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INTELLIGENT AUDIO - METHOD AND CONTROL DEVICE FOR INFLUENCING THE SOUND CONTROL OF AN ENTERTAINMENT COMPONENT TO ENSURE A CONSTANT PERSONALIZED SOUND PRESSURE LEVEL

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INTELLIGENT AUDIO - METHOD AND CONTROL DEVICE FOR INFLUENCING THE SOUND CONTROL OF AN ENTERTAINMENT COMPONENT TO ENSURE A CONSTANT PERSONALIZED SOUND PRESSURE LEVEL

Technical task:

The aim of the invention is to ensure constant acoustics of any audio form in the form of a personalised, preferred sound pressure level for persons in a passenger compartment of a motor vehicle, which is independent of influencing factors or disturbance variables from the motor vehicle and the environment.

Initial situation:

If you are travelling in a vehicle and the volume suddenly changes, for example during audio consumption of an entertainment function, the perception may not be optimal (too loud/too quiet).

The change in volume occurs, for example, due to a recorded radio advertisement, a traffic message or a vehicle-specific message from the navigation system, an audio output or an MMI function. In addition, the road condition, especially a road surface, can change, i.e. become rough and loud or change from asphalted to unpaved. Environmental conditions such as the weather (precipitation/spring/snow), boundary conditions such as construction site noise or trams, or the vehicle-specific driving program of a drive system, which changes the interior acoustics by changing the program, also influence the volume in the vehicle. These factors have a negative influence on the personalized desire of a driver or passenger for a constant acoustic environment. As a result, the driver's or passenger's perception of the head restraint system may be impaired by fluctuating sound pressure levels, especially due to the three latter factors. This poor perception may lead to misbehaviour or delayed perception and reaction by the driver, as well as uncertainty or annoyance in general because the information is not transmitted clearly and distinctly.

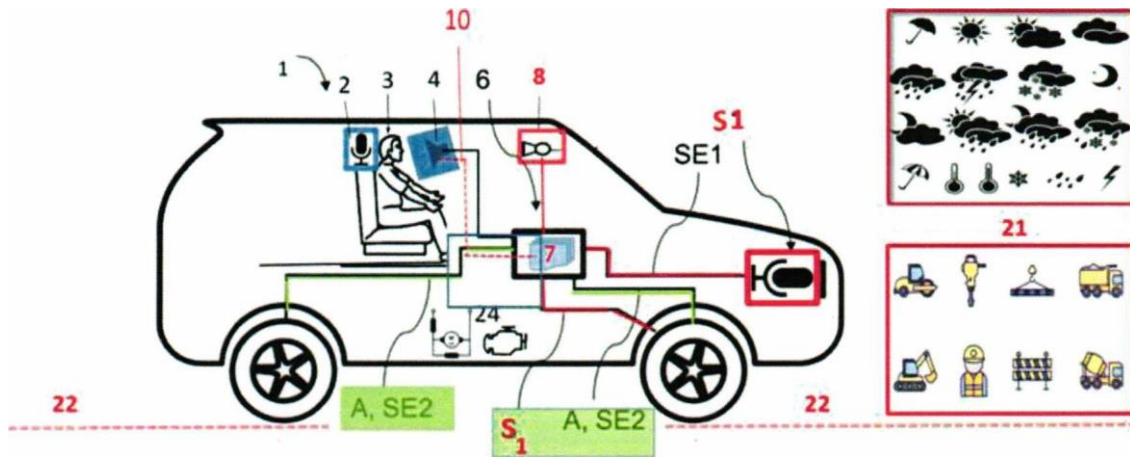
Currently, GALA systems are used to influence speed-adapted volume control. Audio setups influence a certain desire for individual volume reproduction of any audio components such as radio, CD, SD, mobile phone, navigation and assistance systems. Differentiating from this, there is no procedure and no control device for a sound pressure-based volume control which ensures a personalized, constant sound level close to the headrest for a driver or fellow passenger if changed, i.e. negative or also positive influencing factors (20, 21, 22) are present due to the motor vehicle and/or the surroundings or environment.

Solution:

The differentiation of the invention from the state of the art leads to a control device and a method for an even more individual and intelligent acoustic process, which uses subsequent components and modules:

- At least one sound pressure level measuring device in a passenger compartment for Disturbance detection of driving and environmental noise, i.e. in relation to all overall driving conditions
- a loudspeaker or micro system close to the headrest (2)
- an AA control unit or controller (6) with a
- personalized setup (7,8) for a specific differential pressure level (10) at a specific disturbance level (caused by 20,21,22)
- Interface to audio, GALA or other acoustic adjustment and individualization processes of audio components

The invention describes the determination of a differential sound pressure level, an amplifier signal (10) which, depending on the driving operating conditions of the motor vehicle, is made available according to the known GALA method (state of the art) for further, i.e. subsequent, processing with respect to a sound pressure level influence in order to ensure a constant perception of an acoustic for the driver and fellow passengers.



- 1 Motor vehicle
- 2 Microphone / near headrest for reference level / desired level
- 3 Driver / occupant in general
- 4 Audio source / acoustic / entertainment module general in passenger compartment
- 6 Patent idea: AIA controller with personalizing database 7 that takes into account preferences/tilt of 3
- 7 Personalized database with preferences / preferences to changing environmental conditions 20/22/24 / difference level request 10 indoor camera / personalization
- 20/21/22 Environmental conditions / influencing the desired level
- 24 drive motor / powertrain / influencing the desired level
- SE1 Control signal influencing desired level on 3 / detection sound level off 20/21/24
- SE2 State of the art: Control signal vehicle speed for speed dependent volume control GALA
- S1 Control signal environment around 1 / detection sound level off 22

Figure 1

Advantages:

- Increasing road safety by eliminating disturbances caused by the vehicle or the environment
- Innovation through personalization and customer satisfaction
- Increase of individuality and added value through constant desired acoustics