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## MEMBER PRESS RELEASE

World Bioenergy Association | For Immediate Release  
Bucharest, Romania — June 2026

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# Energy-Serv (Romania) Files Patent for BioS-AME:

## *A Carbon-Negative Biorefinery System Producing SAF, Food Ingredients and Net Electricity from Seasonal Biomass*

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SC Energy-Serv SRL, a Romanian ESCO (energy services company and WBA member), announces the filing of a patent application for BioS-AME concept (Biosecurity System — Alimente-Mediu-Energie) at the State Office for Inventions and Trademarks of Romania (OSIM), with filing date 4 June 2026. The PCT/EPO international filing is planned within the 12-month priority window. The patent covers an integrated biorefinery architecture in a concept of circular bioeconomy that simultaneously produces **Sustainable Aviation Fuel (SAF)**, gluten-free food ingredients, and net clean electricity or heat export — achieving a verified carbon-negative energy balance. The Biorefinery architecture is flexible for **production on Bioethanol** as well.

### A NEW PARADIGM: CARBON-NEGATIVE, MULTI-OUTPUT BIOREFINERY

BioS-AME addresses one of the central challenges of the bioenergy transition: how to maximise the value and climate impact of seasonal, non-food-competing biomass at commercial scale. The system is built around sweet sorghum — a drought-tolerant, high-yield energy crop cultivable on marginal land — processed through a fully integrated circular bioeconomy architecture.

The primary commercial configuration (P2 FOOD-SAF) operates across 12,500 hectares and is designed to generate three simultaneous revenue streams while maintaining a verified net-negative carbon balance across all three accounting levels (direct emissions, avoided fossil substitution, and permanent land-use carbon sequestration).

### KEY PERFORMANCE PARAMETERS — P2 FOOD-SAF CONFIGURATION

|                               |  |
|-------------------------------|--|
| <b>Feedstock</b>              | Sweet sorghum, 12,500 Ha (marginal/non-food land)                  |
| <b>SAF production</b>         | ≥ 20,000 t/year (ASTM D7566 compliant, RED III certified)          |
| <b>Gluten-free flour</b>      | 31,875 t/year (food-grade, direct human consumption)               |
| <b>Net electricity export</b> | 187.3 GWh/year (to national grid)                                  |
| <b>Carbon balance</b>         | Net-negative CO <sub>2</sub> eq/year (all three accounting levels) |
| <b>RED III GHG reduction</b>  | > 65% vs fossil fuel comparator                                    |
| <b>Green Bond eligibility</b> | CBI-eligible (7 simultaneous categories)                           |
| <b>IP status</b>              | Patent pending — OSIM BP-1 to BP-11, filed 4 June 2026             |
| <b>PCT/EPO deadline</b>       | 4 June 2027  |

## STRATEGIC SIGNIFICANCE FOR THE BIOENERGY SECTOR

The BioS-AME system is designed to be **technology-neutral and licensable**, enabling producers, investors, and agro-industrial groups to deploy the architecture under a Technology Option Agreement structure. Energy-Serv is actively seeking licensing partners, co-development agreements, and joint-venture structures for European and international deployment.

The system is particularly relevant to WBA members operating in the following areas:

- SAF producers and aviation-sector offtakers seeking feedstock-diversified, RED III-compliant supply chains
- Bioenergy investors and project developers targeting carbon-negative profiles for Green Bond or InvestEU/EBRD financing
- Agricultural groups and agro-industrial cooperatives with seasonal biomass and marginal land assets
- Energy utilities seeking cogeneration and grid-export assets with verified carbon credentials
- Technology licensees in EU member states facing ReFuelEU Aviation mandates (2025–2050)

## ABOUT THE INTEGRATED ENERGY SYSTEM

The BioS-AME patent covers the **full biorefinery-energy integration**, including: cogeneration on lignocellulosic biomass (bagasse), a three-level thermal cascade recovery system, mechanical vapour recompression (MVR), hybrid photovoltaic-thermal (PVT) generation, absorption and electric heat pumps, three-level hybrid thermal-electrical storage, battery energy storage (LFP), and a predictive energy management system (EMS) with RED III dual-constraint optimisation. A second independent patent (BP-7 Extins) covering the energy system as a standalone licensable module has been filed simultaneously.

**The architecture has been designed from the outset to satisfy the requirements of the EU Renewable Energy Directive (RED III), the ReFuelEU Aviation Regulation, and the Climate Bonds Initiative (CBI) Green Bond taxonomy** — enabling direct access to EU grant programmes, EBRD/EIB green finance instruments, and airline SAF offtake frameworks.

## TECHNOLOGY OPTION AGREEMENT

Energy-Serv is making the BioS-AME technology available to qualified partners under a Technology Option Agreement (TOA) structure, including an exclusive option for defined territories. Parties interested in licensing, co-development, or project finance partnerships are invited to contact the Director General directly.

## CONTACT

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### NOTE TO EDITORS

*A technical backgrounder and project summary are available on request. Detailed performance parameters, carbon accounting methodology, and RED III compliance documentation can be provided under NDA to qualified investors and licensing partners. The patent is currently pending; PCT/EPO filing is planned before 4 June 2027.*