Hydrogen System Form (H2SF) for hydrogen vehicles according to the Hydrogen Rules 2026

Cover Sheet

The Cover Sheet must contain the following:

- **Heading “Hydrogen System Form 2026”**
- **University Name and Team Name**
- **Contact details of an Hydrogen Safety Officer or team leader which is responsible for this document**

Feel free to add your team logo and car picture to the cover page

1. **Requirements (delete this section after you have read and understood it):**
2. Complete all sections and tables of the H2SF. If a section is not applicable to your design state in the document, do not delete any sections.
3. Remove instructions (orange) from the document as you complete the sections.
4. Provide hyperlinks to all datasheets.
5. If you are unsure concerning the reviewer's feedback, do not hesitate to ask questions at: hydrogen@fs-world.org
6. Parts of the H2SF that are changed because of reviewer’s feedback **must be marked in red**.
7. Following these guidelines will guarantee a swift review process.

Table of Contents

1 System Overview

1.1 Short description

Include a brief description of the vehicle (1 paragraph).

1.2 Renderings from the whole car

Include renderings from all both side views, top view, front view and back view which shows the whole car. To make some parts of the bodywork transparent to make other parts better visible is allowed.

1.3 Renderings from the drivetrain and hydrogen related parts

Include renderings from the drivetrain and all hydrogen related parts, so that the officials can see how your system looks like.

1.4 Block diagram

Insert a large (full page) system overview block diagram showing the major hydrogen components (hydrogen tank, OTV, valves, mandatory sensors, refueling and defuelling ports, pressure regulator,…). Keep it simple with the most important parts that the reviewer gets an idea how your system is working. Please use exactly one page for that.

2 Fuel

Complete the information in the table below.

Which kind/grade of hydrogen do you need?	ISO 14687: 2025
How much hydrogen do you need for one endurance?	500g
How much hydrogen do you need at the whole event?	800g
maximum fuel pressure	350 bar

Table 2-0 - Fuel Specifications

3 Hydrogen tank

3.1 Description and safety

Include a description of the hydrogen tank and the manufacturer. If it is a self made or customized hydrogen tank, please tell us how it is designed, manufactured, tested and why it is a safe system.

Please add some pictures of the tank, so that officials can see that there are no visible defects.

3.2 General informations

Complete the information in the table below.

Tank manufacturer	xxx
Model/name of the tank	xxx
Type of tank	xxx
Maximum hydrogen pressure	350 bar
Tank volume	1 kg
Certification according to	xxx
accredited by	xxx

Table 3-2 - Hydrogen Tank Specifications

3.3 Hydrogen tank links

Please add the following links:

Datasheet of the hydrogen tank

Datasheet of the certification of the hydrogen tank

3.4 Protective cover for hydrogen tank

Please show your flexible protective cover (e.g neoprene sleeve) for the hydrogen tank is according to F3.1.8 of the Hydrogen Rules.

3.5 Gripping devices for hydrogen tanks

Please show a picture of your gripping devices for your hydrogen tanks according to F3.1.9 of the Hydrogen Rules.

3.6 Refueling hydrogen tank

Please explain how the refueling of your tank is working?

4 On Tank Device (OTD)

4.1 General informations

Please explain in one paragraph up to one page how all the functions of the OTD are solved in your construction. If several parts build together the OTD, please explain how they are mounted to each other.

Please add pictures of the whole assembly and how it is attached to the hydrogen tank.

All OTD or the parts of the OTD must be certified according to ISO 19881, UN GTR No.13 or UN regulation No. 134.

Complete the information in the table below.

Model OTD	xxx
Manufacturer OTD	xxx
Model OTV	xxx
Manufacturer OTV	xxx
Model TPRD	xxx
Manufacturer TPRD	xxx

Table 4-1 - ON Tank Device Specifications

4.2 On Tank Valve (OTV)

Please show detailed pictures and a datasheet for the OTV.

4.3 Thermal activated pressure relief device (TPRD)

Please show detailed pictures and a datasheet for the TPRD.

5 Pressure gauge and pressure regulator

5.1 General informations

Complete the information in the table below.

Model pressure gauge	xxx
Manufacturer pressure gauge	xxx
Model pressure regulator	xxx
Manufacturer pressure regulator	xxx
rated for max. high pressure	350 bar
used low pressure	10 bar

Table 5-1 - Pressure gauge and pressure regulator Specifications

5.2 Picture and Datasheet

Please show detailed pictures of the pressure gauge and pressure regulator.

5.3 Mounting of the pressure regulator

Please explain how to attach the pressure gauge and pressure regulator to the OTD and the quick connector.

6 Connectors, fittings and lines

6.1 Quick Connector

Please show detailed pictures and a datasheet for the connector which is prescribed in F3.1.4 and F3.15 of the Hydrogen Rules. Please explain which steps are necessary to remove the tank assembly from the car for refueling and to reassemble it. How long will it take?

6.2 Refueling connector

Which connectors do you have that we can use to connect the hydrogen tank to the refueling infrastructure? Please show that your tank valve H35 (normal flow or designed for maximum mass flows of 60g/s) is specified in accordance with ISO 17268 - gaseous hydrogen land vehicle refuelling connection devices. Please add pictures and a datasheet of the connector.

Please show that the tank valve is easily accessible with a fueling nozzle according to ISO 17268.

6.3 Connectors and fittings

Please show detailed pictures and datasheets for all hydrogen containing parts. See F4.1.1 and F4.1.2 of the Hydrogen Rules. Please show with an invoice that you are only using hydrogen rated parts. Please let us know which connectors you have to open and close quite often.

6.4 Lines

Which kind of lines or tubings do you use? Please add datasheets. Please show with an invoice that you are only using hydrogen rated parts.

7 Structural

7.1 Attachment Hydrogen Tank to the Chassis

Insert a large image of the complete hydrogen tank assembly without cover and show the attachment points to the chassis.

Please show with pictures and calculations that your design fulfills F2.1.1 and F3.1.3 of Hydrogen Rules and can withstand all the forces of T3.3 of the FS Rules.

Please add a link to the Installation guidelines of the hydrogen tank. (Attachment)

7.2 Lowest Point of any Part of the Hydrogen System

Please show with a rendering or picture that your design is according to F2.1.8 of the Hydrogen Rules.

7.3 Shielding and Firewall of Hydrogen Tank

Prove that you have considered F2.1.4 and F2.1.7 of Hydrogen Rules when designing the housing and firewall.

7.4 Hydrogen Tank Surrounding Structure

Prove that the hydrogen tank is protected by an impact structure following T3.15 of the FS-Rules and that this impact structure follows F2.1.3 and F2.1.10, if applicable.

This includes CAD screenshots of the structure/s and hydrogen tank and may include attachment calculations for the structural attachment between two chassis parts.

7.5 H2CV only: Engine mounting

Insert a large image of the engine without cover and show the attachment points to the chassis.

Please show that you are using good engineering practices to fulfill F2.1.1 of Hydrogen Rules and can withstand all the forces of T3.3 of the FS Rules.

7.6 FCEV only: Fuel cell mounting

Insert a large image of the fuel cell without cover and show the attachment points to the Fuel Cell System Container (FCSC).

Please show with pictures and calculations that your design fulfills E11.1.1 and E.11.1.2 of Hydrogen Rules.

7.7 FCEV only: Fuel Cell System Container Attachments

Insert a large image of the FCSC and show the attachment points to the chassis.

Please show with pictures and calculations that your design fulfills E11.1.3 to E11.1.11 of Hydrogen Rules and can withstand all the forces of T3.3 of the FS Rules.

7.8 FCEV only: Positioning of Hydrogen System Parts

Please show that all parts of the Hydrogen System fulfil E3.1.1 of the Hydrogen Rules.

8 Firewall and heat management

8.1 Firewall specifications

Complete the information in the table below.

Aluminum layer thickness:	0.2mm
Insulating layer thickness:	2mm
Insulating Material Make / Model:	Conductive Co. FLDPRDCT
Insulating Material Datasheet:	Datasheet
Insulating layer side:	Driver

Table 8-1 - Firewall Specifications

8.2 Firewall pictures

Provide CAD rendering(s) or photographs showing the firewall components. Mark the parts that the firewall is protecting from (hydrogen, oil, and cooling system components) in the pictures, if necessary. Show that you are according to F2.1.2, F2.1.4 and E11.1.1 of the Hydrogen Rules.

8.3 Firewall pictures

Explain how you do the heat management and how you fulfill F2.1.5 and F2.1.6 from the Hydrogen Rules. Please show renderings and datasheets of the used material/construction.

9 H2CV / H2HY only

9.1 General informations about engine

Complete the information in the table below.

	serial production spec	expected spec running H2
Mechanical layout	e.g. reciprocating piston	
Manufacturer		
Model designation		
Intended serial production use	e.g Snowmobile	
Displacement [cc]	1600	800
Power output [kW]		
Fuel	RON98	H2
Number combustion chambers	4	2

Table 9-1 - Engine Specifications

9.2 General information about injection system

Complete the information in the table below.

Injection location(s)	e.g. intake runner
Number of injectors used	
Manufacturer(s)	
Model(s)	
Injector pressure [bar rel]	
Intended serial production use	
Norms and certifications	

Table 9-2 - Injection Specifications

9.3 Modification of the engine

Please explain which kind of modification you have done to make the engine running on hydrogen. Please add pictures of the modifications.

9.4 Parts of the injection system

Please explain all parts of the injection system and include all datasheets and standards supporting rule C1.1.5 of the Hydrogen Rules and a detailed system diagram.

If your injector(s) is/are not rated to one of the hydrogen norms, explain why they are a safe solution. Please add pictures of the injector.

9.4 Crankcase ventilation system

Show through text and images that you fulfill C1.1.6 of the Hydrogen Rules and details of your intended safe venting location

9.5 Air intake system

Please make a short description of your air intake system and show how you attach it to the car. Show the officials that you are using good engineering practice. Please add some pictures.

9.6 Forced air induction system (if applicable)

Please provide a short description of your boosting system and show how you attach it to the car. Please add some pictures.

10 FCEV only

10.1 General requirements

Please explain how you want to fulfill the general requirements of the whole chapter E2 of the Hydrogen Rules. Show necessary datasheets and/or pictures.

10.2 Discharge Circuit

Explain how you design the discharge circuit(s) and how you fulfill the rules from the chapter E7 from the Hydrogen Rules. Please show circuit diagrams and datasheets of the used material/construction.

Please show a diagram or time chart showing the voltage is decreasing below 60V in less than 5 seconds.

Please add the datasheets of the stack protection diode and the discharge diode.

10.3 General informations about fuel cell

Complete the information in the table below.

Model of the fuel cell	xxx
Manufacturer of the fuel cell	xxx
Output Voltage	xxxV
Output Current	xxxA
Max. Power	20kW
Size	500x450x300mm
Weight	15kg
number of cells	xxx

Table 10-3 - Fuel Cell Specifications

10.4 Fuel cell links

Please add the following links:

Datasheet of the fuel cell

Installation guidelines of the fuel cell

Datasheet of the Dedicated fuel cell coolant

10.5 Fuel Cell System Container – Electrical Configuration

Please explain how you fulfill rule E9.1.2 from the Hydrogen Rules and show the necessary ventilation holes.

Please show that your electrical layout is according to whole chapter E10 from the Hydrogen Rules. Add all necessary pictures, circuit diagrams or datasheets.

10.6 Power distribution

Please explain how you want to fulfill rule E5.1.4 to E5.1.7. Please add circuit diagrams and/or programming.

10.7 Fuel Cell Control Unit (FCCU)

Please explain how your FCCU is working. Please add circuit diagrams and/or programming.

Please explain how you want to fulfill rule E7.1.2 and the whole chapter E14 of the Hydrogen Rules.

11 Shutdown Circuit and other safety devices

11.1 Shutdown Circuit Schematic H2CV / H2HY

Insert a large (full page) schematic of the shutdown circuit. Check for working on this topic chapter S3 of the Hydrogen Rules.

Explain how you meet the following requirement: The hydrogen system may only be activated when the combustion engine is running or during engine start.

11.2 Shutdown Circuit Schematic FCEV

Insert a large (full page) schematic of the shutdown circuit. Check for working on this topic chapter S2 and S4 of the Hydrogen Rules.

Explain how you meet the following requirements:

- chapter E8 from the Hydrogen Rules
- The hydrogen system may only be activated when the fuel cell is running.

11.3 H2 Safety Measurement Device (H2SMD)

Show through text and images that you fulfill S10 of the Hydrogen Rules.

12 Important items that are not part of the car

12.1 Measuring tooling for hydrogen leak detection

Show through text and images that you fulfill S8.1.3 of the Hydrogen Rules. Please add the datasheet of your measuring tools.

12.2 Leak detection spray

Show through images that you have the right leak detection spray according to H3.1.1 of the Hydrogen Rules.

12.3 Signs

Show through images that you have the signs according to H3.1.1 of the Hydrogen Rules.

12.4 Hand cart

Show through text and images that you fulfill S9.1.5 and S9.1.6 of the Hydrogen Rules.