DRONA MARITIMA FOTOVOLTAICA MODULARA PURTATOARE DE DRONE AERIENE, RACHETE ANTIDRONA SI DRONE SUBACVATICE

Inventie inregistrata la OSIM cu cererea de brevet de inventie nr. A/00248 din 16.06.2025, publicata in Buletinul Oficial de Proprietate Industriala – Sectiunea Inventii Nr. 11 din 28 noiembrie 2025.

Inventia se refera la o drona maritima fotovoltaica modulara purtatoare de drone aeriene, rachete antidrona si drone subacvatice, destinata operatiunilor de recunoastere, supraveghere si control 24/7 ziua si noaptea cu camera cu infrarosu si termoviziune, transmitand imaginile 4k in timp real prin streaming, prelucrand datele cu inteligenta artificiala AI, pentru a detecta miscarea navelor, aeronavelor, dronelor, vehiculelor si oamenilor, pentru a alerta personalul de securitate din Centrul de comanda. Are aplicatii si in misiuni de cautare si salvare marina, aeriana si subacvatica, precum si in misiuni militare, de securitate, inspectie, transport si mediu.

Recunoasterea, supravegherea si securitatea:

- raurilor, lacurilor si fluviilor de frontiera, delta fluviilor, cursuri de apa greu accesibile, in raza porturilor la mari si oceane, in vederea combaterii trecerii ilegale de frontiera, traficului de droguri si persoane;
- perimetrului navelor la nivelul apei, aerian si subacvatic;
- porturilor;
- cablurilor submarine;
- poate marca anumite locuri periculoase, functionand ca o baliza plutitoare, avand capacitatea de a-si mentine aceeasi pozitie GPS, indiferent de curentii marini, vant si valuri, emitand semnale acustice si luminoase.

Transportul in interiorul corpurilor, cat si prin montarea de containere pe punti (15 kg):

- medicamente, analize medicale, sange pentru transfuzii etc;
- posta, curier, documente, piese de schimb de la nava la nava etc;
- in varianta conectarii a 4 drone cu traverse din teava patrata din carbon, se realizeaza o platforma plutitoare autopropulsata radiocomandata, cu care se pot traversa diverse echipamente pe rauri sau fluvii;
- in aceeasi varianta modulara, prin montarea unei pompe electrice de apa, se poate utiliza ca drona pompier pentru stingerea incendiilor in zone periculoase.

Militar (mica, silentioasa si rapida, este imposibil de detectat vizual si cu radarul):

- identificarea tintelor si transmiterea la Centrul de comanda a imaginilor in timp real de la nivelul apei cat si aerian, precum si a coordonatelor GPS ale tintelor, astfel prin marcarea acestora se pot efectua lovituri cu precizie de la mare distanta de pe sol, aer, apa, fara a pune in pericol personalul uman;
- escortarea navelor militare si civile;
- identificarea, transportul si dezamorsarea minelor marine;
- drona kamikaze cu incarcatura exploziva de 15-20 kg, drona aeriana fiind ridicata inainte de contactul cu tinta, putand sa transmita imaginile si coordonatele tintei celorlalte drone care actioneaza in haita, astfel eficientizand urmatoarele lovituri, pana la distrugerea totala a tintei;

- drona aeriana poate lansa incarcatura exploziva asupra tintei;
- prin dotarea cu doua rachete antidrona pe corpurile laterale, dupa identificarea si marcarea tintei de la nivelul apei si aerian, are posibilitatea de a lovi si distruge idependenta tinta, fara sprijin din exterior, fiind complet autonoma;
- se poate dota cu doua arme automate, pentru luptele navale.

Operatiuni de cautare si salvare (marina, aeriana si subacvatica):

- identificarea navelor esuate sau scufundate si a naufragiatilor;
- identificarea persoanelor aflate in pericol in cazurile de inundatii;
- echipata cu microfon si difuzor pentru transmiterea audio la distanta, in vederea contactarii supravietuitorilor si transmiterea catre Centrul de Comanda a imaginilor audio-video in timp real, a pozitiei pe harta si a coordonatelor GPS a navei in pericol si a naufragiatilor;
- transmiterea de mesaje, semnale luminoase si acustice in zone greu accesibile, in cazuri de cataclisme, razboi, furtuni.

Inspectie:

- infrastructura porturi, diguri, poduri;
- detectarea si identificarea obiectelor sub apa precum nave scufundate, cabluri submarine, deseuri care pot bloca caile navigabile, fiind dotata si cu sonar;
- suprafata exterioara a navelor.

Mediu:

- echipata cu senzori pentru masurarea calitatii apei sau detectarea uleiului, precum si echiparea cu dispozitive de neutralizare a uleiului si a titeiului de la suprafata apei;
- prelevarea de probe de apa in cazul scurgerilor de titei sau substante periculoase;
- pulverizare de pesticide in zonele cu insecte periculoase;
- studierea si cercetare mediului marin;
- idepartarea de pe suprafata apelor a deseurilor din plastic si filtrarea microplasticelor.

Dronele aeriene UAV actuale pot functiona in medie 30 minute, ajungand la o distanta de 10 km, avand nevoie de energie pentru drum dus-intors. Dronele aeriene nu functioneaza in caz de vreme severa, ploaie, vant sau frig. Dronele subacvatice trebuie transportate cu nave pana la locul misiunii, fiind comandate prin fir de la bordul acesteia, implicand costuri foarte mari de deplasare si cheltuieli cu echipajul, precum si timpul aferent organizarii deplasarii. Pentru operatiunile de recunoastere, este necesara trimiterea in misiuni a personalului uman cu vehicule terestre, aeriene sau pe apa, ceea ce implica costuri mari si punerea in pericol a personalului uman. Utilizarea imaginilor din satelit nu este intodeauna o solutie viabila deoarece nu se ofera imagini in timp real, clare si detaliate si depinde de pozitionarea satelitilor deasupra tintelor, precum si costuri ridicate si in special dependenta fata de proprietarii sistemului de sateliti militari strategici.

Problemele tehnice pe care le rezolva inventia sunt urmatoarele:

- drona aeriana poate fi transportata la 80 km, fara necesitatea de a strabate drumul dus-intors, ci doar pana pe puntea dronei maritime, astfel drona aeriana decoleaza de pe drona maritima numai in cazul necesitatatii identificarii aeriene a tintelor, apoi aterizeaza pe drona maritima asteptand urmatoarea misiune;
- prin echiparea dronei maritime cu doua rachete antidrona, sau cu doua arme automate, se pot lovi si distruge tintele de la distanta;
- drona subacvatica este transportata pana la locul scufundarii si este controlata prin fibra optica conectata la receptorul ei de pe drona maritima, fiind dirijata de la o distanta de 80 km prin radiocomanda, ea fiind la zeci de metri sub apa;
- functioneaza in toate conditiile nefavorabile, fiind rezistenta la apa, vant, frig, valuri;
- are un sistem modular trimaran fiind construita din 3 corpuri, care ii asigura o mare stabilitate pe apa, precum si o rezistenta mica la inaintare;
- sistemul modular are avantajul ca drona maritima poate fi montata si demontata in cateva minute, intreg ansamblul fiind fixat in numai 12 suruburi cu piulite tip fluture;
- are dimensiuni mici, toate componentele avand loc in portbagajul unei masini medie, putand fi manevrata si pilotata de o singura persoana;
- puntile fiind demontabile, permite accesul lejer in interiorul corpurilor pentru a instala diverse dispozitive necesare anumitor misiuni, precum si asezarea echilibrata a incarcaturii in vederea transportului acesteia;
- are multiple domenii de utilizare si costul de fabricatie este foarte mic;
- este realizata din materiale compozite ca fibra de sticla si fibra de carbon, aluminiu, si are o rezistenta foarte mare la o greutate mica de doar 15 kg complet echipata;
- datorita functionarii cu acumulatori si panou fotovoltaic, drona maritima are capacitatea de a functiona non stop 24/7 pe suprafata apei, drona aeriana fiind ridicata doar in cazul necesitatii supravegherii aeriene;
- sistemul de iluminare a dronei maritime permite decolarea si aterizarea dronei aeriene si pe timp de noapte, fiind dotata deasemnea cu proiectoare;
- controlerul de incarcare solara este prevazut cu doua porturi USB, ceea ce permite incarcarea transmitatorului radiocomenzii si a altor dispozitive mobile ca telefon sau tableta, in timpul pregatirii misiunilor, in zonele fara acces la energia electrica;
- raza de actiune a dronei maritime este de 80 km, fiind limitata doar de tipul de radiocomanda utilizat, iar viteza este de 60 km/h;
- drona maritima este dotata la prova cu camera video 4k (3840X2160), cu zoom digital, unghi reglabil, gimbal pe 3 axe Electronic Image Stabilization EIS, astfel transmite digital imagini stabile in timp real prin streaming 60 fps, cat si aerian prin drona aeriana pe monitoare diferite, transmitand si pozitia pe harta si coordonatele GPS; drona aeriana poate transmite imagini si cand este pe puntea dronei maritime, astfel se poate acoperi o mai mare zona de observatie;
- se poate utiliza orice tip de drona aeriana prevazuta cu velcro pe trenul de aterizare cat si pe pista, pentru a avea o pozitie statica pe drona maritima;
- avem posibilitatea de a conecta 4 drone maritime prin traverse din teava patrata din carbon, prinse in suruburi in acelasi loc in care sunt fixate cele 3 corpuri ale dronei, realizand o platforma plutitoare autopropulsata radiocomandata de 10 metri patrati, astfel se pot traversa echipamente

pe rauri, lacuri, fluvii si se poate monta o pompa electrica de apa, astfel drona maritima va functiona ca pompier pentru stingerea incendiilor in zone periculoase;
- pentru misiuni rapide pe distante scurte, corpul central cu un acumulator suplimentar, poate functiona independent pentru a transporta medicamente, documente sau piese de schimb de mici dimensiuni. Deasemenea corpurile laterale montate prin traverse, pot functiona independent, utilizand doua sisteme de radiocomanda si de transmitere video, astfel avem doua drone maritime care pot executa foarte rapid doua misiuni in doua directii diferite;
- are capacitatea de a-si pastra pozitia nemiscata pe anumite coordinate GPS, prin functionarea independenta a motoarelor, la aterizarea dronei aeriene, putand fi utilizata si ca baliza temporara pentru identificarea unei pozitii fixe pe apa;
- optimizarea operatiunilor se realizeaza prin utilizarea in haita a mai multor drone maritime interconectate, care vor transmite Centrului de Comanda, informatii in timp real din cat mai multe pozitii, creand o retea locala informationala computerizata cu date prelucrate cu inteligenta artificiala AI.

Drona maritima, se caracterizeaza prin modularitate, stabilitate si rezistenta fiind trimaran, manevrabilitate, raza mare de actiune si functionare 24/7 fiind fotovoltaica, avand utilizari in foarte multe domenii de activitate, prin ideea inovatoare de a transporta drone aeriene, rachete antidrona si drone subacvatice pentru a acoperi toate zonele apa, aer, subacvatic, la costuri de productie foarte mici, ceea ce nicio drona realizata in lume pana in prezent nu are aceste calitati.

Prin aplicarea inventiei se obtin urmatoarele avantaje:

- functionarea dronei maritime non stop 24/7, datorita alimentarii cu energie de la panoul fotovoltaic, astfel avand o raza mare de actiune, marind considerabil raza de actiune a dronei aeriene, care este utilizata doar cand este necesara supravegherea aeriana;
- posibilitatea de a transporta drone aeriene si drone subacvatice, ceea ce ii confera avantajul de a transmite concomitent, pe monitoare diferite, imagini in timp real de la nivelul apei, aerian si subacvatic, precum si pozitia foarte exacta GPS a tintei oriunde s-ar afla pe apa, pe sol, in aer sau sub apa;
- echipata cu rachete antidrona, este capabila sa distruga tinte aeriene la distanta;
- comandarea prin radio de la mare distanta a dronei subacvatice care se poate scufunda la adancimi mari, fiind legata de drona maritima prin fibra optica ultrausoara;
- foarte manevrabila si rapida, avand 4 motoare cu functionare independenta;
- modularitatea, astfel ca se pot monta 4 drone obtinandu-se o platforma drona plutitoare autopropulsata, se pot utiliza corpurile ca drone maritime independente, se monteaza si se demonteaza foarte usor in doar cateva minute de o singura persoana si incape in portbagajul unei masini;
- realizata din materiale compozite, este rezistenta cu costuri reduse de fabricatie;
- dimensiunile mici, ceea ce o face invizibila atat vizual cat si pe radar;
- la o greutate proprie de 15 kg, poate transporta incarcatura de inca 15-20 kg.

In functie de misiune, este echipata cu camera video cu termoviziune, infrarosu, senzori, sonar activ si pasiv, microfon si difuzor cu transmiter audio la distanta, containere pentru transport, senzori pentru detectarea uleiului si titeiului, dispozitive pentru prelevarea probelor de apa, dispozitive pentru

colectarea plasticelor din apa, dispozitive pentru purificarea microplasticelor, rachete antidrona, arme automate, incarcatura exploziva si sistem de transmisie prin satelit Starlink pentru operare la foarte mare distanta.

Drona maritima este alcatuita din: trei corpuri, suport camera video, un panou fotovoltaic flexibil, o pista de aterizare pentru drona aeriana, cu o cutie cu trapa comandata de un servomotor, care protejeaza drona aeriana, toate fixate prin 4 traverse cu 12 suruburi si 12 piulite tip fluture, motarea si demontarea intregului ansamblu durand cateva minute. Sistemul electric este alcatuit din: controler incarcare solara, doi acumulatori legati in paralel, 4 motoare electrice, 3 variatoare de viteza. Directia se face prin doua carme conectate la doua servomecanisme, precum si prin variatia motoarelor de pe corpul 1 si corpul 3.

Rachetele antidrona de 60 cm si greutate de 1 kg, cu incarcatura exploziva cu dispersie de 0,5 kg sunt montate pe corpurile laterale, iar modificarea unghiului de tragere si declansarea se realizeaza prin servomecanisme si sunt utilizate impotriva dronele iraniene Shahed-136 sau varianta lor ruseasca Geran-2, care zboara la mica altitudine si produc zgomot mare.

Drona maritima trimaran cu dimensiunile 1,2 m X 1 m si 1,4 m X 1 m cu dronele subacvatice montate, este multifunctionala avand o serie de capabilitati care ii permit sa distruga 4 drone navale inamice prin lansarea de pe pista a dronei aeriene cu incarcatura exploziva, prin cele doua drone subacvatice cu incarcatura exploziva comandate prin fibra optica, care sunt atasate intre cele 3 corpuri ale trimaranului, precum si la final chiar si drona maritima cu incarcatura exploziva, toate in misiuni de tip kamikaze. Poate sa distruga si doua drone aeriene inamice Shahed-136 sau Geran-2 cu rachetele antidrona.

Varianta largita a dronei maritime de 5m X 4m are si mai multe capabilitati putand sa transporte 500 kg incarcatura exploziva, 10 drone aeriene cu incarcatura exploziva, 4 drone subacvatice torpile cu comanda la distanta, 6 rachete antidrona si 2 arme automate, este complet demontabila, pentru transportul mai multor drone fiind necesar un simplu camion fara peridoc, se pot utiliza corpurile separat formand 2 drone care pot fi trimise in doua directii diferite si se poate utiliza si ca platforma plutitoare radiocomandata, la traversarea raurilor sau fluviilor a echipamentelor sau armamentelor.

De asemenea este capabila sa scoata din uz orice tip de nava inamica, prin distrugerea sistemului de propulsie, a carmei si a sistemului de comunicatii, dupa care prin marcarea acesteia si transmiterea pozitiei GPS catre Centrul de Comanda, poate fi distrusa complet prin lovituri de la distanta cu rachete.

DRONA VELIER MODULARA PURTATOARE DE DRONE SUBACVATICE SI MINIDRONE USV

Inventie inregistrata la OSIM cu cererea de brevet de inventie nr. A/00076 din 16.02.2026, care va fi publicata in Buletinul Oficial de Proprietate Industriala – Sectiunea Inventii Nr. 8 din 28 august 2026.

Inventia se refera la o drona velier modulara purtatoare de drone subacvatice si minidrone USV, destinata operatiunilor de recunoastere, supraveghere si control 24/7, transmitand imaginile 4k in timp real prin streaming, prelucrand datele cu inteligenta artificiala AI, fiind foarte silentioasa si dotata cu microfoane si sonar activ si pasiv pentru detectarea, interceptarea si distrugerea dronelor navale si subacvatice inamice. Dimensiunile dronei sunt 130 X 100 cm cu raza de actiune de 80 km, panzele

sunt realizate din mylar cu sistem de control al velelor printr-un servomotor vinci. Este dotata cu doua panouri fotovoltaice flexibile care asigura energia sistemelor de comanda, control si transmisia datelor, precum si incarcarea acumulatorilor dronelor subacvatice si a minidronelor. Are aplicatii in misiuni militare, de cautare si salvare marina si subacvatica, de securitate, inspectie si mediu.

Recunoasterea, supravegherea si securitatea: raurilor, lacurilor si fluviilor de frontiera, delta fluviilor, in raza porturilor la mari si oceane in vederea combaterii trecerii ilegale de frontiera, traficului de droguri si persoane; perimetrului navelor la nivelul apei, si subacvatic; porturilor; cablurilor submarine.

Militar: identificarea tintelor si transmiterea la Centrul de Comanda a imaginilor in timp real de la nivelul apei si subacvatic, precum si a coordonatelor GPS ale tintelor, astfel prin marcarea acestora se pot efectua lovituri cu precizie cu dronele subacvatice care funcioneaza ca niste torpile sau cu minidronele USV cu incarcatura exploziva din dotare precum si cu rachete de la mare distanta de pe sol, aer, apa, fara a pune in pericol personalul uman; neutralizarea minelor marine; escortarea navelor militare si civile.

Operatiuni de cautare si salvare marina si subacvatica: identificarea navelor esuate sau scufundate si a naufragiatilor; echipata cu microfon si difuzor pentru transmiterea audio la distanta, in vedera contactarii supravietuitorilor si transmiterea catre Centrul de comanda a imaginilor audio-video in timp real, a pozitiei pe harta si a coordonatelor GPS a navei in pericol si a naufragiatilor.

Inspectie: infrastructura porturi, diguri, poduri; detectarea si identificarea obiectelor sub apa precum nave scufundate, cabluri submarine, deseuri care pot bloca caile navigabile, fiind dotata si cu sonar; suprafata exterioara a navelor.

Mediu: echipata cu senzori pentru masurarea calitatii apei sau detectarea uleiului; prelevarea de probe de apa in cazul scurgerilor de titei sau substante periculoase; studierea si cercetarea mediului acvatic.

Dronele subacvatice sunt montate pe o traversa in partile laterale ale dronei velier, rezultand o ambarcatiune trimaran si au sisteme de comanda la distanta independente de sistemul de comanda al dronei velier. In momentul detectarii dronelor navale inamice, dronele subacvatice se desprind de drona velier, intra in imersiune functionand ca niste torpile si sunt comandate la distanta pana ating si distrug tintele. Acestea au sisteme electrice de propulsie, sisteme de navigatie GNSS si transmitere video a imaginilor 4k in timp real, ceea ce permite tintirea si urmarirea dronelor inamice, pana la neutralizarea acestora prin declansarea de la distanta a incarcaturii explozive. Minidronele USV sunt montate pe aceeasi traversa, intre corpul dronei velier si dronele subacvatice si au sisteme de comanda la distanta independente de drona velier si de dronele subacvatice. Deasemenea au sisteme electrice de propulsie, sisteme de navigatie GNSS si transmitere video a imaginilor 4k in timp real, ceea ce permite executarea misiunilor de recunoastere, precum si identificarea si urmarirea dronelor inamice, pana la neutralizarea acestora prin declansarea de la distanta a incarcaturii explozive. Dupa incheierea misiunii, drona velier se intoarce la baza, unde e incarcata cu alte doua drone subacvatice si doua minidrone USV si poate executa o noua misiune.

Dronele navale, subacvatice si aeriene au raza de actiune limitata de cantitatea de combustibil sau de durata de descarcare a acumulatorilor. In prezent, dronele subacvatice trebuie transportate cu nave pana la locul misiunii, fiind comandate prin fir de la bordul acesteia, implicand costuri foarte mari de deplasare si cheltuieli cu echipajul, precum si timpul aferent organizarii deplasarii. Dronele aeriene

nu functioneaza in caz de vreme severa, vant, ploaie, frig si pot transporta o cantitate limitata de incarcatura exploziva.

Problemele tehnice pe care le rezolva inventia sunt urmatoarele:

- drona velier utilizeaza forta vantului pentru deplasare si este capabila sa functioneze nelimitat 24/7, avand o raza mare de actiune, precum si are capacitatea de a transporta doua drone subacvatice si doua minidrone USV;
- poate functiona in toate conditiile nefavorabile, fiind rezistenta la apa, frig, valuri;
- drona velier, dronele subacvatice si minidronele USV sunt realizate din materiale compozite ca fibra de sticla si fibra de carbon, aluminiu si panzele din mylar, au o rezistenta foarte mare la o greutate proprie mica, cu un cost de productie scazut;
- drona velier, dronele subacvatice si minidronele USV sunt dotate cu camere video 4k (3840X2160), cu zoom digital, unghi reglabil, gimbal pe 3 axe Electronic Image Stabilization EIS, astfel pot transmite digital imagini stabile in timp real prin streaming 60 fps, pe monitoare diferite, transmitand si pozitia pe harta si coordonatele GPS; drona velier este silentioasa si dotata si cu microfoane si sonar;
- drona velier are coca hidrodinamica, cu carena prova concava, avand un design conceput pentru a minimiza rezistenta la inaintare, ceea ce conduce la o viteza mai mare, o stabilitate superioara la navigare si o precizie in deplasare.

Drona velier, conform inventiei, se caracterizeaza prin modularitate, rezistenta si stabilitate functionand ca un trimaran, manevrabilitate, raza mare de actiune si functionare 24/7 utilizand forta vantului pentru deplasare si energia solara pentru sistemele de comunicatii WIFI si a sistemului de control al velelor, precum si pentru incarcarea acumulatorilor dronelor subacvatice si a minidronelor USV. Drona subacvatica poate fi comandata la adancimi mici prin radiocomanda, avand camera video si antena GNSS montate pe un catarg, sau pentru adancimi mari este comandata prin radio pana pe puntea dronei velier si mai departe sub apa prin fibra optica.

Drona velier are utilizare duala in domeniul militar si civil, prin ideea inovatoare de a transporta 24/7 drone subacvatice si minidrone USV pentru a acoperi cele doua medii suprafata apei si subacvatic, la costuri de productie foarte mici, ceea ce nicio drona realizata in lume pana in prezent nu are aceste calitati.

In cazul lipsei vantului, a urcarii in vant a dronei velier, sau pentru o viteza mai mare de deplasare, se pot utiliza motoarele dronelor subacvatice care sunt alimentate de acumulatori conectati la panourile fotovoltaice printr-un controler solar.

Prin aplicarea inventiei se obtin urmatoarele avantaje:

- drona velier transporta dronele subacvatice si minidronele USV in zona indeplinirii misiunilor fara sa consume din energia acumulatorilor acestora, ceea ce le mareste considerabil raza de actiune;
- dronele subacvatice si minidronele USV vor utiliza acumulatori de capacitate redusa cu o greutate mica, fiind necesara energie doar pentru distante scurte de la drona velier pana la tinta, avand mai mult spatiu pentru incarcatura exploziva;
- acumulatorii de pe dronele subacvatice si minidronele USV se incarca in mod constant de la panourile fotovoltaice;
- prin echiparea dronei velier cu drone subacvatice si minidrone USV cu incarcatura exploziva, este capabila sa distruga tinte la distanta in misiuni de tip kamikaze;

- avand dimensiuni mici de 130 cm X 100 cm, fiind complet demontabila, se poate transporta, manevra si pilota de o singura persoana;
- fiind modulara si multifunctionala se pot monta diferite tipuri de camere video (infrarosu, termoviziune), iar pe traversa se pot monta pe gimbal cu 3 axe arme automate sau containere pentru transport;
- utilizarea dronei velier in misiunile fortelor speciale, iar ca exemplu este exercitiul Bold Machina din septembrie 2025 din Olanda, cand soldatii de elita NATO au inceput sa fie instruiti sa asambleze si sa controleze drone navale;
- detectarea si neutralizarea minele marine si escortarea navelor militare si civile;
- poate executa misiuni de securitate si control pentru Politia de Frontiera si Garda de Coasta, in vederea combaterii trecerii ilegale de frontiera si a traficului de droguri
- inspectia perimetrului navelor si a cablurilor submarine;
- poate transporta piese de schimb, documente, analize medicale, medicamente, sange pentru transfuzii;
- este imposibil de detectat cu radarul fiind mica, silentioasa si rapida;
- echipata cu senzori pentru masurarea calitatatii apei, pentru cercetarea mediului;
- utilizarea in mod dual, atat in domeniul militar cat si in domeniul civil;
- intregul arsenal pentru distrugerea dronelor inamice este la locul misiunii, avand posibilitatea unui raspuns rapid, fara utilizarea fregatelor militare si fara a pune in pericol personalul uman.

DRONA SUBACVATICA UUV

Dronele subacvatice UUV se pot monta intre cele trei corpuri ale dronei maritime trimaran, fiind conectate de corpul central prin fibra optica, care este infasurata pe rola unui servomotor vinci. Sunt ghidate la distanta wireless pana la drona maritima si apoi prin fibra optica sub apa. Utilizate in misiuni kamikaze cu incarcatura exploziva ca o drona subacvatica torpila ghidata la distanta prin radiocomanda, sau pentru misiuni de recunoastere, supraveghere, control, inspectie, precum si in misiuni de cautare si salvare. Se poate utiliza si in domeniul mediului pentru cercetare marina.

Dronele subacvatice sunt montate pe o traversa in partile laterale ale dronei velier, rezultand o ambarcatiune trimaran si au sisteme de comanda la distanta independente de sistemul de comanda al dronei velier. In momentul detectarii dronelor navale inamice, dronele subacvatice se desprind de drona velier, intra in imersiune functionand ca niste torpile si sunt comandate la distanta pana ating si distrug tintele. Acestea au sisteme electrice de propulsie, sisteme de navigatie GNSS si transmitere video a imaginilor 4k in timp real, ceea ce permite tintirea si urmarirea dronelor inamice, pana la neutralizarea acestora prin declansarea de la distanta a incarcaturii explozive.

Drona subacvatica are dimensiunile 130 X 13 cm, viteza de 60 km/h, transporta incarcatura de 5 kg si poate fi comandata la adancimi mici prin radiocomanda, avand camera video si antena GNSS montate pe un catarg, sau pentru adancimi mari este comandata prin radio pana pe puntea dronei maritime sau a dronei velier si mai departe sub apa prin fibra optica. Acumulatorii dronei UUV se incarca printr-un controler conectat la panouri solare.

DRONA VELIER

Drona are dimensiunile 130 X 170 X 22 cm cu un derivor de 60 cm prevazut cu un bulb si are o greutate de 5 kg. Panzele sunt realizate din mylar si au sistem de control al velelor printr-un servomotor vinci. Este dotata cu sistem de navigatie GNSS si destinata operatiunilor de recunoastere, supraveghere si control 24/7, transmitand imaginile 4k in timp real prin streaming, prelucrand datele cu inteligenta artificiala AI, fiind foarte silentioasa si dotata cu microfoane si sonar activ si pasiv pentru detectarea, interceptarea si distrugerea dronelor navale si subacvatice inamice. Are aplicatii in misiuni militare si civile, de cautare si salvare marina si subacvatica, de securitate, inspectie si mediu.

MINIDRONA USV

Drone de 50-100 cm, cu greutatea de 1-3 kg, capabile sa transporte 1-5 kg exploziv, cu raza de actiune de 80 km si viteza de 60 km/h, pentru delta fluviilor, rauri sau lacuri, manevrata si pilotata de o singura persoana, astfel poate fi utilizata de fortele pentru operatiuni speciale, care au inceput sa fie instruiti sa asambleze si sa controleze drone navale. Sunt foarte ieftine si utile in misiunile de recunoastere si supraveghere, precum si in misiuni kamikaze pentru distrugerea ambarcatiunilor inamice de mici dimensiuni.

Minidronele USV sunt montate pe drona velier, pe o traversa intre corpul dronei velier si dronele subacvatice si au sisteme de comanda la distanta independente de drona velier si de dronele subacvatice. Acumulatorii minidronelor USV se incarca printr-un controler conectat la panouri solare. Au sisteme electrice de propulsie, sisteme de navigatie GNSS si transmitere video a imaginilor 4k in timp real, ceea ce permite executarea misiunilor de recunoastere, precum si identificarea si urmarirea dronelor inamice, pana la neutralizarea acestora prin declansarea de la distanta a incarcaturii explozive.

MODULAR PHOTOVOLTAIC MARITIME DRONE CARRIER FOR AERIAL DRONES, ANTI-DRONE MISSILES, AND UNDERWATER DRONES

Invention registered with OSIM under patent application no. A/00248 dated June 16, 2025, published in the Official Industrial Property Bulletin – Inventions Section No. 11 on November 28, 2025.

The invention relates to a modular photovoltaic maritime drone capable of carrying aerial drones, anti-drone missiles, and underwater drones. It is designed for 24/7 reconnaissance, surveillance, and control operations—day and night—using infrared and thermal imaging cameras. It transmits 4K images via real-time streaming and processes data using artificial intelligence (AI) to detect the movement of ships, aircraft, drones, vehicles, and people, alerting security personnel at the command center. It also has applications in maritime, aerial, and underwater search and rescue missions, as well as in military, security, inspection, transport, and environmental operations.

Reconnaissance, surveillance, and security of:

- border rivers, lakes, and waterways, river deltas, and hard-to-reach watercourses, as well as areas within the vicinity of seaports and ocean ports, to combat illegal border crossings and the trafficking of drugs and persons;
- ship perimeters—at the waterline, in the air, and underwater;
- ports;
- undersea cables;
- it can mark hazardous locations by functioning as a floating beacon, maintaining a fixed GPS position regardless of marine currents, wind, or waves, while emitting acoustic and visual signals.

Transport within the hulls or via deck-mounted containers (15 kg capacity):

- medicines, medical samples, blood for transfusions, etc.;
- mail, courier services, documents, ship-to-ship spare parts transfers, etc.;
- by connecting four drones using square carbon-fiber tubing crossbars, a radio-controlled, self-propelled floating platform is created, capable of transporting various types of equipment across rivers;
- using this same modular configuration, the system can be equipped with an electric water pump to serve as a firefighting drone for extinguishing fires in hazardous areas.

Military (small, silent, and fast; impossible to detect visually or via radar):

- target identification and real-time transmission of surface and aerial imagery—as well as GPS coordinates—to the Command Center; this enables precision strikes from long range (land, air, or sea) without endangering human personnel;
- escorting military and civilian vessels;
- identification, transport, and neutralization of naval mines;
- kamikaze drone capability with a 15–20 kg explosive payload; the aerial drone component can

launch prior to impact, transmitting imagery and target coordinates to other drones operating in a swarm, thereby optimizing subsequent strikes until the target is completely destroyed;

- the aerial drone can drop its explosive payload onto the target;
- equipped with two anti-drone missiles on its side hulls, it can independently strike and destroy a target—without external support—after identifying and marking it from both surface and aerial perspectives;
- can be equipped with two automatic weapons for naval combat.

Search and rescue operations (maritime, aerial, and underwater):

- locating grounded or sunken vessels and shipwreck survivors;
- locating persons in distress during floods;
- equipped with a microphone and loudspeaker for remote audio communication with survivors, and capable of transmitting real-time audio-video imagery, map position, and GPS coordinates of the distressed vessel and survivors to the Command Center;
- transmission of messages, as well as visual and acoustic signals, in hard-to-reach areas during cataclysms, war, or storms.

Inspection:

- port infrastructure, breakwaters, and bridges;
- detection and identification of underwater objects—such as sunken vessels, submarine cables, and debris that could obstruct waterways—using onboard sonar;
- external ship hulls.

Environment:

- equipped with sensors for measuring water quality or detecting oil, as well as devices for neutralizing oil and crude spills on the water surface;
- water sampling in the event of crude oil or hazardous substance spills;
- pesticide spraying in areas with dangerous insects;
- marine environment study and research;
- removal of plastic waste from the water surface and microplastic filtration.

Current aerial UAVs have an average flight time of 30 minutes and a range of 10 km, requiring sufficient energy for the round trip. Aerial drones cannot operate in severe weather conditions, such as rain, high winds, or cold temperatures. Underwater drones must be transported to the mission site by ship and are controlled via a tether from on board; this entails high transport and crew costs, as well as the time required to organize the deployment. Reconnaissance operations require deploying human personnel using land, air, or water vehicles, which involves high costs and risks to personnel safety. Satellite imagery is not always a viable solution, as it often lacks clear, detailed, real-time data and depends on satellite positioning over targets; furthermore, it involves high costs and, crucially, reliance on the

owners of strategic military satellite systems.

The technical problems solved by the invention are as follows:

- the aerial drone can be transported up to 80 km without the need for a round trip; it travels only to the maritime drone's deck, taking off from there solely when aerial target identification is required, and subsequently landing back on the maritime drone to await the next mission;
- by equipping the maritime drone with two anti-drone missiles or two automatic weapons, targets can be engaged and destroyed from a distance;
- the underwater drone is transported to the dive site and controlled via a fiber-optic cable connected to a receiver on the maritime drone; it is steered from a distance of 80 km using radio control while operating tens of meters underwater;
- it operates under all adverse conditions, being resistant to water, wind, cold, and waves;
- it features a modular trimaran design consisting of three hulls, ensuring high stability on the water and low hydrodynamic drag;
- the modular system offers the advantage of rapid assembly and disassembly—taking just a few minutes—with the entire unit secured by only 12 bolts with wing nuts;
- it is compact, with all components fitting into the trunk of a mid-sized car, and can be handled and piloted by a single person;
- the removable decks allow easy access to the interior of the hulls for installing mission-specific devices and for balancing the payload during transport;
- it has multiple applications and very low manufacturing costs;
- it is constructed from composite materials such as fiberglass and carbon fiber, as well as aluminum, offering high strength at a low weight of just 15 kg when fully equipped;
- powered by batteries and a photovoltaic panel, the maritime drone can operate continuously (24/7) on the water, while the aerial drone is launched only when aerial surveillance is required;
- the maritime drone’s lighting system—which includes floodlights—enables the aerial drone to take off and land at night;
- the solar charge controller features two USB ports, allowing the radio control transmitter and other mobile devices (such as phones or tablets) to be charged during mission preparation in areas without access to mains electricity;
- the maritime drone has an operating range of 80 km (limited only by the type of radio control system used) and a speed of 60 km/h;
- the maritime drone is equipped at the bow with a 4K (3840x2160) video camera featuring digital zoom, an adjustable angle, and a 3-axis gimbal with Electronic Image Stabilization (EIS); this allows for the real-time digital streaming of stable images at 60 fps—alongside the aerial feed from the aerial drone—to separate monitors, while also transmitting map positions and GPS coordinates; the aerial drone can transmit images even while on the maritime drone's deck, thereby expanding the total area under surveillance;
- any type of aerial drone can be used, provided it is fitted with Velcro on its landing gear to match the Velcro on the maritime drone's landing pad, ensuring a stable, stationary position;
- we have the capability to connect four marine drones using square carbon-fiber tubing

crossbars—bolted at the same attachment points used for the drone's three hulls—to create a 10-square-meter, self-propelled, radio-controlled floating platform; this allows for the transport of equipment across rivers, lakes, and waterways, and enables the mounting of an electric water pump, allowing the marine drone to function as a firefighting unit in hazardous areas;

- for rapid, short-range missions, the central hull—equipped with an additional battery—can operate independently to transport medical supplies, documents, or small spare parts; additionally, the side hulls (connected via crossbars) can operate independently using dual radio control and video transmission systems, effectively creating two maritime drones capable of rapidly executing missions in different directions;
- it can maintain a stationary position at specific GPS coordinates through independent motor operation; upon the landing of an aerial drone, it can also serve as a temporary beacon to mark a fixed location on the water;
- operational efficiency is optimized through the use of a "swarm" of interconnected maritime drones that transmit real-time data from multiple locations to the Command Center, creating a local computerized information network that processes data using artificial intelligence (AI).

This maritime drone is characterized by modularity, stability, and durability—owing to its trimaran design—as well as high maneuverability, long operational range, and 24/7 operation powered by photovoltaics. It has applications across numerous fields, featuring the innovative capability to transport aerial drones, anti-drone missiles, and underwater drones to cover surface, aerial, and underwater domains at very low production costs—a combination of qualities unmatched by any other drone produced to date.

Implementing this invention offers the following advantages:

- non-stop 24/7 operation of the maritime drone, powered by a photovoltaic panel, resulting in an extended operational range and significantly increasing the range of the aerial drone, which is deployed only when aerial surveillance is required;
- the ability to transport aerial and underwater drones, enabling the simultaneous transmission—to separate monitors—of real-time imagery from the surface, air, and underwater, as well as the precise GPS location of a target, whether situated on water, land, in the air, or underwater;
- equipped with anti-drone missiles, it is capable of destroying aerial targets at a distance;
- long-range radio control of the underwater drone, which can dive to great depths while remaining connected to the maritime drone via an ultra-light fiber-optic cable;
- high maneuverability and speed, driven by four independently operating motors;
- modularity: four drone units can be assembled into a single self-propelled floating drone platform, or the individual hulls can be used as independent maritime drones; the system is easily assembled and disassembled by a single person in just a few minutes and fits into a car trunk; - made of composite materials, it is durable and has low manufacturing costs;
- compact dimensions, making it invisible both visually and to radar;
- with a weight of 15 kg, it can carry an additional payload of 15–20 kg.

Depending on the mission, it is equipped with a thermal imaging and infrared video camera, sensors, active and passive sonar, a microphone and loudspeaker with remote audio transmission, transport containers, oil and crude oil detection sensors, water sampling devices, plastic collection devices, microplastic purification devices, anti-drone rockets, automatic weapons, an explosive payload, and a Starlink satellite transmission system for long-range operation.

The maritime drone consists of three hulls, a camera mount, a flexible photovoltaic panel, and a landing pad for an aerial drone—featuring a hatch-equipped housing controlled by a servomotor to protect the aerial drone—all secured by four crossbars using 12 bolts and 12 wing nuts; the assembly and disassembly of the entire unit take just a few minutes. The electrical system comprises a solar charge controller, two batteries connected in parallel, four electric motors, and three speed controllers. Steering is achieved via two rudders connected to servomechanisms, as well as by varying the thrust of the motors on the first and third hulls.

The 60 cm, 1 kg anti-drone rockets—featuring a 0.5 kg dispersing explosive payload—are mounted on the side hulls; firing angles and launch triggering are controlled by servomechanisms. They are designed to counter Iranian Shahed-136 drones (or their Russian Geran-2 variants), which fly at low altitudes and generate significant noise.

The trimaran maritime drone—available in 1.2 m x 1 m and 1.4 m x 1 m configurations with mounted underwater drones—is multifunctional. It possesses capabilities allowing it to destroy four enemy naval drones via an aerial drone with an explosive payload launched from its deck, two fiber-optic-controlled underwater drones with explosive payloads attached between the trimaran's three hulls, and finally, the maritime drone itself (also carrying an explosive payload)—all in kamikaze-style missions. It can also destroy two enemy Shahed-136 or Geran-2 aerial drones using anti-drone missiles.

A larger 5 m x 4 m variant offers even greater capabilities, able to carry a 500 kg explosive payload, 10 explosive aerial drones, 4 remote-controlled underwater torpedo drones, 6 anti-drone missiles, and 2 automatic weapons. It is fully demountable, requiring only a standard truck (without a trailer) for transport; the hulls can be used separately to form two drones sent in different directions, or the unit can serve as a radio-controlled floating platform for ferrying equipment or weaponry across rivers.

Furthermore, it is capable of disabling any type of enemy vessel by destroying its propulsion system, rudder, and communications; once the target is marked and its GPS coordinates are transmitted to the Command Center, the vessel can be completely destroyed via long-range missile strikes.

MODULAR SAILING DRONE CARRIER FOR UNDERWATER DRONES AND USV MINIDRONES

Invention registered with OSIM under patent application no. A/00076 dated February 16, 2026; to be published in the Official Industrial Property Bulletin – Inventions Section, No. 8, on August 28, 2026.

The invention relates to a modular sailing drone designed to carry underwater drones and USV minidrones. It is intended for 24/7 reconnaissance, surveillance, and control operations, transmitting real-time 4K video streams and processing data via artificial intelligence (AI). Highly silent, it is equipped with microphones as well as active and passive sonar systems to detect, intercept, and destroy enemy naval and underwater drones. The drone measures 130 x 100 cm and has an operating range of 80

km; its sails are made of Mylar and controlled by a winch servomotor system. It features two flexible photovoltaic panels that power the command, control, and data transmission systems, while also charging the batteries of the underwater drones and minidrones. It has applications in military missions, marine and underwater search and rescue, security, inspection, and environmental monitoring.

Reconnaissance, surveillance, and security applications include: border rivers, lakes, and waterways, as well as river deltas and areas surrounding seaports and oceans, to combat illegal border crossings and the trafficking of drugs and persons; monitoring ship perimeters (both at the waterline and underwater), port facilities, and submarine cables.

Military: target identification and real-time transmission of surface and underwater imagery—along with target GPS coordinates—to the Command Center, enabling precision strikes via underwater drones (acting as torpedoes) or explosive-laden USV mini-drones, as well as long-range missiles launched from land, air, or sea, all without endangering human personnel; neutralization of naval mines; and escorting of military and civilian vessels.

Marine and underwater search and rescue operations: identification of grounded or sunken vessels and shipwreck survivors; equipped with a microphone and loudspeaker for remote audio communication to contact survivors, and for transmitting real-time audio-video footage, map position, and GPS coordinates of the vessel in distress and the survivors to the command center.

Inspection: port infrastructure, breakwaters, and bridges; detection and identification of underwater objects—such as sunken vessels, submarine cables, and debris that could obstruct waterways—using onboard sonar; inspection of vessel hulls.

Environment: equipped with sensors for measuring water quality or detecting oil; water sampling in the event of crude oil or hazardous substance spills; study and research of the aquatic environment.

The underwater drones are mounted on a crossbeam extending from the sides of the sailing drone—creating a trimaran configuration—and feature remote control systems independent of the sailing drone's control system. Upon detecting enemy naval drones, the underwater drones detach from the sailing drone, submerge, and operate like torpedoes, being remotely controlled until they strike and destroy their targets. They are equipped with electric propulsion systems, GNSS navigation systems, and real-time 4K video transmission capabilities, enabling the targeting and tracking of enemy drones until neutralization via the remote detonation of an explosive charge. USV mini-drones are mounted on the same crossbeam, positioned between the sailing drone's hull and the underwater drones; they feature remote control systems independent of both the sailing drone and the underwater drones. They also feature electric propulsion systems, GNSS navigation, and real-time 4K video transmission, enabling reconnaissance missions as well as the identification and tracking of enemy drones—culminating in their neutralization via the remote detonation of an explosive charge. Upon completing the mission, the sailing drone returns to base, where it is loaded with two additional underwater drones and two USV mini-drones, ready to undertake a new mission.

Naval, underwater, and aerial drones have an operating range limited by fuel quantity or battery life. Currently, underwater drones must be transported to the mission site by ship and controlled via a tether from on board, entailing high transport and crew costs, as well as the time required to organize the deployment. Aerial drones cannot operate in severe weather—such as wind, rain, or cold—and can carry only a limited explosive payload.

The technical problems addressed by the invention are as follows:

- the sailing drone utilizes wind power for propulsion and is capable of continuous 24/7 operation with an extensive range; it also has the capacity to carry two underwater drones and two USV (Unmanned Surface Vehicle) mini-drones;
- it can operate under all adverse conditions, being resistant to water, cold, and waves;
- the sailing drone, underwater drones, and USV mini-drones are constructed from composite materials—such as fiberglass and carbon fiber—as well as aluminum and Mylar sails; they offer high strength-to-weight ratios and low production costs;
- the sailing drone, underwater drones, and USV mini-drones are equipped with 4K (3840x2160) video cameras featuring digital zoom, adjustable angles, and 3-axis gimbals with Electronic Image Stabilization (EIS); this enables the real-time digital streaming of stable images at 60 fps to various monitors, alongside map positioning and GPS coordinates; the sailing drone operates silently and is also equipped with microphones and sonar;
- The sailing drone features a hydrodynamic hull with a concave bow, designed to minimize drag, resulting in higher speed, superior sailing stability, and precise movement.

The sailing drone according to the invention is characterized by modularity, durability, and stability (operating as a trimaran), as well as maneuverability, long operational range, and 24/7 operation; it utilizes wind power for propulsion and solar energy for Wi-Fi communication systems, the sail control system, and the charging of batteries for underwater drones and USV mini-drones. The underwater drone can be controlled at shallow depths via radio—using a video camera and GNSS antenna mounted on a mast—or, for greater depths, controlled via radio up to the sailing drone's deck and subsequently underwater via fiber optics.
The sailing drone has dual military and civil applications, based on the innovative concept of transporting underwater drones and USV mini-drones 24/7 to cover both the surface and underwater environments at very low production costs—qualities not found in any drone produced worldwide to date.
In the absence of wind, when the sailing drone is sailing upwind, or to achieve higher speeds, the motors of the underwater drones can be used; these are powered by batteries connected to photovoltaic panels via a solar controller.

Implementing the invention yields the following advantages:

- the sailing drone transports the underwater drones and USV mini-drones to the mission area without consuming their battery energy, thereby considerably extending their operational range;

- the underwater drones and USV mini-drones utilize low-capacity, lightweight batteries—since energy is required only for short distances between the sailing drone and the target—leaving more space for an explosive payload; - the batteries on the underwater drones and USV mini-drones are continuously charged by photovoltaic panels;
- by being equipped with underwater drones and USV mini-drones carrying explosive payloads, the sailing drone is capable of destroying distant targets in kamikaze-style missions;
- compact dimensions (130 cm x 100 cm) and a fully demountable design allow for transport, handling, and operation by a single person;
- its modular and multifunctional nature allows for the mounting of various video cameras (infrared, thermal imaging), while the crossbar can accommodate automatic weapons or transport containers on a 3-axis gimbal;
- use in special forces missions—exemplified by the "Bold Machina" exercise held in the Netherlands in September 2025, where elite NATO troops began training to assemble and operate naval drones;
- detection and neutralization of naval mines, as well as the escorting of military and civilian vessels;
- capable of performing security and monitoring missions for the Border Police and Coast Guard to combat illegal border crossings and drug trafficking;
- inspection of vessel perimeters and undersea cables;
- capable of transporting spare parts, documents, medical samples, medication, and blood for transfusions;
- undetectable by radar due to its small size, silent operation, and high speed;
- equipped with sensors for water quality measurement and environmental research;
- dual-use capability, suitable for both military and civilian applications;
- deployment of the entire arsenal for destroying enemy drones directly at the mission site, enabling a rapid response without the need for military frigates or risk to human personnel.

UNDERWATER DRONE UUV

UUV underwater drones can be mounted between the three hulls of a trimaran maritime drone, connected to the central hull via a fiber-optic cable wound onto a motorized winch reel. They are guided wirelessly to the maritime drone and subsequently controlled underwater via fiber optics. They are used for kamikaze missions carrying an explosive payload—acting as a remotely radio-controlled torpedo—or for reconnaissance, surveillance, monitoring, inspection, and search-and-rescue operations. They can also be utilized in environmental applications for marine research.

The underwater drones are mounted on a crossbeam connecting the side hulls of the sailing drone, creating a trimaran configuration; they feature remote control systems independent of the sailing drone's own control system. Upon detecting enemy naval drones, the underwater drones detach from the sailing drone, submerge, and operate like torpedoes, being remotely controlled until they strike and destroy their targets. They are equipped with electric propulsion systems, GNSS navigation, and real-

time 4K video transmission, enabling the targeting and tracking of enemy drones until neutralization via the remote detonation of the explosive payload.
The underwater drone measures 130 x 13 cm, reaches speeds of 60 km/h, and carries a 5 kg payload. It can be radio-controlled at shallow depths—using a camera and GNSS antenna mounted on a mast—or, for greater depths, controlled via radio link to the maritime drone or sailing drone and subsequently via fiber-optic cable underwater. The UUV's batteries are charged via a controller connected to solar panels.

SAIL DRONE

The sail drone measures 130 x 170 x 22 cm, features a 60 cm keel with a bulb, and weighs 5 kg. Its sails are made of Mylar and controlled by a winch servo system. Equipped with a GNSS navigation system, it is designed for 24/7 reconnaissance, surveillance, and control operations; it streams 4K images in real-time and processes data using artificial intelligence (AI). It operates very quietly and is equipped with microphones as well as active and passive sonar to detect, intercept, and destroy enemy naval and underwater drones. It has applications in military and civil missions, including marine and underwater search and rescue, security, inspection, and environmental monitoring.

USV MINIDRONE

These are 50–100 cm drones weighing 1–3 kg, capable of carrying 1–5 kg of explosives, with an 80 km range and a speed of 60 km/h. Designed for use in river deltas, rivers, or lakes, they are maneuvered and piloted by a single person, making them suitable for special operations forces personnel trained to assemble and control naval drones. They are highly cost-effective and useful for reconnaissance and surveillance, as well as for kamikaze missions to destroy small enemy vessels.
The USV minidrones are mounted on the sail drone—on a crossbar situated between the sail drone's hull and the underwater drones—and feature remote control systems independent of both the sail drone and the underwater drones. The minidrones' batteries are charged via a controller connected to solar panels. They feature electric propulsion systems, GNSS navigation systems, and real-time 4K video transmission, enabling reconnaissance missions as well as the identification and tracking of enemy drones, culminating in their neutralization via the remote detonation of an explosive charge.