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Undersigned ………………………………………….. teacher, from the ..…………………………………………………………… University/College, as supporter teacher, declare that I have overlooked the sent documentation of planning vehicle and have controlled right the formal and content requirements of documents.

Additionally I certificate that the members of team have made the documents.

………. 2014 ………………..

 …………………………

 signature

# Vehicle introduction

# Mass and dimensions

# Framework, car-body

# Engine

# Input of extern energy

# Puffer container

# Drive chain

# Suspension

# Steering-gear

# Brake

# Compressed air bottle

# Safety prescriptions

# Start plates

# Other elements of pneumatics

# Technical data sheet

# Telemetry

|  |
| --- |
| **AVENTICS PNEUMOBIL 2014 TECHNICAL DATA SHEET** |
| **START NUMBER:** |  |
| **NAME OF TEAM:** |  |
| **NAME OF UNIVERSITY:** |  |
| **TEAM-MEMBERS** | **Year/class:** |
|  |  |
|  |  |
|  |  |
|  |  |
| **Name of supporting instructor:** |  |
|  **DESCRIPTION OF THE CONSTRUCTION OF THE PNEUMOBILE** |
|  |
| **VEHICLE-TYPE** |  |   |
|  |
| **PLANNED HIGHEST SPEED** |  | km/h |
| **PLANNED BIGGEST DISTANCE** |  | m |
|  |
| **MAIN DIMENSIONS OF THE PNEUMOBILE** |   |   |
| LENGTH |  | mm |
| WIDTH |  | mm |
| MASS |  | kg |
|  |
| **DATA OF THE UNDERCARRIAGE** |   |   |
| AXLE-BASE |  | mm |
| TRACK WIDTH |  | mm |
| SZABAD HASMAGASSÁG |  | mm |
| DIAMETER OF STEERED WHEEL(S) |  | mm |
| NUMBER OF STEERED WHEELS |  | Pcs. |
| BRAKE-SYSTEM OF THE STEERED WHEEL |  |   |
|  |  |  |
| DIAMETER OF DRIVEN WHEEL(S) |  | mm |
| NUMBER OF DRIVEN WHEELS |  | Pcs. |
| BRAKE-SYSTEM OF THE DRIVEN WHEEL |  |   |
|  |
| **ENGINE-CONSTRUCTION**  |  |
| **TYPE OF DRIVING** |  |
|  |
| **DATA OF THE PNEU-ENGINE** |   |   |
| NUMBER OF CYLINDERS IN THE ENGINE  |  | Pcs. |
| TOTAL CYLINDER CAPACITY OF ACTIVE CHAMBERS  |  | cm3 |
| REVOLUTION PER MINUTE OF THE ENGINE-AXLE |  | rev/min |
| TORQUE OF THE ENGINE  |  | Nm |
|   |
| **DATA OF THE APPLIED CYLINDERS** |   |   |
| DIAMETER |  | mm |
| LENGTH OF STROKE |  | mm |
| NUMBER OF CYLINDERS |  | Pcs. |

# Formal and content requirements of the documentation

**If case of not reading the instructions guide, no exception will be taken regarding responsibility of errors!**

Formal requirements:

Documentation has to be sent in this file as 1 pc. „pdf” document. Every attachment, figures, drawings, simulations have to be pasted into this file (the whole content). Documentations arriving in more files will be rejected (for supplement) before reading.

1. Vehicle introduction:

General introduction of the construction and why this design will be carried out.

Specialties of the vehicle shall be presented and pointed out. Figure is required (3D illustration preferred).

1. Mass and dimensions

According to chapter 2 of the Technical specification, dimensions of the vehicle shall be presented, and how the position of the seat, as well as the engine and air-bottle (see chapter 2.b) will be ensured. If applicable, the fulfillment of chapter 2.c shall be documented either. The prescribed clearance between the bottom of the vehicle and the ground surface (at least 70 mm) shall be documented too. Figures and calculations are required.

*Geometrical dimensions shall be documented on the data sheet (see chapter 15).*

1. Framework, car-body

Structure of the framework and car-body should be presented and documented, how the requirements of different constructions will be ensured (e.g. safety of the driver, position of the air-bottle, crush zone). Prove conformity of applied materials and construction. Explaining figures and load calculations are required.

1. Engine

Construction of the engine shall be presented (which elements have been chosen, and why), calculation of cylinder capacity is required. Presentation of the engine position and building according to Technical specification chapter 4c (introduction of engine unit), 4e (position and conformity of engine), 4f (usage ratio of existing elements, which were received in the previous years). **Drawing of the pneumatic switching, and the adequacy of the drawing and item list (regarding part nr.) is required** (main elements: cylinders, valves, driving elements, but not the accessories). Explanation of the engine-work in the description shall follow the numbers in the item list.
*In case of electrical drive (input-output list), drawing of the connection is required.*

In the description diagrams (steps, charge, force, etc.) and figures (3D) are **required.** Calculation made on the web-page of Aventics are preferred.

**Aventics software on Internet:**

Calculations:

[Pneumatikus elemek kalkulátora](http://www.aventics.com/computation/converter/flow_component_calculator.jsp) (Calculator for pneumatical elements)

[Munkahenger kalkulátor](http://www.aventics.com/computation/piston_rod_cylinders/piston_compute.jsp) (Calculator for cylinders)

[Pneumatikus kapcsolás tervező program](http://www.boschrexroth.com/de/de/produkte/engineering/konfiguratoren-und-tools/dundc-scheme-editor/d-c-scheme-editor-index) (Design of pneumatics switchings)

**We request the** **complete pneumatic switching has to be describe on separate page (from Emergency stop circuit to cylinders in one unit).**

1. Input of extern energy

Method for input of extern energy shall be introduced and the expected improvement of the efficiency should be described. Calculations are preferred.

1. Puffer container

Position of the probable puffer container in the vehicle and the reason for its application should be described. Figure and calculations are preferred. Fulfilment of the requirements for pressure-cabins should be proved.

1. Drive chain

Kinematic design of the drive chain is required (started from the driving axe of the engine to the driven wheels). Its operation, transmission, free wheels should be explained through this drawing. Calculations (moment, revolution per minute, etc.) and figures are required.

**We request to hand in the dimensions and data of complete drive chain ( diameter of driven wheel, sprocket-wheel(s), number of teeth, etc.) on separate page.**

1. Suspension

Suspension used to the wheels of the vehicle shall be introduced. Figure is required.

1. Steering-gear

Steering-gear used on the vehicle shall be introduced. Geometrical figure of steering and calculation for steering radius are required. Calculations regarding the wheel camber, toe and angle of pin should also be presented here.

1. Brake

The applied brake-system and information about its building in and constructions should be presented, and the availability of the two independent cycles as far as the parking brake should be confirmed. Figure, calculation (e.g. braking distance) are required.

1. Compressed air bottle:

Figure is required to present the safe position of the bottle on the chassis. Description of the fixing method is required too.

1. Safety prescriptions

Every points of Technical specifications chapter 12. shall be introduced here, if applicable for the vehicle (e.g. safety belt, solution for “gas-pedal” in case of quads, where will be the switch of the emergency stop system and the electrical emergency stop placed on the vehicle). Figure is required.

1. Start plates

The provided surface for start plates shall be documented with figures.

1. Other elements of pneumatics

Use of the “demand of elements” list is compulsory, type and amount of all required elements shall be defined in this table, and sent a separate excel file.

If there is any other pneumatically operated function (apart from the drive chain), it should be described here.

1. Technical data sheet

Fulfilment based on the attached example is required.

1. Telemetry

Planned structure of graphical representation of the required data and diagrams should be presented.