







EUROPEAN CONFERENCE

Towards a greener Defence: the challenge of sustainable development for European Defence industries

- 十 24 January 2023
- + Bordeaux, France











Welcome



Alain ROUSSET

President of the Nouvelle-Aquitaine
Regional Council











Introduction

Florine BOULLE
Ceramic Cluster

Isabelle TOVENA-PECAULT
AlphaRLH Cluster

Christelle DOUDIES
Aerospace Valley Cluster

On behalf of the Regional Taskforce for Defence





















European Defence Fund implementing a Greener Defence



Ngandu MUPANGILAI

DG DEFIS, European Commission



EUROPEAN DEFENCE FUND



Opportunities offered by the European Defence Fund: focus on a Greener Defence "Energy efficiency and environmental transition"

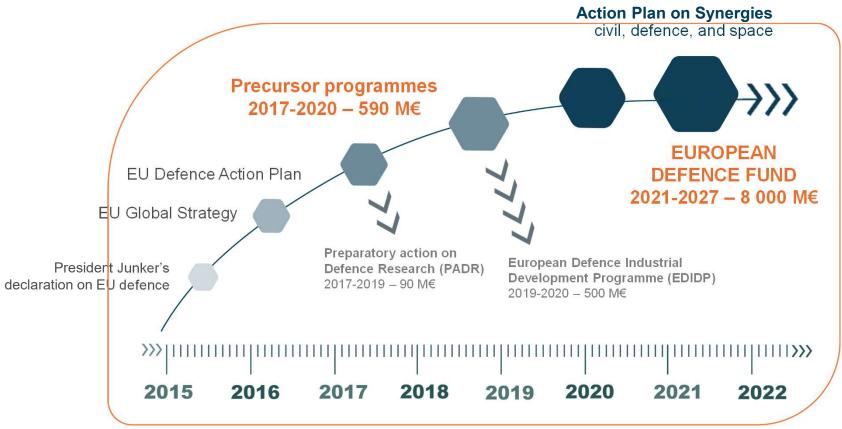
Ngandu MUPANGILAI
Policy /Project officer
European Commission
DG Defence Industry and Space (DG DEFIS)
Ngandu.mupangilai@ec.europa.eu

Bordeaux – France 24 Jan



Ramping-up the EU's ambition for a more collaborative approach to defence capabilities building





Strategic compass

spend more and better in Defence, strategic enablers, capabilities and innovation

Defence Package

joint procurement, critical technologies, defence innovation scheme...

Versailles declaration

DEFENCE CROSS-BORDER R&D



European Defence Fund: The EU defence R&D programme

collaborative and cross**border** research and development projects, including disruptive technologies

Contribute to the competitiveness and innovation capacity of the EDTIB*

Encourage the participation of **SMEs** and other actors not usually active in the defence field

Help reducing fragmentation of the European defence and industrial landscape

Build partnerships between defence actors. on both demand and supply sides

Help maximising the outcome of defence spending

Lead to close defence technological gaps

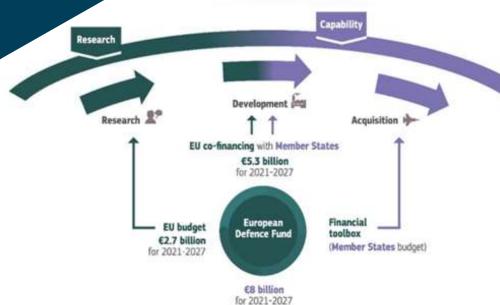
Strengthen other security and defence initiatives

Strenathen Europe's resilience and strategic autonomy

EDF financial support mainly in the form of grants Open to EU Member States and Norway

> Security-based participation conditions for entities controlled by third-countries

*Defence Technological and Industrial Base

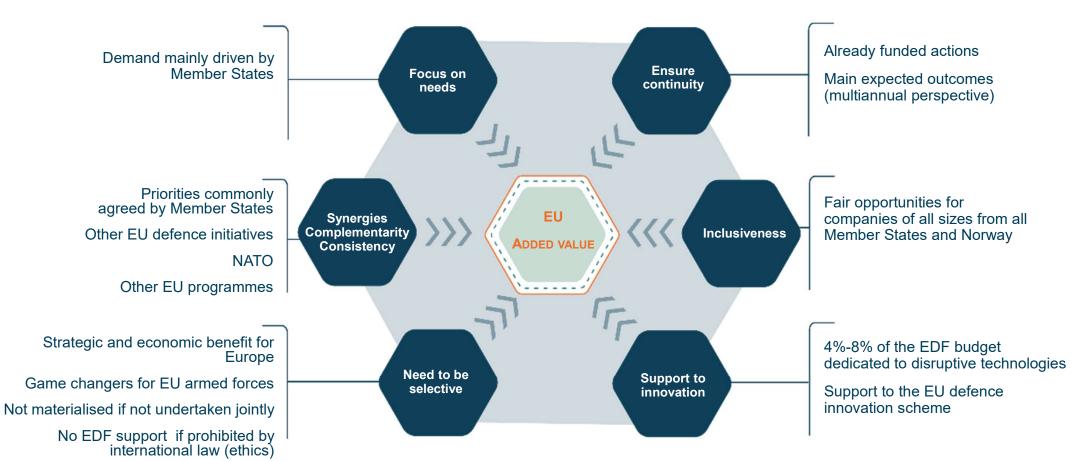






EDF General Principles





#EUDefenceIndustry



EDF CATEGORIES OF ACTIONS

Addressed by annual work programmes & calls for proposals







Medical response, CBRN & human factors



Information superiority



Sensors







Digital transformation



Energy resilience & environmental transition



Materials and components



Air combat



Air and Missile defence



Ground combat



Force protection and mobility



Naval combat



Underwater warfare



Simulation and training



Disruptive technologies



Innovative defence technologies

#EUDefenceIndustry

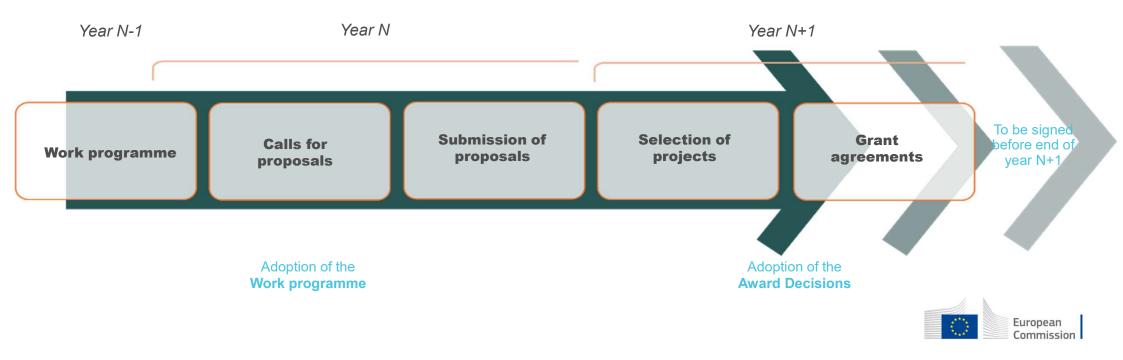


EDF Life-cycle



Annual work programmes and calls for proposals + indicative multiannual perspective

Member States ("EDF Programme Committee") to validate the annual **work programme** (WP) and the **selection of projects** (awards) to be funded following the calls for proposals



Eligibility conditions



Consortia: at least 3 eligible entities from 3 different MS/Norway (2 for disruptive call)

Compliance with international law and high ethics standards

Recipients & main subcontractors + Infrastructure, facilities, assets and resources for the action located in EU or Norway

Entities established in 3rd countries can be associated if security-specific conditions are met, but no EDF financial support

Recipients and main subcontractors not subject to control by 3rd country/entity

Derogation possible if approved security-specific guarantees can be provided

No restrictions nor control by 3rd country/entity on results

+ specific to development actions

Co-financing where needed

Harmonised defence capability requirements jointly agreed by at least 2 MS/NO for design

Intention to procure & common technical specifications for system prototyping+ activities

#EUDefenceIndustry







Research actions

Activity type	EU funding rate				
Generating knowledge	100%				
Integrating knowledge	100%				
Studies	100%				
Design	100%				

Development actions

Activity type	EU baseline funding rate			
Integrating knowledge	65%			
Studies	90%			
Design	65%			
Prototyping	20%			
Testing	45%			
Qualification	70%			
Certification	70%			
Increasing efficiency	65%			



EU maximum funding rate					
100%					
100%					
100%					
55%					
80%					
80%					
80%					
100%					

Funding rate mechanism to incentivise co-financing (leverage effect)





Condition for application	Value of the bonus					
PESCO Bonus						
Action developed in context of the Permanent Structured Cooperation (PESCO)	+10% for all activities in the action					
'Mid-ca	o' bonus					
% eligible costs allocated to 'Midcaps' established in the EU (and NO) ≥ 15%	+10% for the activity					
SME Bonus						
% eligible costs allocated to 'SMEs' established in the EU (and NO) ≥ 10%	% of eligible costs allocated to 'non cross-border SMEs' established in the EU and NO (maximum 5%) + 2 x % of eligible costs allocated to 'cross-border SMEs' established in the EU and NO					

Bonus system to incentivise participation of SMEs and mid-caps



Step-by-step Submission process

How to search for partners?

Partner search tool on the Funding & Tender portal

Register and request/offer expertise to your topics of interest (EDF topics are under "Horizon Europe" programme)



EDF brokerage / matchmaking events organised at:

- Union level (since 01 July 2022)B2B platform open until end of October!
- Multinational or national level Reach out to your national focal point(s)

Network of EDF National Focal Points (NFP)

 Contact details of your national contact point(s) on the web site!

Other platforms

- European Enterprise Network *
- European Defence Agency B2B platform
- European Network of Defence related Regions (ENDR)

*The Enterprise Europe Network (EEN) helps businesses innovate and grow on an international scale. It is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions.



Energy efficiency and environment transition Gree Category



- The aim of this category of action is to create and develop energy efficient solutions and green technologies in the defence sector.
- It is planned to address research and the entire life cycle of capabilities, from upgrading the systems currently in use, to the design of new ones to be integrated in future defence capabilities."
- In the context of the climate change, the overall contribution of this category will support Europe in achieving ambitious environmental objectives.



EDF Work Programme 2021

EUR 1 220 million

ENDR-Greener Defence



23 calls for proposa	ls
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37 topics

Calls closed on 9 December 2021

Results July 2022

	Medical	•	Detection, identification and monitoring of CBRN threa	ats18.5 M€	8	Air	•	Next generation rotorcraft technologies	40 M€			
4	Response & CBRN		Development of defence medical countermeasures	50 M€		combat	•	Enhanced pilot environment for air combat European interoperability standard for collaborative air	150 M€			
R	Information superiority		High-altitude platform systems Robust defence multi-dimensional communications	70 M€		Air missile defence	•	Endo-atmospheric interceptor – concept phase	100 M€			
	Sensors	•	Infrared detectors	38 M€			•	Improved warheads	10 M€			
	Selisois	•	Advanced radar technologies	30 IVI€	⊈ Ground		20 M€	Ground	Ground	•	Future modular ground vehicles and enabling technologies, including green technologies	
40%	Cyber		Improving cyber defence and incident management w artificial intelligence	ith 13,5 M€	combat		•	Unmanned ground vehicle technologies BLOS collaborative close combat architecture	150 M€			
101		•	Improved efficiency of cyber trainings and exercises	20 M€	ooko Pr	-tt 0	•	Development of full-size demonstrators for soldier syster	ms			
	Space		Space and ground-based NAVWAR surveillance European protected waveform and accompanying	50 M€	iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	otection & Mobility	•	Development of a digital system for the secure and quick exchange of information related to military mobility				
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Space		technologies for resilient satellite communications aga jamming	ainst		Naval combat	•		29 M€ 14,5 M€			
<u>ಬ್</u> ಕಾ	Digital	•	Frugal learning for rapid adaptation of AI systems	18,5 M€		Combat	•	Modular and multirole patrol corvette	60 M€			
tra	ansformation		Military multi-domain operations cloud			Diamontina	•	Quantum technologies Non-line-of-sight optical sensors applications	60 M€			
			Energy independent and efficient systems for military			Disruptive chnologies	•	Over-the-horizon radars applications New materials and technologies for additive manufacture				
9 6	Energy & Environment	•	camps Next generation electrical energy storage for military forward operation bases	133 M€		cimologics		defence applications Non-thematic research	10 M€			
		•	Alternative propulsion and energy systems for next				•	Non-thematic research for SMEs and ROs	17.5 M€			
2011	Materials &	•	generation air combat systems Materials and structures for enhanced protection in	40 M€	S. S	SMEs	•	Non-thematic development for SMEs	36 M€			
	Components		hostile environments Advanced RF components	40 IVIC	+	Others	•	External expertise, audits and IT systems Business coaching for SMEs	1,8 M€			
	_											

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<u>Legend:</u> Research Development



Support so far to greener defence:

Commission

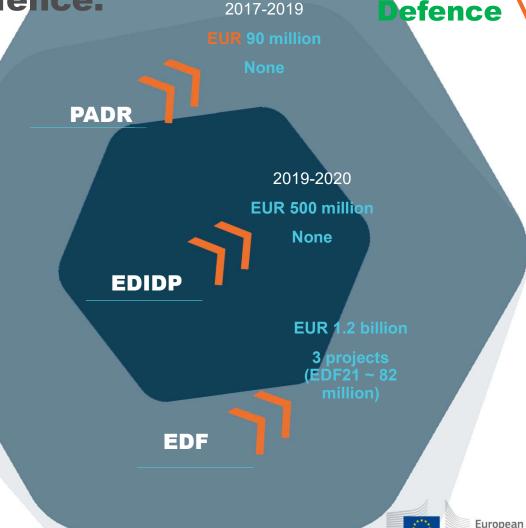
From pre-cursor programmes, no projects have been funded.

EDF21:

INDY: Energy independent and efficient systems for military camps – solutions for autonomous military camp with a focus on Energy Security, reducing heat waste and efficiency.

NOMAD: Next generation electrical energy storage for military forward operation bases (FoBs)- energy storage systems which is deployable, compact, reliable, and stable.

NEUMANN: Alternative propulsion and energy systems for next generation air combat systems - efficient sub and supersonic enhanced propulsion systems which is key for next generation air combat systems.



INDY: Energy Independent and Efficient Deployable Military Camps

13 EU countries & NO, 6 SME, 3 MIDCAPs, Large Companies, RTOs & MoDs. Budget ~14.3 M€



- Developing the strategic roadmap technology specifications towards future energy-independent and efficient deployable military camps.
- Project offers a paradigm shift for energy production, conversion, storage, transport, distribution and final energy usage in deployable camps.
- Identify existing energy technologies and software **solutions** available in civil applications and evaluate their potential for military camps (dual-use).
- Represents a first step to an implementation roadmap for a full-scale operational demonstrator fulfilling interoperability demands between inter-allied armies and NATO.
- Contributes to **competitiveness** and the **innovation** potential of EU industrial base, contributes to EU **Green Deal** and European Defence Agency's initiatives.

NOMAD: **NO**vel energy storage technologies usable at **M**ilit**A**ry **D**eployments in forward operating bases

10 EU countries & NO, 7 SME, 2 MIDCAPs, Large Companies,RTOs & MoDs Budget ~ 20 M€





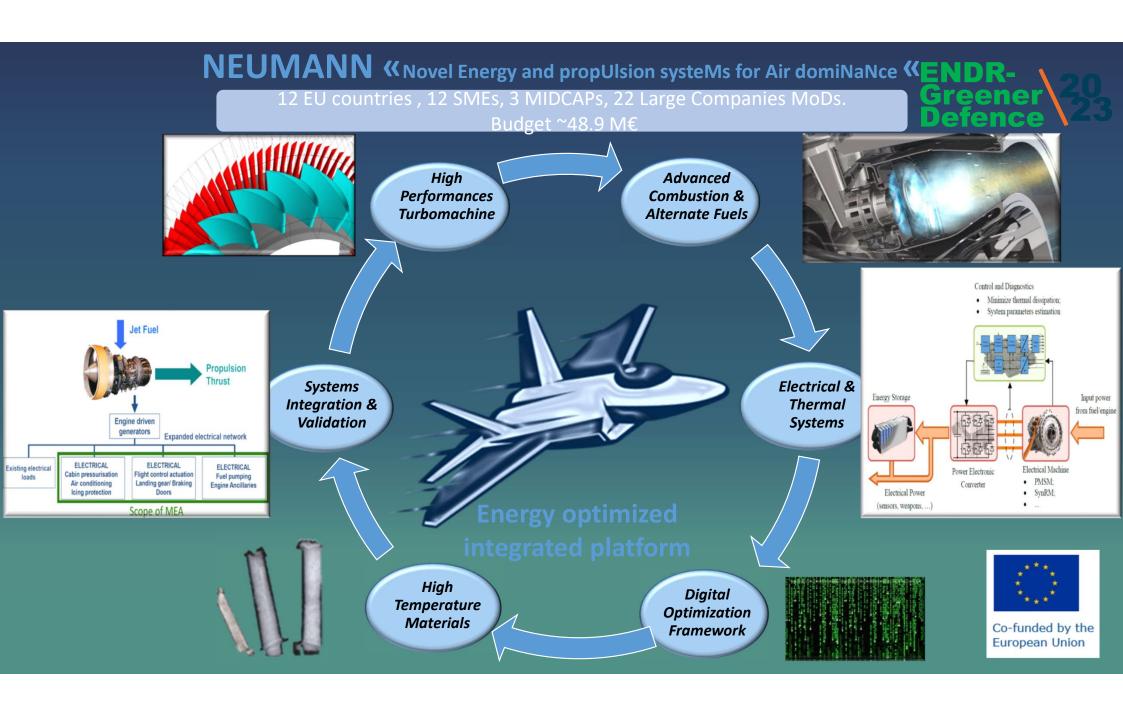
High mobility and modularity. Building blocks and functional modules integrated in one container facilitating the logistics of transport, maintenance, etc.

High Energy storing capacity and lower weight. For a 20 feet container integrating two functional modules of 200kWh of storing capacity, 400 kWh in total, that entail 12 t (optimum mass), that means 33Wh/kg for the global system. This is a high energy storing capacity compliant with military requirements.

At least 25% less diesel consumption and reduction of lethal exposure situations This reduction entails the reduction of diesel transport to FOBs in a 20-25%. This is a big advantage if we consider that this logistics activities for FOBs, are the main cause of deaths.

15-20% less CO2 emissions: With the reduction of diesel consumption in a 25%, it is expected to reduce the CO2 emissions in 15-20%

Reduction of FOBs costs: the final cost in Afghanistan FOBs where around 100€/I of diesel. Considering that the average FOB consumption for 1200 persons is 80-100I/h. To reduce the 25% of necessary diesel will be a big cost reduction while the Operational Expenditure (OPEX) for the energy storage energy is lowering.



EDF Work Programme 2022

EUR 924 million

ENDR- 20 Greener 23

8 calls for proposals	33 topics Calls closed :	24 Nov	Nov 2022			Results ~ Jun 2023		
Medical • Response & CBRN •	Diagnostics, treatment, transport and monitoring of his contagious, injured and/or contaminated personnel FPA on medical countermeasures	ghly 25 M€ n.a.		Air combat	•	Airborne electronic warfare	40 M€	
Information superiority	SES interoperability European command and control Special operations command post	20 M€ 30 M€ 20 M€		Ground combat	•	Collaborative ground combat	50 M€	
Sensors	Covert sensing	25 M€		ction & Nobility	•	Medium size tactical cargo	30 M€	
3013013	Advanced radar technologies Adapting Cyber Situational Awareness	15 M€ 10 M€		Naval combat	•	Medium size semi-autonomous vessel Naval collaborative surveillance	65 M€ 65 M€	
Cyber	Cyber and information warfare toolbox Cybersecurity and systems for improved resilience	33 M€ 27 M€		erwater warfare	•	Underwater manned-unmanned teaming and swarms Underwater ODAC	25 M€ 30 M€	
Space :	Responsive space system Innovative space ISR capabilities Space-based missile early warning	20 M€ 40 M€ 90 M€		ulation training	•	Modelling, simulation and simulators integration	30 M€	
Digital transformation	Hidden threats detection (challenge, 2 topics) Shared databases for image recognition	25 M€ 25 M€	The state of the s	ruptive ologies	•	Adaptive camouflage Electromagnetic artillery demonstrator Non-thematic research	15 M€ 15 M€ 10 M€	
Energy & Environment	Sustainable components for underwater applications	20 M€		SMEs	•	Non-thematic research for SMEs and ROs Non-thematic development for SMEs	17.6 M€ 36.5 M€	
Materials & Components	Packaging technologies for critical components Smart and multifunctional textiles	25 M€ 20 M€	+	Others	•	CSA for national focal points External expertise, audits and IT systems Business coaching for SMEs Blending facility for equity funding for SMEs/Mid-Caps	1,5 M€ 3 M€ 20 M€	
	Logand					Commi		

Research Development

Legend:

EDF 2022 topics contributing to a greener defence



- ENERENV category with one topic on environment issues (e.g EU Green deal, REACH regulations, etc.)
- Open development call (any development proposal can be submitted / EU budget 4 M€ max)

Open research call (any research proposal can be submitted /EU budget 4 M€ max)

Categories of Action	Budget	Topics	Description
EDF-2022-ENERENV-CUW	Research 20 M€	Sustainable components for underwater applications	To replace existing titano-zirconate (PZT) based ceramics with lead-free piezoelectric materials (no lost of performance levels, maybe gain and "greener").
EDF-2022-LS-RA-SMERO- NT	Research 17,6 M€	Non-thematic research actions by SMEs and research organisations	Encourage SMEs in bringing forward innovation defence research, possibly by adapting technologies from civil applications or addressing hybrid warfare.
EDF-2022-LS-DA-SME-NT	Development 36,5 M€	Non-thematic development actions by SMEs	Encourages SMEs to turn technology and research results into defence products in a fast and cost-efficient way, possibly by adapting technologies from civil applications or addressing hybrid warfare.

EDF indicative multiannual perspective 2023-2026



- Main expected outcomes from EDF 2021-2027 support:
- Prototype of a future green, efficient, resilient, safe and multi-sources, energy solutions for the defence sector operating under harsh environmental conditions.
- Demonstrator of efficient and green engine representatives of new architecture and technologies, respectively adapted to each of the following capability:
 - > next generation air combat aircraft
 - next generation Main Battle Tank (MBT)
 - > next generation naval vessels
- Prototype of technological solution to ensure save reuse of water for military and peace keeping missions (environment transition)
- Prototype of green innovative solution for recycling soldier equipment (environment transition)
- → "Energy resilience and environmental transition" category > 5% EDF budget (2021~2027)



Useful links



- General information on the EDF on DG DEFIS website
 (including EDF annual work programmes and multiannual perspective)
- EDF Calls for proposals on the *Funding and Tenders portal* (where to apply)
- EDF Reference documents on the Funding and Tenders portal
 (Regulation, conditions to apply, submission templates, model grant agreements, etc.)
- National Focal Points Network
- Remaining questions regarding application to EDF calls for proposals?
 - → <u>DEFIS-EDF-PROPOSALS@ec.europa.eu</u>





Thank you! Any questions?

Contact: Ngandu MUPANGILAI ngandu.mupangilai@ec.europa.eu











Keynote speech What does it mean to be green in the Defence sector?



GBA Julien SABÉNÉ
Chief of Staff of the Air Force Command



EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS

















Round-table 1 : Life cycle

Moderation

Jean-Marc LAURENT, General & Professor at SciencesPo Bordeaux



With:



Elena GARBARINOEuropean Defence Agency



Robert HELL
GKN Aerospace



Ronja AHLBERG
SOFF



Alain IGEL
ArianeGroup

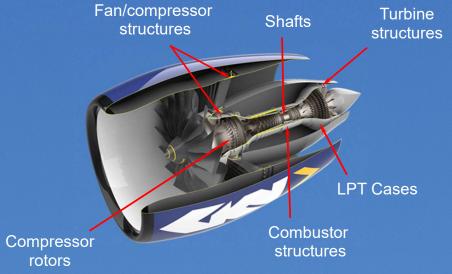










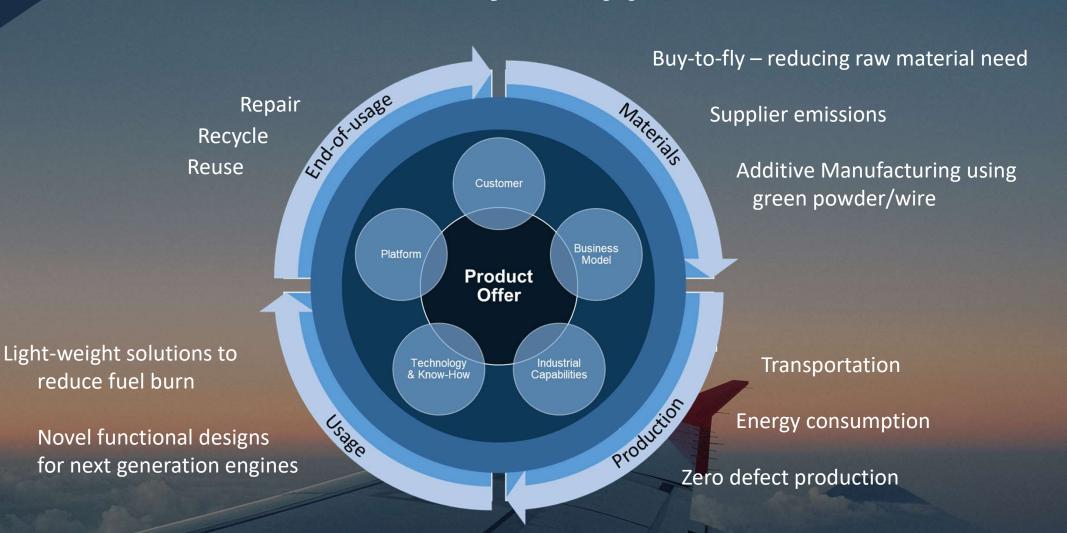








Our Life Cycle Approach











Round-table 1 : Life cycle

Moderation

Jean-Marc LAURENT, General & Professor at SciencesPo Bordeaux



With:



Elena GARBARINOEuropean Defence Agency



Robert HELL
GKN Aerospace



Ronja AHLBERG
SOFF



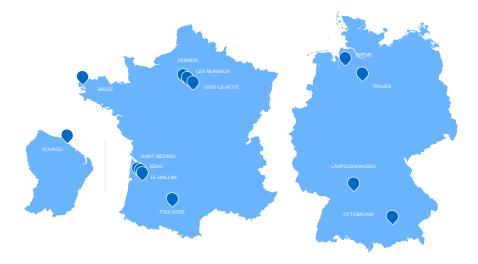
Alain IGEL
ArianeGroup



A EUROPEAN GROUP



FRANCE GERMANY















End-of-life is part of the product lifecycle ArianeGroup develops its own treatment means



Licorne™: Biological treatment with bacteria



Elixir™: Super Critical Water Oxidation

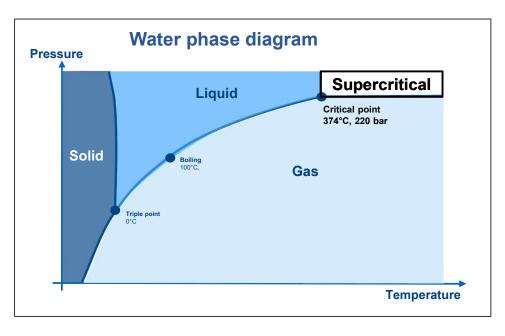
2 innovation programs developed with support of

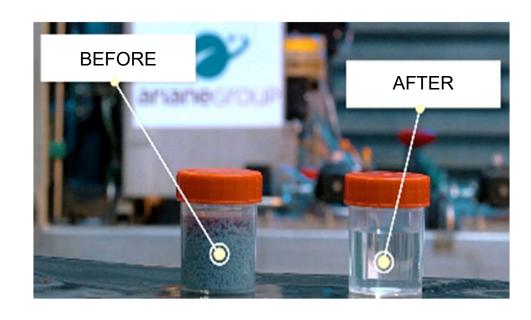






ELIXIR™: SUPER CRITICAL WATER OXIDATION





Performances:

- ✓ Full and complete organic matter oxidation
- Best in class Low emission efficiency



✓ Safe process under water

Fully destroys:

- √ Hazardous, energetics material
- ✓ PFAS*

*Per- and PloyFluoroAlkyl Substances











Round-table 1 : Life cycle

Moderation

Jean-Marc LAURENT, General & Professor at SciencesPo Bordeaux



With:



Elena GARBARINOEuropean Defence Agency



Robert HELL
GKN Aerospace



Ronja AHLBERG
SOFF



Alain IGEL
ArianeGroup









Networking Lunch

The conference will resume at 13:30.

After the lunch:

How can new developments in energy savings, green energy production, and energy storage answer the needs in the defence sector?









State of the art on Energy



Massimo MARAZITI

DG Energy, European Commission











Round-table 2: Energy

Moderation

Raphaël DANINO-PERRAUD, French Ministry of Armed forces



With:



Aliette QUINT Nexeya Hensoldt



French Ministry of Armed forces.

Fabien MICHELIN



Matej GAJZER

Slovenian Energy &
Environment Partnership in
Defence



Nikolaos SAVOURIS EasyPower

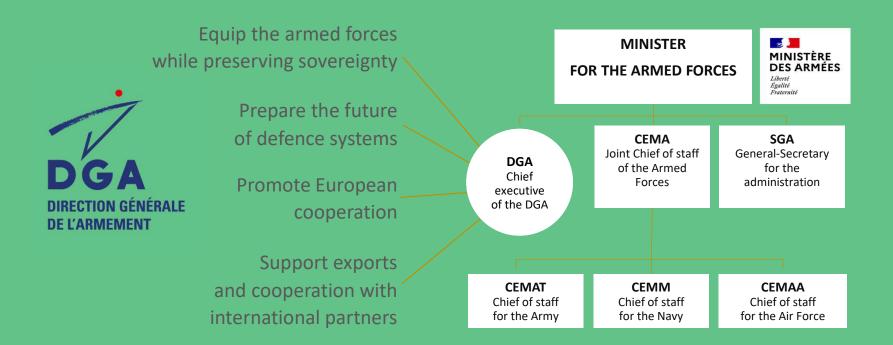








Armament General Directorate (DGA): Fundamental Missions



@defis_eu





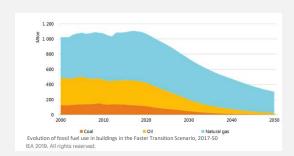




Context and challenges for the armed forces

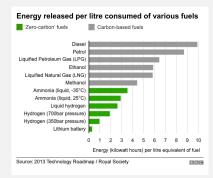
A GLOBAL TREND





Forecast decrease of the fossil energy use

MAIN CHALLENGES FOR THE ARMED FORCES



Maintaining the operational performance

Internal combustion engines set to disappear in Europe after 'historic vote'

The European Parliament has voted to ban all new internal combustion engines in the EU from 2035. The mood amongst carmakers is somewhere between accepting and concerned.

Anticipating technical and regulatory changes



Ensuring access to energy resources



Supporting the increased energy demand of weapons systems







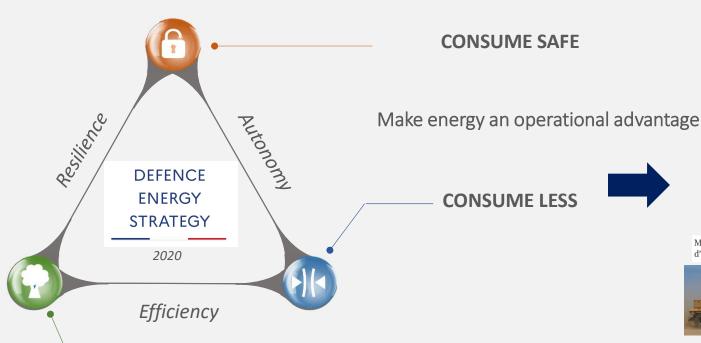






Make energy an operational advantage

CONSUME BETTER



OPPORTUNITIES TO STRENGTHEN OPERATIONAL PERFORMANCE



Higher autonomy and range



Acoustical and visual stealth

Mali : Deux militaires français blessés par l'explosion d'un IED au passage de leur camion citerne CaRaPACE



Lower logistic footprint



New operating modes

@defis_eu



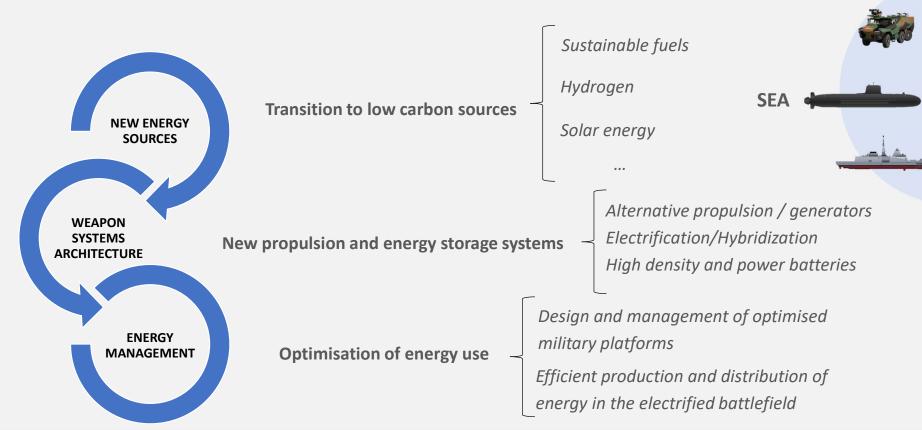






LAND

Capability and innovation pillar



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Easy Power S.A. Towards Greener Defence

Presentation by Nikolaos Savouris
Vice President & Head of Military Applications Department

@defis_eu









Company Profile

- Established in 2007
- An engineering house specialized in Autonomous Hybrid Solar Systems for Military and Civil applications
- A company active in Greece and abroad
- Patented innovative Systems
- In partnership with GEK-TERNA Group*, for Military Net Zero Energy Projects

Activities:

- Active in Renewable Energy Sources (R.E.S.)
- Customised solutions in Hybrid Energy Production Systems either in on or off-grid areas
- Customised Solutions for Solar Hybrid EV charging Stations
- Study and Design of Net Zero Energy on Highways
- Study, Design and installation of Net Zero Energy systems for Civil and Military Airports/Bases

*GEK TERNA GROUP is one of the leading business Groups in Greece with realized investments of more than €3.5 billion during the recent years.

The Group has a leading position in the fields of infrastructure, energy production, supply and trade from thermal sources and RES, concessions, waste management and real estate development & management.

The Group is operating in 16 countries around the world.











1.Customized Mobile Autonomous Solar Hybrid Units installed in remote islands to cover the electrical needs of

small Military Bases

Key Features

- 1. Major Breakthroughs of the units developed
 - Fully Autonomous Operation
 - Remotely Managed and Controlled
 - Reliable (in the field operation >4 ½ years with no failures)
 - Fuel Savings >85% in relation to the previously installed solar hybrid system
 - · Substantial savings in human engagement
 - Reduced thermal footprint
 - Ability to connect more hybrid units in parallel to increase its energy capabilities
- 2. Sustainment & Development
 - Increase power density while reducing weight and size
 - Replace diesel generators with Hydrogen production and power generation unit

















2. Transformation of 115 Combat Wing -Souda Airport to one of the 1st Net Zero Energy and Near Zero Carbon Emissions Military Airports

Key Features and Enhancements

- 1. System design and capabilities
 - PV station combined with advanced battery storage system covers 100% of airport annual energy requirements
 - Scalable up to +25% additional energy requirements
 - System architecture allows adaptation to Civil Airports
 - Utilizes off the shelf parts and equipment
 - Seamless Transitions between On and Off-grid operation
- 2. Energy Management System (EMS) development:
 - Locally hosted EMS with:
 - Increased cyber-security (air-gap)
 - Automatic grid-connection
 - User-settable energy reserve, according to the readiness level











Steps to be adopted by European Commission and EDA to allow the development of Greener systems within European Militaries

- * Establish guidelines to allow the development and operation of Green Energy Production inside military bases
 - ✓ Enforce Green Energy Production with Storage and Electric Mobility within the military bases
 - ✓ Use of commercially available European-manufactured equipment and customized equipment for special operations as required
 - ✓ Provide Financial Schemes for the implementation of Green Energy Production Projects
 - ✓ Specify System requirements to satisfy military needs:
 - ✓ Batteries vs explosive materials installations
 - ✓ EMS vs cloud hosted lifecycle asset management

<u>Keynote</u>: a joined approach among different EU players is vital in order to identify synergies through global cooperation and multilateral channels, maximizing efficiencies and thus lowering cost impact









Thank you!

Contact Information:

EasyPower S.A.

47 Drosias-Stamatas Av. Stamata-Attikis, Greece

email: nsavouris@easypower.gr

Tel: +30 2106828580



EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS









EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS







Energy

Hydrogen Production and Energy Conversion

•Provide clean, controlled and sustainable energy - Ensure energy self-sufficiency and efficiency - Secure infrastructures and platforms - Remove magnetic signatures.

- Autonomous production and consumption of energy in remote locations (Off-Grid)
- Energy storage solution connected to the grid (Microgrid)
- Secured devices for the transportation, storage and distribution of high-pressure hydrogen (tanks, bundles, containers)



SURHYCATE Energy self-sufficiency







DC/DC Converters

- Power converters
- Rectifiers
- Battery chargers
- Specific energy systems
- Naval degaussing solution



CBS rectifier

MASK – Demagnetisation systen





EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS

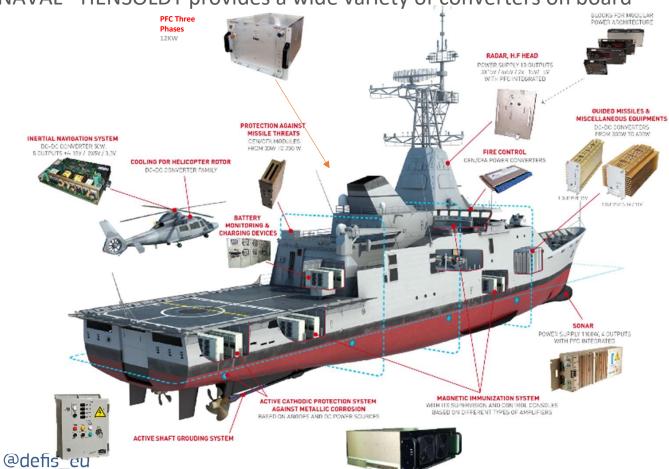
Energy







NAVAL - HENSOLDT provides a wide variety of converters on board



Recent improvement in converter technology bring better energy efficiency for navy vessels.

In an energy & climate crisis context a gain of few percent on hotel load could not be neglected

→ approx 10-15% from fuel to e.g. radar

1st benefit:

Saving could be more than 1,5 ton of Fuel for major ships as 1st rate Frigate.

2nd Benefit

Higher efficiency lead to lower cooling needs.

→ Increasing discretion (thermal and acoustic)

We are currently deploying such technology on mains vessels (ASW ASUW and AAW and SSN)

Corollary:

This benefits could be bring to deployable camp reducing fuel consumption.











Energy

HENSOLDT provides complete INTELLIGENT ENERGY SYSTEM based on HYDROGEN

At stakes

- Improve energy autonomy
- Increase flexibility of energy production
- Increase renewable energy production
- Reduce CO2 emissions
- Improve energy stability & resilience
- Increase stealth



• HDS – High Density Storage container (H2 logistic solution)

SURHYCATE - Off-Grid solution with green energies compatibility

Our Solutions

- OFF GRID SOLUTIONS
- MICRO GRID SOLUTIONS
- H2 LOGISTIC & DISTRIBUTION SOLUTIONS



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HENSOLDT Energy markets

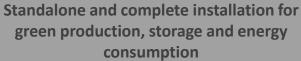
Hydrogen solutions

LOCAL ENERGY PRODUCTION

LOGISTIC & DISTRIBUTION

LIGHT MOBILITY







Energy storage station to complete the network



High pressure storage for large volume transport, distribution and embedded applications

@defis eu







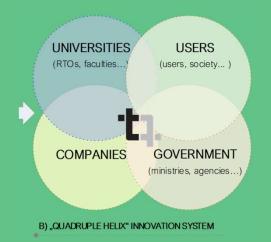




TECES is a leading Slovenian innovation cluster on green technologies and energy-efficient solutions

Established in 2001 by Slovenian companies and universities to foster collaboration and international competitiveness of its members.

W: www.teces.si





The SiEnE partnership is unique by offering integrated and customised support for the cooperation of civil and defence stakeholders in the defence and security area in Slovenia and abroad.

Established by TECES and the Slovenian Ministry of Defence in 2020 to address the green transition, energy and environmental challenges in the defence and security sector and to foster civilian and defence stakeholders collaboration in the development of dual-use solutions.

W: SiEnE.teces.si



EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS







CIVILIAN USE Interweaving solu	Interweaving solutions for civilian and defence use		DEFENCE and DUAL USE
smart cities, smart communities	→	smart (deployable) camps, military barracks,	fixed infrastructure
 energy production (generation), distribution, storage, management, usage, ene efficiency, renewable energy sources, district heating & cooling, microgrids 	rgy →	 energy production (generation), distribution, management, usage, energy efficiency, renew cooling, selfhealing microgrids 	
 smart buildings – fixed and deployable (modular) construction (residential, commercial, industrial), HEMS, BEMS 	→	 smart buildings – fixed and deployable modul MODs, modular buildings), BEMS 	lar construction (building stock of
 digital planning (BIM, planning, digitalisation, digital twins, predictive maintena) , 	nce →	 digital planning (BIM, planning, digitalisation, maintenance) 	digital twins, predictive













INDY, Energy Independent and Efficient Deployable Military Camps

INDY will develop a strategic roadmap toward future energy independent and efficient deployable military camps.

Keywords: deployable military camp, energy mix, hydrogen, cybersecurity, energy architecture, production, conversion, storage, transport, distribution and usage, energy security, resilience, energy independence

Call Topic ID: EDF-2021-ENERENV-D-EEMC

Related PESCO project: Energy Operational Function (EOF)

Project duration: 1.12.2022 – 31.01.2023 (26 months)

Project value: 14.229.475 €

Consortium: 31 partners (20 beneficiaries + 2 affiliated entitities + 9 known subcontractors) or (6 SMEs, 3 MidCaps, 8 large companies, 2 RTOS 2 UNIs,

1 innovation cluster

Coordinator: TECES, Slovenia

Countries involved: 13 EU and associated countries.



NOMAD, Novel energy storage technologies usable at MilitAry Deployments in forward operating bases

NOMAD will develop next-generation electrical energy storage for military forward operating bases.

Keywords: batteries, building block, FOB, capacitors, functional module, demonstrator, supercapacitors, flywheels, fuel cells, high energy, high power density, energy management, hybridization, interoperability

Call Topic ID: EDF-2021-ENERENV-D-NGES

Related PESCO project: Energy Operational Function (EOF)

Project duration: 1.12.2022 – 31.01.2027 (50 months)

Project value: 20.717.428 €

Consortium: 25 partners (18 beneficiaries and 7 sub-contractors

Coordinator: ARPA, Spain

Countries involved: 9 EU and associated countries.





EUROPEAN **N**ETWORK OF **D**EFENCE-RELATED **R**EGIONS





































- Solar
- Wind
- Hydro
- Geothermal
- Waste

- Heat to Power
- Heat to Cold - Waste to energy
- Synthetic fuel

- Electrical storage

- Heat-cold storage - Hydrogen storage

From outside the camp

- Trucks (road)
- Plane (Air)

Inside the camp (networks)

- Electricity (AC-DC)
- Heat / Cold







Camp needs

· Electricity /- Heat / Cold /-Water

Operation

- Land Vehicles (light-heavy)













2030

2050





FOSSIL FUEL for the camp & operations

40% reduction

100% reduction



Energy **EFFICIENCY**

20% primary energy saving

30% primary energy saving







ENERGY **AUTONOMY** of the camp

35%

70%





ENERGY AUTONOMY of the operations

10%

30%



FUEL LOGISTIC for the camp

35% reduction

10% reduction

70% reduction

30% reduction



GUARANTEE OF Safety / Security Interoperability / Modular



AND CLIMATIC REGIONS from Artic to Tropical regions and different conflict situations

DIFFERENT GEOGRAPHIC

•





FUEL LOGISTIC for operations









Round-table 2: Energy

Moderation

Raphaël DANINO-PERRAUD, French Ministry of Armed forces



With:



Aliette QUINT Nexeya Hensoldt



French Ministry of Armed forces



Matej GAJZER

Slovenian Energy &
Environment Partnership in
Defence



Nikolaos SAVOURIS
EasyPower









Coffee break

The conference will resume at 15:45.

After the break:

How to make defence jobs attractive for young and not so young people? Can the sector's greening contribute to its attractiveness??









Round-table 3: Talents & Skills

Moderation

Eric GRIVEL, Professor at Bordeaux INP



With:



Benoit CONSOLINI Aerocampus Aquitaine



Michel DUBARRY Fondation Bordeaux Université



Ophélie TAN ORAJe



Thalès DMS



Richard PERROT David HUGUET Tarmaq









Concluding remarks



Paul ANCIAUX
DG DEFIS, European Commission









Thank you, and have a nice evening!









EUROPEAN CONFERENCE

Towards a greener Defence: the challenge of sustainable development for European Defence industries

- 十 24 January 2023
- + Bordeaux, France











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