to be considered as minimum requirements for other vehicles as well. Depending on the application, test objects other than those mentioned there as well as moving objects must also be taken into account (see section 3.2.1).

Functional safety

In addition to protection against mechanical hazards, particular attention must be paid to the correct design of the control systems and compliance with the necessary measures for functional safety. The requirements for functional safety must be determined and technically implemented. The following principles apply to the elements of the individual levels:

Perception of the environment (input level):
Suitable measures (e.g. diverse redundant systems/sensor fusion) must be taken to ensure that the vehicle can be brought to a safe state even in the event of a fault.

At least two reliable pieces of information are required for each signal level in order to make a reliable decision. The more information is available, the better the respective decision will be, even under error conditions.

The output signals of the input level must be suitable for fulfilling PL d in accordance with DIN EN ISO 13849-1 [17] or at least an equivalent safety level. When being implemented in accordance with other functional safety standards such as the ISO 26262 [18] series of standards in conjunction with ISO 21448 [19], the achievement of the required safety level must be verified in each individual case by means of appropriate safety analyses of the overall system. Output signals must be regularly checked for plausibility by the processing level.

Motion planning (processing level):
All functions of the processing level must be implemented in at least PL d in accordance with DIN EN ISO 13849-1 or SIL 2 in accordance with DIN EN 61508 [20]. Based on the risk assessment (operator) and the resulting risk assessment of the manufacturer, it may be necessary to specify higher requirements (e.g. higher PL or SIL) for individual or all systems at this level. The implementation in accordance with other functional safety standards such as ISO 26262 in conjunction with ISO 21448 and corresponding safety analyses of the overall system is also possible.

Implementation of drive commands (output level):
The actuators must be suitable for the area of application. A fault must not lead to a hazardous situation. For motor vehicles that are eligible for approval, the requirements of the StVZO [21] and the relevant UN/ECE regulations [22] apply. For other vehicles and mobile machinery, the requirements of Annex I Section 3 of the MD and Section III of DGUV Regulation 70 apply. In the absence of a standardised basis, the requirements of the StVZO and UN/ECE regulations should be used as a guide.

Internal and external influences such as overload, insulation faults, short circuits, environment, EMF, EMC etc. as well as errors in the transmission level must be controlled depending on the requirements. Information must be transmitted securely and without changes or errors.

Failure of the automated driving function or relevant systems must be detected automatically, and the vehicle must be brought to a safe state. The same applies if the system limits are exceeded.

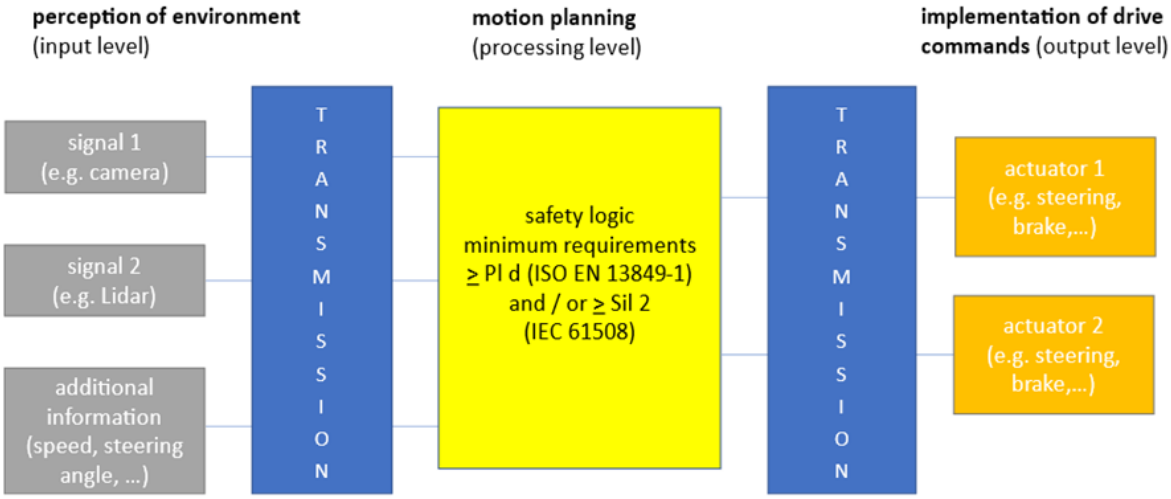

Figure 3 – Functional safety of systems for automated driving

If the functional safety requirements are assessed in accordance with ISO 26262 in conjunction with ISO 21448, the verification must fulfil the safety goals that have been determined as part of the risk assessment described in the beginning of section 3.2.

Among other things, vehicles must be designed for driving manoeuvres in the infrastructures or structural environments of the respective areas (e.g. with loading ramps, loading stations, etc.).

When using artificial intelligence (AI) or machine learning (ML) to control automated vehicles, their trustworthiness and the relevance of errors for the functional safety of the overall system must be considered in particular. Where classic solutions are available, these should be implemented as a matter of priority (see also "General principles for the safety assessment of artificial intelligence (AI)" [23]). Decisions made by AI-based systems must be reproducible and checked for plausibility in the system, for example by comparing them with redundant channels. They must not influence the safety-related behaviour of the system in a negative way.

The current Technical Reports (TR) for assessing the trustworthiness of AI, such as ISO/IEC TR 24028 "AI - Overview of trustworthiness in Artificial Intelligence" [24] and ISO/IEC TR 24029-1 "AI - Assessment of the robustness of neural networks - Part 1: Overview" [25] must be taken into account. The safety of AI systems in relation to automated road vehicles is dealt with in ISO 21448, among others. Systems with AI and ML must have a safety certificate.

Fully automated driving with passenger transport requires proven safety with reproducible results to prevent personal damage.

3.2.1 Obstacles and road users

The primary purpose of recognising obstacles and road users is to prevent collisions and the resulting damage. Preventing personal injury is always the main priority. All anticipated obstacles that could result in personal injury must be recognised safely and in good time. To prevent a collision, the automated vehicle must reduce its speed and, if necessary, stop. Swerving in front of the obstacle is permitted if it is safely possible (e.g. without endangering persons). The spontaneous behaviour of people must also be taken into account as far as possible. As soon as people are recognised in the immediate danger zone, the vehicles must stop safely.

Table 1 on page 8 shows a list of possible obstacles that may occur. It serves as an aid with regard to frequently occurring obstacles, but does not claim to be exhaustive. The dimensions given there correspond to the 5th percentile of women over 18 years of age from DIN 33402 2 "Ergonomics - Human body measurements, Part 2: Values" [26].

As part of the risk assessment (operator), it is necessary for the operators to adapt and supplement the contents in accordance with the individual circumstances and the technologies used (e.g. Vehicle-2-X communication) and to define other possible obstacles with their dimensions and speeds.

Accidents involving material obstacles can cause personal injury and must also be considered (e.g. vehicle collides with scaffolding that falls over; damage to chemical plants, etc.).

Table 1 - Examples of obstacles to be expected (dimensions according to DIN 33402-2)

Designation	Dimensions in cm	Speed (typical) in km/h
person upright	24,5 x 153,5	6
person sitting	24,5 x 81,0	
person lying down	24,5 x 39,5	
child		6
cyclist	24,5 x 153,5	15
wheelchair user	118,5 x 54,5	6
animal		
construction machine		
vehicle		30
barrier		
tool		
machine		
transport goods		
waste		

Not only the geometry of the objects must be considered, but also their material, reflexion and surface properties and speeds.

The specific characteristics for reliable detection must be defined in detail for the individual objects. If necessary, several objects can be summarised under one critical test object if minimum dimensions and properties are taken as a basis. Verification of the effectiveness of obstacle detection can be carried out analogue to DIN EN ISO 3691-4 Chapter 5.2 "Verification for type testing and individual tests after manufacture and commissioning".

The sensor system for obstacle detection in these automated functions must have the required detection reliability. Requirements for the functional safety of obstacle detection (input level) are described in section 3.2.

The requirements for obstacle detection apply equally to the moving and stationary state of the vehicle, as long as it is in automatic mode. A stationary vehicle must not move off if there is an obstacle in the intended driving area.

3.2.2 Levels of automated driving operation depending on lane guidance

Depending on the lane guidance, five levels of complexity can be distinguished for automated driving operations on company premises.

Level 1 – Lane-bound
In lane-bound automated driving, the vehicle moves in a defined lane. This is implemented, for example, by wire-guidance (magnet, transponder).

The lane can contain crossroads. Turning into defined lanes as well as travelling forward and backward is possible. Entering and exiting the lane is permitted (e.g. to the charging station).

Figure 4 – Example of lane-bound driving

Level 2 – Lane-guided
In lane-guided automated driving, the vehicle moves in one of several defined lanes (even if only in sections). This is implemented, for example, by wire-guidance (magnet, transponder). The traffic route may include crossroads, turning into defined lanes and travelling forward and backward are possible.
Vehicles may travel in a loop or in opposite directions. Complete lane changes are only permitted during an overtaking manoeuvre or if an obstacle blocks the designated lane. After evasive manoeuvres or overtaking manoeuvres, it must be returned to the designated lane. Entering and exiting the lane is permitted (e.g. to the charging station).

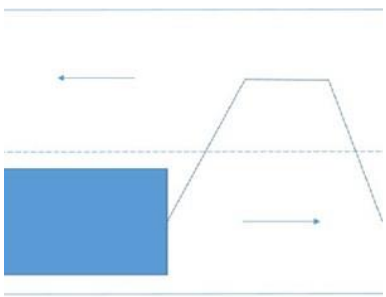

Figure 5 – Example of lane-guided driving

Level 3 – Corridor-bound - Direction-bound
With direction-bound automated driving in a travel corridor, all vehicles move in only one direction in the corridor. The travel corridor may contain crossroads. Turning into other travel corridors is possible.

It is possible to drive in multiple lanes (even in sections only) with complete driving line changes. Vehicles can drive in a loop. Several vehicles can overtake each other if necessary or avoid obstacles. Vehicles are permitted to enter and exit the driving corridor (e.g. to the charging station).

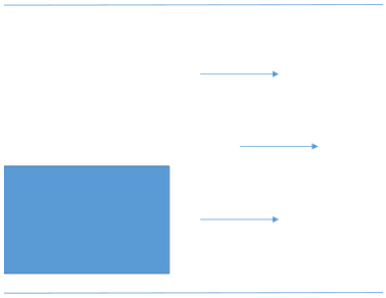

Figure 6 – Example of corridor-bound driving

Level 4 – Corridor-bound - Direction-unbound
With direction-unbound automated driving in a driving corridor, all vehicles move in one direction of travel or in the opposite direction in the corridor. The travel corridor may contain crossroads. Turning into other travel corridors is possible. Travelling forward and backward is permitted. Vehicles can travel in multiple lanes (even in sections only) with complete driving line changes (position within the driving corridor). Vehicles can travel in a loop. Several vehicles can overtake each other or avoid obstacles if necessary. Vehicles are permitted to enter and exit the driving corridor (e.g. to the loading station).

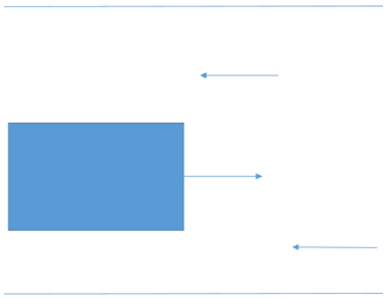

Figure 7 – Example of direction-unbound driving in predefined driving corridors

Level 5 − Free navigation in a driving field
With freely navigated automated driving in a driving field, all vehicles move in any direction. Travelling forward and backward is permitted. All objects in the driving field can change position as desired. Entering and exiting the driving field is permitted (e.g. to the charging station).

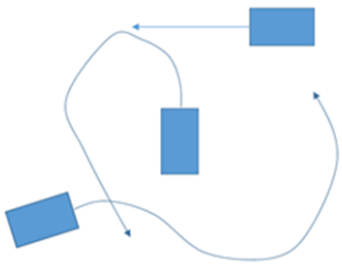

Figure 8 – Example of free driving in a predefined driving field

3.2.3 Basic requirements

The following section describes the basic requirements for the individual levels of automated driving depending on the lane guidance. The basic requirements for automated driving vehicles within restricted company areas with limited access can be categorised as follows:

- environment detection (U),
- communication (K),
- navigation (N) and
- regulations (R)

Depending on the complexity level of automated driving, the requirements must be determined in accordance with Table 2 in the Annex. The measures listed are only to be regarded as a basis for the operational risk assessment (operator). The contents are not exhaustive.

3.2.3.1 U: Environment detection

U1: Road users, objects, obstacles
The recognition of road users, objects and obstacles in the area of the manoeuvres to be carried out must be ensured in

- direction(s) of travel or
- all directions

U2: Condition of road users, objects, obstacles
Recognition of the characteristics of traffic participants, objects and obstacles in the area of the driving manoeuvres to be carried out must be ensured with regard to:

- dimension
- distance
- speed
- acceleration/deceleration
- position
- trajectory (direction)
- swivelling out, towing curve, including trailer if necessary

U3: Identify track condition
If hazards (e.g. road damage, edges of crashes) in the area of the driving manoeuvres to be performed cannot be safely excluded by other measures, the vehicle must ensure that these hazards are detected.

U4: Surroundings, infrastructure influences, environmental influences
The detection of other influences, such as slippery conditions, fog, smoke, flooding, moisture, wind, fire, shadows, etc., must be ensured if the required safety cannot be guaranteed due to these influences. If this is not possible, the measures required under K6 must be implemented.

3.2.3.2 K: Communication

K1: Operating status identifiable
The operating status of the automated driving vehicle (e.g. automatic mode, malfunction) must be identifiable on the vehicle. Changes in the operating status require sufficient warning time so that other road users can react appropriately. This includes identifying and interpreting signals and being able to make decisions and allowing sufficient time to act.

K2: Display driving manoeuvre
All starting, turning and braking manoeuvres as well as emergencies must be indicated in good time by visual and/or acoustic signals.

K3: Communication with X
Communication between road users and with traffic facilities must be ensured (V2X: Vehicle to everything), insofar as this is necessary to fulfil the driving task and achieve the required level of safety.

K4: Communication through centralised control
Communication with other road users can be replaced by suitable technical measures (e.g. centralised control).

K5: Safety monitoring
Centralised monitoring with the option of shutting down (e.g. for hazard prevention, faults, maintenance) and, if necessary, determining the position is required.

K6: Surroundings, infrastructure influences, environmental influences
If the vehicles' environment detection systems do not automatically detect other influences such as slippery roads, fog, smoke, flooding, wet conditions, wind, fire or signal interference, these influences must be communicated to the vehicles, provided that the vehicles can react to such influences with suitable behaviour. Otherwise, suitable external measures must be taken or implemented (e.g. reduced speed, shutdown).

3.2.3.3 N: Navigation

N1: Route determination
The route can be determined
- predefined/by means of centralised control or
- self-determined based on map or environmental data

N2: Risk optimisation route
The route must be determined in terms of risk (e.g. no left turns) and economy (time, distance) in an optimised manner. Traffic jams and congestion should be avoided.

N3: Positioning in space
Positioning in space for safety-related functions must be ensured with sufficient accuracy.

3.2.3.4 R: Regulations

R1: Clear and known
Regulations must be clear and known to everyone. Persons with access to the company area must be instructed.

R2: Required forms of communication
Regulations must be implemented in all necessary forms of communication (e.g. electronic signals for automated vehicles, traffic signs for people).

R3: General right of way
A general right of way regulation for automated vehicles may be permissive or prohibited depending on the situation.

R4: Consider behaviour of persons
In addition to the expected behaviour of people in the traffic area, the spontaneous behaviour of the automated driving vehicle must also be taken into account.

R5: Data recorder
Depending on the boundary conditions, driving data memories are required for relevant data for the traceability of malfunctions and accidents.

R6: Leaving the traffic area/lane is not permitted
The automated driving vehicle must not leave authorised traffic areas or the driving lane(s).

R7: Safety distance
Sufficient safety distances from obstacles and other vehicles must be maintained (see also ISO 3691-4 Table A1). Exceptions to this are coupling operations, starting up at loading ramps, etc., which must be carried out at a reduced speed (if necessary, only permitted in a designated zone). In such cases, suitable measures must be taken to prevent any danger to persons.

R8: Maximum speed
The maximum speeds must be defined for the respective application depending on the safety components used on the vehicle and the operational equipment as well as the expected traffic objects and ambient conditions.

R9: Speed reduction if trajectories are not recognised
If trajectories (dynamic properties of obstacles) are not identified, the speed must be limited. It must be possible to stop in good time without endangering road users at all times.

R10: Acceleration
The maximum and minimum accelerations must be defined for the respective application.

R11: Lane specification
When travelling within a corridor, a lane specification is required (e.g. driving on the right).

R12: Priority rule, overtaking
Priority must be given when overtaking (e.g. overtaking vehicle has priority).

R13: Evasive action on encounter
The evasive behaviour in oncoming traffic must be defined.

R14: Adequately free traffic area
Driving may only take place if adequate traffic space is available without obstructing other road users (see edge and encounter allowances in accordance with ASR A 1.8). This also applies to overtaking manoeuvres, entering crossroads, etc.

3.3 Restricted areas without access

Automated driving vehicles that are used within restricted company areas without access by persons are comparable to automated production equipment. They are subject to the requirements of Directive 2006/42/EC. In automated operation, measures are required to protect persons in the restricted area when persons enter it, for example for trouble-shooting or maintenance. In this case, vehicles and other automated system components must be placed in a safe standby mode. Automated vehicles and system components may then be moved individually and at reduced speed by manual control (maintenance mode). Only after leaving the area and closing the accesses may it be possible to cancel the maintenance mode by manual authorisation from outside.

4 Summary and limits of application

This "Fachbereich AKTUELL" is based on expert knowledge gathered by the expert committee Woodworking and Metalworking, subcommittee Vehicle Construction, Vehicle Drive Systems and Maintenance of German Social Accident Insurance (DGUV) as well as findings from accidents. It was prepared in collaboration with the expert committees Transport and Landscape, Trade and Logistics, the Institute for Occupational Safety and Health (IFA) of the German Social Accident Insurance, the Federal Institute for Occupational Safety and Health (BAuA) and the German Road Safety Council (DVR).

It is intended to support manufacturers and operators in the preparation and implementation of their risk assessments and the determination of requirements for areas, vehicles, systems and persons.

Further requirements (e.g. from national or DGUV regulations) remain unaffected. Specific hazards, for example the transport of hazardous substances, are not taken into account. Work operations (hazards posed by work superstructures or equipment) may be subject to special requirements or regulations.

The provisions according to individual laws and regulations remain unaffected by this "Fachbereich AKTUELL". The requirements of the legal regulations apply unrestrictedly.

In order to obtain complete information, it is necessary to consult the relevant regulatory texts.

This “Fachbereich AKTUELL” is the English translation of the German issue “FBHM-119” as of 3/2026. In any case, the German original shall prevail. No liability is accepted for translation errors.

The expert committee Woodworking and Metalworking is composed of representatives of the German Social Accident Insurance Institutions, federal authorities, social partners, manufacturers and users.

Further “Fachbereich AKTUELL” and Information Sheets of the expert committee Woodworking and Metalworking (Fachbereich Holz und Metall) can be downloaded from the internet [27].

Glossary

Term	Description
Communication	Exchange of information and data between traffic objects, as well as with objects in their environment or infrastructure, which serves the safe implementation of the automated driving function
Company premises	Spatially restrictable areas on or in commercially used areas, properties and buildings that are not subject to public road traffic law
Functional safety (FuSi)	Part of the safety of a technical system depending on the correct function and other risk minimising measures (defined in IEC 61508)
Highly automated /autonomous	Operating mode of a vehicle which is characterised by the fact that it is generally not controlled by a person, but the vehicle generally moves independently in internal traffic without manual intervention
Lane	Area that is available to a vehicle for travelling in one direction and in which vehicles move in the intended way (possibly also in a forced manner). Automated vehicles may only leave lanes for certain authorised driving manoeuvres (overtaking, turning, approaching loading/ unloading, approaching charging stations, reaching a safe state in the event of a fault, ...).
Navigation	Here: targeted selection of the route, in the sense of automated driving as a higher level of vehicle control (stabilisation, guidance)
Performance level (PL)	Ability to perform safety functions of a technical system under foreseeable conditions (defined in DIN EN ISO 13849-1)
Risk assessment (operator)	In the context of this document, this is the systematic identification and assessment of hazards to employees that may occur during the use of automated driving vehicles according to the employer's expert judgement and experience. The use covers all phases of vehicle operation, including maintenance, for example. The purpose of the risk assessment is to determine the necessary and suitable protective measures for the health and safety of employees.
Risk assessment (manufacturer)	The manufacturer's task, which serves to minimise risk before placing automated vehicles on the market. It comprises the assessment of the probability of occurrence of damage and the possible extent of damage in relation to existing hazards during the development and design process. The procedure for carrying out the risk assessment is standardised in DIN EN ISO 12100.
Safe condition	Vehicle condition in which all dangerous movements are stopped so that a hazard is averted, and obstruction of persons and other traffic objects is avoided as far as possible
Safety Integrity Level (SIL)	Defines the relative degree of risk reduction of safety functions of a technical system (defined in IEC 61508)
Sensors	Here: Technical equipment for recognising the environment, the ambient conditions and safety-relevant status parameters
System limits	Performance and utilisation limits of the (technical) system
Traffic objects	All objects, e.g. vehicles (automated and non-automated), persons, etc., that move or may be located in the respective company area and are involved in traffic with automated vehicles or are affected/influenced by it/influence it
Trajectories	Trajectories that contain direction and speed. Each travelling object has a trajectory (current speed and direction) and a trajectory group (future speed and direction).
Vehicles	Mechanically driven land vehicles and their trailers not tied to rails as well as mobile machinery

Table 2 - Requirements for automated driving in restricted areas with limited access

		Requirements x - required o - possibly required by the system or optional	Level 1 Lane-bound	Level 2 Lane-guided	Level 3 Corridor-bound, direction-bound	Level 4 Corridor-bound, direction-unbound	Level 5 Navigate freely in a driving field
Environment detection	U1	**Road users, objects, obstacles**					
		in the direction of travel	x				
		in all directions	o	x	x	x	x
	U2	**Condition of road users, objects, obstacles**					
		Dimensions		x	x	x	x
		Distance	x	x	x	x	x
		Speed	x	x	x	x	x
		Acceleration/deceleration	o	o	x	x	x
		Position		o	x	x	x
		Trajectory direction			o	x	x
		Swivelling out, drag curve		o	o	x	x
	U3	**Recognise track condition**	o	o	o	o	x
	U4	**Environment, infrastructure, environmental influences**	o	o	o	o	o
Communication	K1	**Recognisable operating status**	x	x	x	x	x
	K2	**Driving manoeuvre displays**	x	x	x	x	x
	K3	**Communication with X**			o	x	x
	K4	**Communication through centralised control**	o	o	o	o	o
	K5	**Safety monitoring**		x	x	x	x
	K6	**Environment, environmental influences**	o	o	o	o	o
Navigation	N1	**Route determination**					
		predefined	o	o			
		self-determined	o	o	x	x	x
	N2	**Risk optimisation route**			o	x	x
	N3	**Positioning in space**	o	o	o	x	x
Regulations	R1	**clear and known**	x	x	x	x	x
	R2	**the necessary forms of communication implemented**	x	x	x	x	x
	R3	**General right of way**					
		permissible	o	o			
		forbidden	o	o	x	x	x
	R4	**Consider the behaviour of people**			o	o	x
	R5	**Data recorder**		o	o	o	x
	R6	**Must not leave authorised traffic areas or lanes**	x	x	x	x	x
	R7	**Safety distance**	x	x	x	x	x
	R8	**Maximum speed**	x	x	x	x	x
	R9	**Speed reduction if trajectories are not recognised**				x	x
	R10	**Maximum, minimum acceleration**	x	x	x	x	x
	R11	**Track specification**		x	o	o	
	R12	**Priority rule, overtaking**		x	o	x	x
	R13	**Evasive action on encounter**				x	x
	R14	**Sufficient free traffic area**	o	x	o	x	x

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- Figure 1 – BASF SE
- Figure 2 – HHLA/Anke Maurer
- Figure 3-8 − FB HM, SG FAI, BGHM, DGUV

Table proof

- Table 1 – Examples of expected obstacles (dimensions according to DIN 33402-2)
- Table 2 – Requirements for automated driving in restricted areas with limited access

Imprint

Deutsche Gesetzliche
Unfallversicherung e.V. (DGUV)
Glinkastraße 40
10117 Berlin
Telefon: 030 13001-0 (Zentrale)
E-Mail: **info@dguv.de**
Internet: **www.dguv.de**

Subcommittee Automotive Engineering, Propulsion Systems, Maintenance, Expert committee Woodworking and Metalworking of DGUV:
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