

STE 2024 Conference- June 27- Munich

CSG sustainability- Hyguane

- ESA introduction to CSG, the Europe's spaceport,
- Preparing CSG future,
- Hyguane ecosystem at a glance,
- To go further- some useful links
- MT-A @ CSG,
- Hyguane and MT-A activities,
- Hyguane – a great opportunity for Germany & Bavaria,



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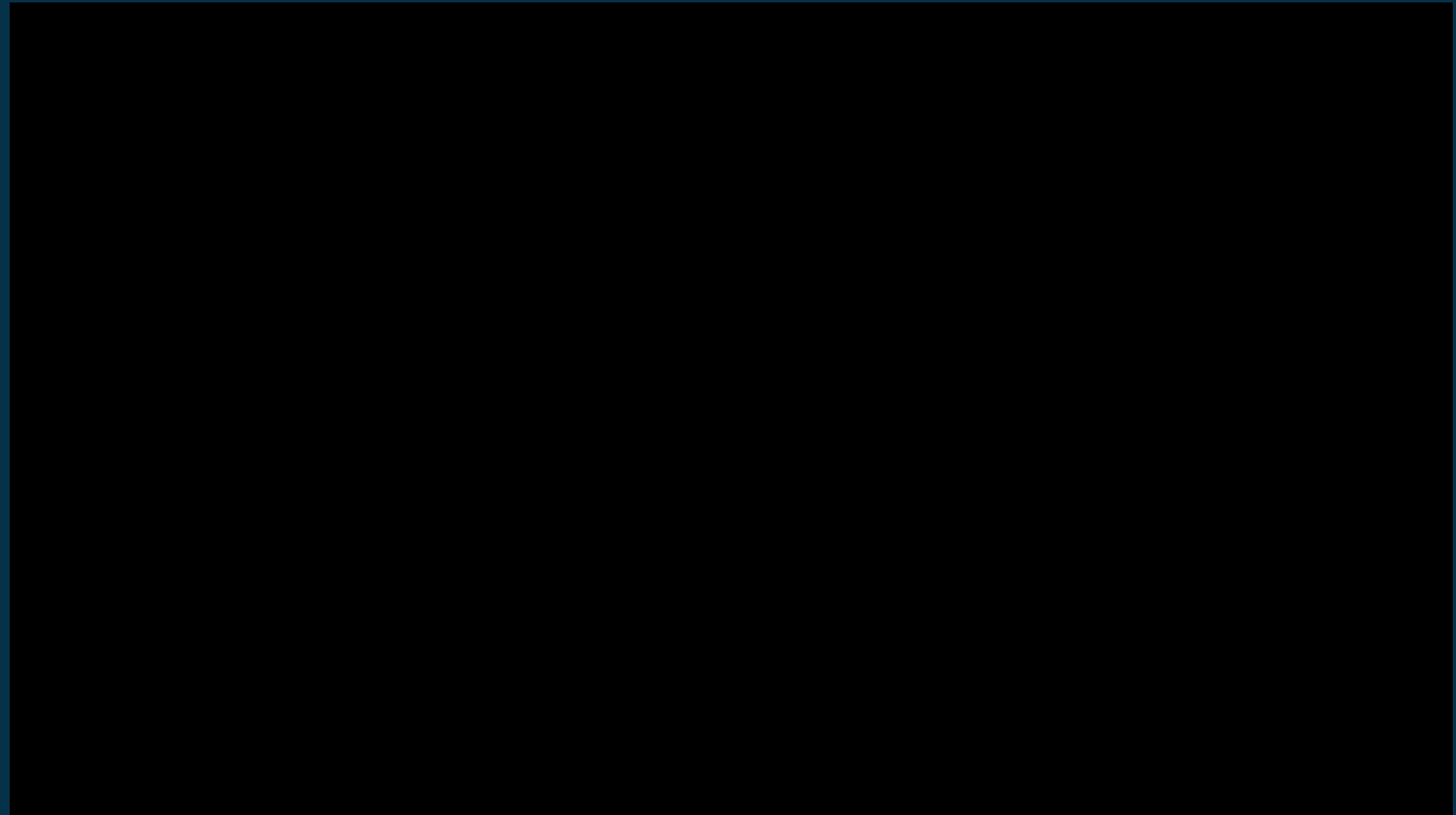
→ Welcome to the CSG, Europe's spaceport
ESA introduction to CSG



An operational spaceport since...



*It started more than
55 years ago!*

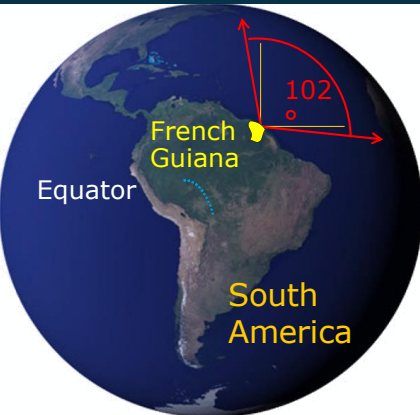


The CSG (Centre Spatial Guyanais)- Europe 's spaceport

The CSG ('Centre Spatial Guyanais'), Europe's spaceport



A main element
of guaranteed, independent,
reliable access to space for Europe



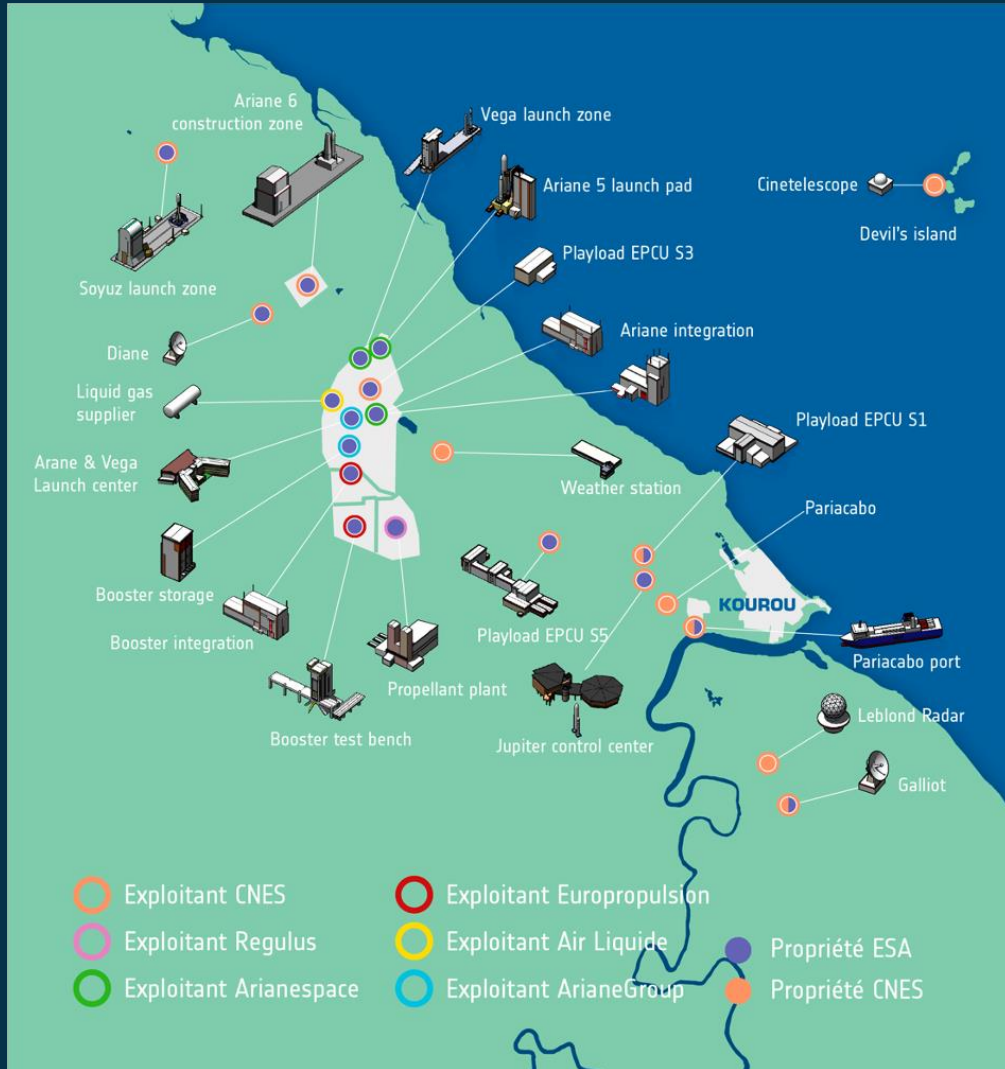
A launch area

Close to equator (5 deg N),

Extensive launch azimuth possibilities



CSG: short overview of the roles of main partners



- The **CSG Range** is co-funded by ESA (2/3) and France (1/3) and is operated by the French space agency **CNES**. (“CSG Resolution” incl. CLRR, FDS projects).
- The **launch complexes for Ariane and Vega** at CSG are **owned by ESA**, maintained and operated by Arianespace with the European industry.
- The **SRM (Solid Rocket Motor) production facilities** are **owned by ESA**, maintained and operated by Regulus and Europropulsion. ALSG produces LH2/LOX.

CSG : some features

The CSG covers an area of

660 Km²



That's 6 times the size of Paris!



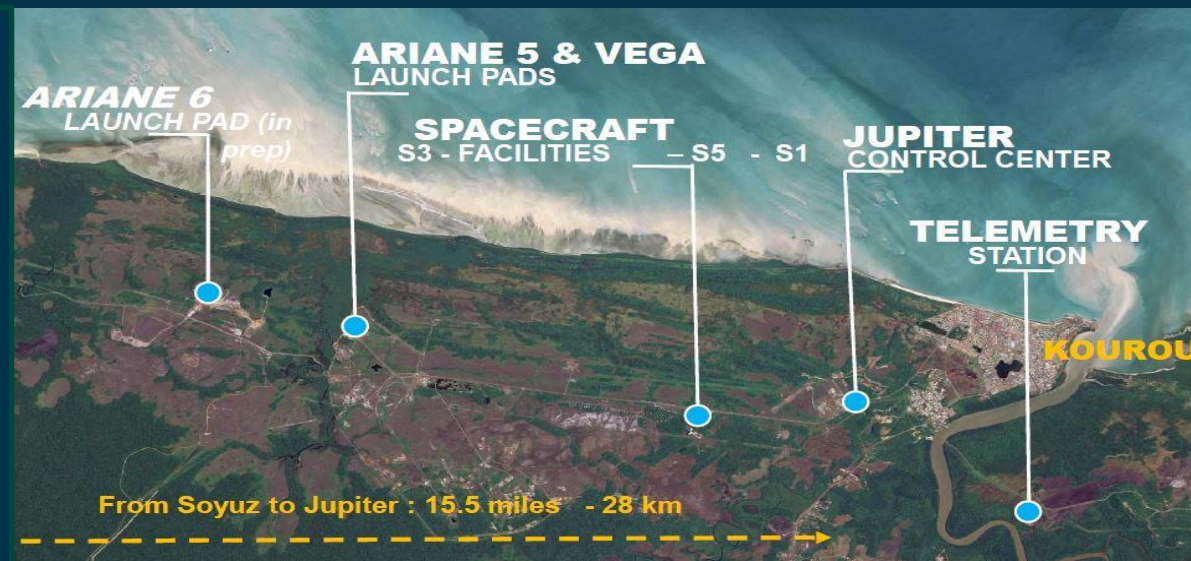
44 Industrialists present on site

Launch Facilities



Payload Preparation Facilities ("EPCU"):

- 9** clean rooms,
- 3** for propellant filling



Electric Energy



- ✓ **7** electricity production plants
- ✓ **2 GW/year** supplied by CSG energy production facilities

✓ **15%** of the overall French Guiana electricity consumption (2019)

✓ **More than half** of the electricity consumption for air conditioning

✓ More than 15 M€ of electricity bill (2022)



Aiming at Europe's Spaceport strategic Infrastructure Excellence !



AVAILABILITY / ECONOMIC VIABILITY & EFFICIENCY

Preparing the future of Europe's spaceport



Key drivers



Preserve & Modernize Strategic Assets & infrastructures



Encourage Innovation & Commercial Approach
(new frameworks / service approach/ increase competitiveness)



New launchers:
Ariane 6, Vega-C

**CSG Range
Renovation &
Modernisation**

Smart grid

Networks
renewal

New Ops.
Center

New
Radar

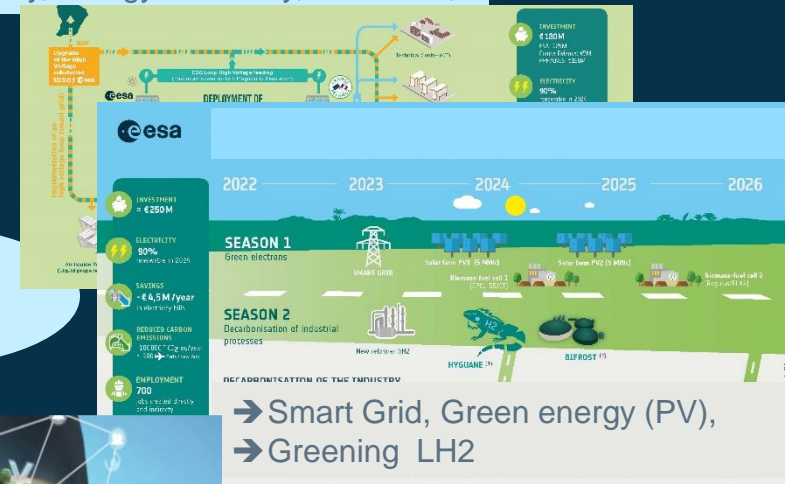
**More
Flexible
(PPF)**

**Further
improvements
of Europe's
spaceport**

**More
sustainable**

More Digital

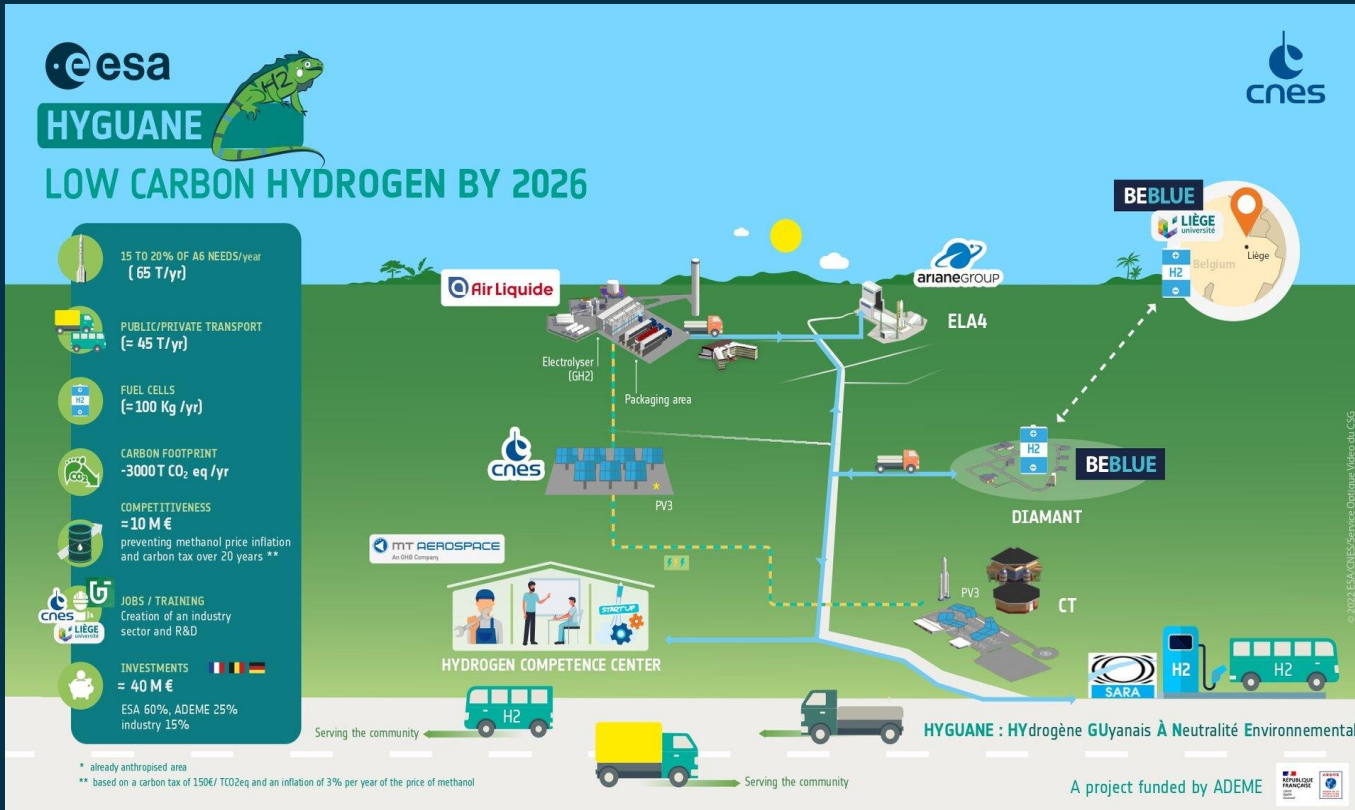
Low carbon trajectory Key drivers:
Sobriety, energy efficiency, resilience,



**New
opportunities**



Hyguane ecosystem at a glance



HYGUANE is...

- Local production of green H2 for Ariane 6 & mobility purpose
- A praiseworthy ESA initiative for
 - a) environment ,
 - b) (space) business ,
 - c) local territories,
- A consortium of
 - Agencies,
 - Space Industrials,
 - Local Industrials,
 - Universities.



➔ A new ecosystem with new ways (eg Space Agencies fundings, ADEME “subvention”, partners contributions, ...)

And a fantastic door for new actors to address new business opportunities !

→ ARE YOU READY TO DISCOVER MORE ?



SPACE
FOR BUSINESS
OPPORTUNITIES

18–19 September 2024

ESA/ESTEC (Noordwijk, The Netherlands)

CSG presentation : 18/09- 15h20

To learn more about the **Europe's Spaceport** on the following websites:

https://www.esa.int/Enabling_Support/Space_Transportation/Europe_s_Spaceport

<https://centrespatialguyanais.cnes.fr/en/le-centre-technique-en>

<https://linktr.ee/centrespatialguyanais>

Moreover, the association of the **CSG's employers**: <https://www.uebs-csg.com>

CSG Range Opportunities:

Contact: cornelius.zund@esa.int (CIC) and enrico.possamai@esa.int (STS)

https://www.esa.int/About_Us/Business_with_ESA/Digital_modernisation_and_extraordinary_maintenance_contracts_at_Europe_s_Spaceport

<https://esastar-publication-ext.sso.esa.int/news/details/957> (Past events on CSG with useful links).

Broader opportunities with ESA : ESA space days- <https://isd.esa.int/>





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An OHB Company



MT AEROSPACE

**HYGUANE PROJECT PRESENTATION
SPACE TRANSPORTATION ECOSYSTEM CONFERENCE**

FLORIAN RUHHAMMER

HEAD OF LAUNCHER GROUND FACILITIES & SERVICES

MT Aerospace is an international leader in the fields of aerospace, defense and components for satellites and aircraft. With our unique engineering and manufacturing expertise, we are pioneers in lightweight metal and composite structures, additive manufacturing and hydrogen technology.

Established	1969
Revenues	150 m€
Employees	500
Headquarter	Augsburg, (410 FTE)
Subsidiaries	Bremen, Kourou.

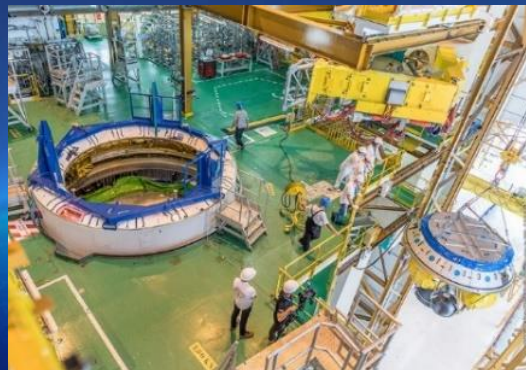
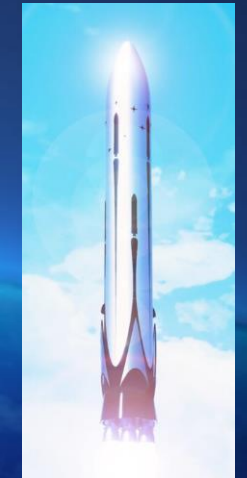
<p>Raumfahrt</p> 	<p>Luftfahrt & Verteidigung</p> 	<p>Infrastruktur & Ground Services</p> 
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WHO IS MT AEROSPACE AT THE CSG?



MT AEROSPACE

An OHB Company



Today:

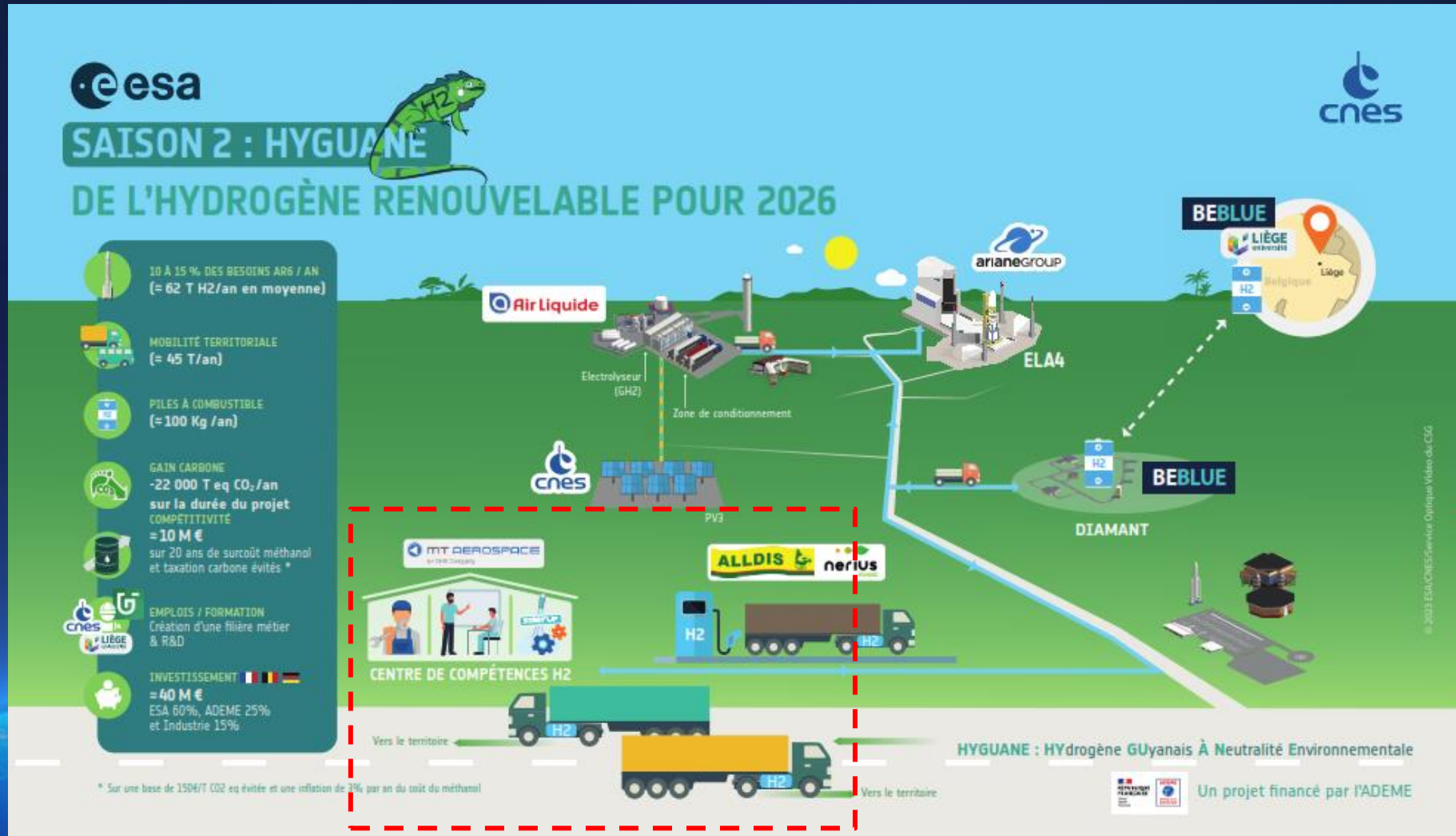
The German industrialist at the European Space Port



Tomorrow:

The German industrialist for innovative and competitive European Space Ports





- 10 À 15% DES BESOINS ARG / AN
(= 62 T H2/an en moyenne)
- MOBILITÉ TERRITORIALE
(= 45 T/an)
- PILES À COMBUSTIBLE
(= 100 Kg /an)
- GAIN CARBONE
-22 000 T eq CO₂/an
sur la durée du projet
- COMPÉTITIVITÉ
= 10 M €
sur 20 ans de surcoût méthanol
et taxation carbone évités *
- EMPLOIS / FORMATION
Création d'une filière métier
& R&D
- INVESTISSEMENT
= 40 M €
ESA 60%, ADEME 25%
et Industrie 15%

Creation of a Hydrogene Competence Center (HCC) at the CSG



- Maintenance of the vehicle fleet
- Operational Qualification of the technology under tropical conditions
- Training of CSG employees and territorial actors
- Support and promote initiatives such as start ups
- Enable the creation and the growth of the H2 mobility branch in French Guiana



Purchasing of a fleet (3+) of FCEV (Fuel Cell Electric Vehicles) for the project



- Definition to answer territorial need beyond CSG
- Collaboration with Bavarian supplier
- Early Qualification of the technology in Germany for tropical conditions
- Operational Qualification of the technology under tropical conditions



HOW WE TURN THE HYGUANE VISION INTO ACTION

Work hand in hand with the DLR Institutes

- Partnership with DLR Lampoldshausen
- Partnership with DLR Stuttgart

Build up on Bavarian supply chain

- Partnership MTA / Quantron

Qualification Phase partly done on German territory

- Participation of ADAC

Training of our CSG employees in Germany

Collaboration with Hydrogen networking groups





Create bridges

- Between the space community and territory of French Guiana
- Between German Space and Non-Space actors at the European Space Port



Be an enabler

- Business enabler: for the territory, for German actors
- Technological enabler by increasing maturity of a (Bavarian) technology



Secure a robust and sustainable business

- Long term perspective for MTA and its subsidiary in Kourou
- Green Energy as sustainable vision



Represent Germany and Bavarian space industry at the CSG



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THANK YOU

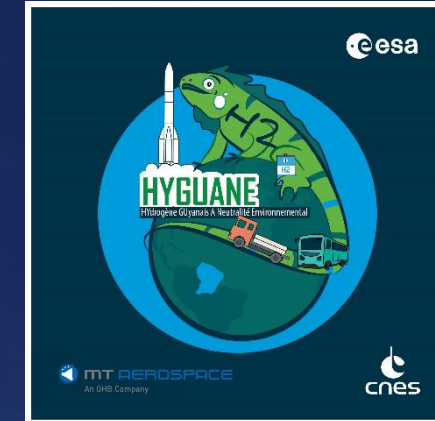
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