

Raport de autoevaluare¹

1. Date de identificare

- 1.1. Denumire²: **Sisteme de conducere automată a proceselor (SCAP)**
- 1.2. Document de înființare: : **Certificat de înființare acordat de CNCSIS nr. 35/CC-C 2001**
- 1.3. Pagina web (limba română, limba engleză): www.scap.ugal.ro
- 1.4. Adresa: **Universitatea „Dunărea de Jos” din Galați, Facultatea Automatică, Calculatoare, Inginerie Electrică și Electronică, Galați, Str. Științei nr.2 corp Y**
- 1.5 Telefon 0336130298, fax 0336130299, e-mail: daniela.cernega@ugal.ro

2. Scurtă prezentare

- 2.1. Domeniul fundamental/ramura de știință³: **Științe ingineresti/Ingineria Sistemelor**
- 2.2 Direcții de cercetare-dezvoltare/obiective de cercetare/priorități de cercetare
 - a. Conducerea proceselor neliniare (modelarea, estimarea stării și controlul proceselor de tratare biologică a apelor reziduale, conducerea robotilor);
 - b. Optimizări discrete (Conducerea și optimizarea proceselor cu evenimente discrete).
- 2.3 Obiectivele activității de cercetare științifică desfășurată în cadrul centrului de cercetare:
 - dezvoltarea unei resurse umane înalt calificată în domeniul Ingineriei Sistemelor;
 - dezvoltarea infrastructurii de cercetare în domeniul Ingineriei Sistemelor;
 - dezvoltarea de cercetări interdisciplinare (biotehnologii, robotică);
 - dezvoltarea de parteneriate cu instituții de cercetare naționale și internaționale;
 - organizarea de evenimente științifice;
 - îmbunătățirea activităților didactice prin introducerea rezultatelor cercetării validate de comunitatea academică națională și internațională.

3. Structura de conducere a centrului

- 3.1 Coordonator (Director/Responsabil) **Conf.dr.ing Daniela Cristina CERNEGA**
- 3.2 Consiliul de conducere/științific: **Prof.dr.ing. Sergiu CARAMAN, Prof.dr.ing. Marian BARBU**

4. Structura resursei umane

Numărul total de membri, din care: Numărul total de membri, din care: 16

- a. Număr membri titulari:16
- b. Număr membri asociați:0
- c. Conducători de doctorat⁴:3 (Prof.dr.ing. Sergiu CARAMAN – Ingineria sistemelor, Prof.dr.ing. Viorel MINZU - Ingineria sistemelor,

¹ Se întocmește și se predă anual.

² Inclusiv acronim.

³ In acord cu Hotărârea nr. 376/2016 privind aprobarea Nomenclatorului domeniilor și al specializărilor/programelor de studii universitare și a structurii instituțiilor de învățământ superior pentru anul universitar 2016-2017.

- d. Număr de tineri cercetatori doctoranzi 8
- e. Număr ingineri:0

5. Infrastructura de cercetare-dezvoltare, facilități de cercetare

5.1. Laboratoare/compartimente⁵

- Sisteme de control a proceselor biotehnologice APEPUR
- Sisteme de control a proceselor neliniare SISCONTROL

5.2. Echipamente, instalații și software de interes național pentru cercetare fundamentală, dezvoltare tehnologică și inovare⁶

- Lista echipamentelor laboratorului APEPUR: Fotobioreactor - Stand de laborator - Experimente privind modelarea și controlul proceselor de obținere a biomasei algale;

- Lista echipamentelor laboratorului SISCONTROL:

1. Linie flexibilă de asamblare Hera - Testarea algoritmilor de optimizare pentru sisteme discrete,
2. Celula flexibilă de asamblare/dezasamblare echipată cu manipulator industrial ABB IRM
3. Vehicul autonom electric cu 2 roți motoare - Testarea algoritmilor de conducere neliniară,
4. Structura de manipulator cu 7 grade de libertate - Testarea algoritmilor de conducere neliniară,
5. Scaun mobil electric pentru persoane cu dizabilități - Testarea algoritmilor de conducere avansată,
6. Sistem de evitare a obstacolelor (de tip laser) - Achiziția de informații din mediul ambiant,
7. Structura hardware și software pentru conducerea scaunului cu roțile - Implementarea în timp real a algoritmilor de optimizare și control a proceselor neliniare,
8. Sistem pneumatic de acționare FESTO - Testarea algoritmilor de identificare și control a sistemelor neliniare.

6. Contracte de cercetare derulate⁷

6.1. Contracte câștigate în competiții:

- internaționale

DIGIWATER, 621764- EPP-1-2020-1-NO-EPPKA2-KA - Titlul proiectului: *“Digitalisation of water industry by innovative graduate water education”* - Responsabil proiect: Prof.dr.habil.ing. Marian Barbu

- naționale

⁴ Nume, prenume, domeniul de doctorat.

⁵ Se vor nominaliza laboratoarele, responsabilul și principalele direcții de cercetare; în cazul laboratoarelor, se vor nominaliza compartimentele/colectivele de cercetare,

⁶ Se se vor enumera numai acele laboratoare și acele echipamente care au fost folosite în activitatea de cercetare din ultimii 2 ani); Se vor nominaliza 1-2 repere reprezentative la nivel de universitate, regional și național.

⁷ Se vor atașa liste pe categorii, care să cuprindă următoarele detalii: nr. contract, titlu, **domeniul** (care se înscrie în lista domeniilor de cercetare declarate ale centrului) de cercetare, director/responsabil UC, parteneri (dacă este cazul), valoarea totală, valoarea regiei și valoarea din regie care a fost solicitată pentru întreținerea centrului.

1. **PN-III-P1-1.2-PCCDI-2017-0290, contract 78PCCDI/01.03.2018** – Titlul proiectului: „*Conducerea inteligentă și distribuită a 3 sisteme autonome complexe integrate în tehnologii emergente pentru asistare personală medico-socială și deservire de linii de fabricație flexibilă de precizie (CIDSACTEH)*” – UDJG - coordonator; Responsabil proiect: Prof.dr.ing. Adrian Filipescu; Director Proiect 3 Conf.dr.ing Daniela CERNEGA, Director proiect 5 conf.dr.ing Răzvan Șolea Valoarea contractului: 1.744.875 lei UDJG;
 2. **PN-III-P1-1.1-TE-2019-2062. Contract nr. TE 64 / 2020** - Titlul proiectului: „*Modelarea și controlul mecanismelor de stres subletal la microalge în spiritul conceptului de biorafinării (ReSuLS).*” Subprogram: Resurse umane, Proiecte de cercetare pentru stimularea tinerelor echipe independente – Director proiect: Conf.dr.ing. George Ifrim Adrian;
 3. **PN-III-P2-2.1-PTE2019-0697. Contract nr. 51 PTE/2020** – Titlul proiectului: „*Optimizarea Tehnologiilor de Creștere a Biomasei Piscicole și Vegetale în Cadrul Sistemelor Multi-Trofice de Acvacultura Intensivă prin Utilizarea Tehnicilor Inteligente de Recunoaștere Vizuală și IoT (MULTIAQUAIOT)*”; Responsabil proiect: Conf.dr.ing. George Ifrim Adrian;
 4. **PN-III-P1-1.2-PCCDI-2017-0800, Contract 86PCCDI/2018** – Titlul proiectului: „*Modelarea empirică și dezvoltarea experimentală a instrumentelor asociate tehnologiilor emergente din domeniul rețelelor sociale online (FUTUREWeb)*” - Responsabil proiect: Prof.dr. Adrian Micu;
 5. **PN-III-P1-1.2-PCCDI-2017-0734 contract 72PCCDI/01.03.20182018** - Titlul proiectului: „*Roboții și Societatea: Sisteme Cognitive pentru Roboți Personali și Vehicule Autonome (ROBIN)*” - Responsabil proiect: Prof.dr.ing. Adrian Filipescu.
- 6.2. Contracte cu agenți economici
- din străinătate -
 - din țară-

7. Rezultatele activității de cercetare, dezvoltare și inovare (CDI)

7.1. Rezultate ale activității CDI (cercetare fundamentală și aplicativă)⁸

		Nr.
7.1.1	Lucrări publicate în reviste cotate ISI.	4
7.1.2	Factor de impact cumulativ al lucrărilor cotate ISI.	69
7.1.3	Citări în reviste de specialitate cotate ISI.	108
7.1.4	Lucrări științifice/tehnice în reviste indexate în baze de date internaționale	0
7.1.5	Comunicări științifice prezentate la conferințe internaționale	8
7.1.6	Comunicări științifice prezentate la conferințe naționale	0
7.1.7	Brevete de invenție (solicitate / acordate)	0
7.1.8	Citări în sistemul ISI ale cercetărilor brevetate.	118
7.1.9	Produse/servicii/tehnologii rezultate din activități de cercetare, bazate pe brevete, omologări sau inovații proprii.	0
7.1.10	Studii prospective și tehnologice, normative, proceduri, metodologii și planuri tehnice, noi sau perfecționate, comandate sau utilizate de beneficiar.	0

7.2. Teze de doctorat finalizate și în derulare^{9,8}

- Georgian SIMION conducător Prof. dr. ing Adrian FILIPESCU
- Dan IONESCU conducător Prof. dr. ing Adrian FILIPESCU

⁸ Se vor anexa lista acestor contribuții.

⁹ Se va anexa lista tezelor de doctorat în derulare, cu specificarea titlului, domeniului de doctorat, numelui doctoranzilor, numelui conducătorului de doctorat.

- Larisa CONDRACHI conducător Prof. dr. ing Marian BARBU
- Bogdan ROȘU Prof. dr. ing Sergiu CARAMAN
- Liliana-Maria GHINEA Prof. dr. ing Marian BARBU
- Marian VULPE Prof. dr. ing Marian BARBU
- Iulian VASILIEV Prof. dr. ing Sergiu CARAMAN
- Valeria CERNOUSOVA. Dr. ing Marian BARBU

7.3. Oportunități de valorificare a rezultatelor CDI.

7.4. Rezultate ale activității CDI valorificate și efectele obținute.

Rezultatele activității de CDI constau în articole publicate , contracte de cercetare câștigate prin competiție și citări ale articolelor publicate de membrii centrului.

9. Măsuri privind creșterea capacității activității CDI.

- atragere de resursa umana în cadrul centrului: masteranzi, doctoranzi;-
- elaborarea de propuneri de granturi de cercetare;
- stabilirea de colaborări interdisciplinare

10. Măsuri pentru creșterea prestigiului și a vizibilității Centrului de cercetare¹⁰

10.1. Dezvoltarea de parteneriate:

- dezvoltarea de parteneriate la nivel național și internațional (cu personalități/ instituții / asociații profesionale) în vederea participării la programele naționale și europene specifice;
- înscrierea Centrului de cercetare în baze de date internaționale care promovează parteneriatele;
- înscrierea Centrului de cercetare în rețele de cercetare/asociații profesionale de prestigiu pe plan național/internațional;
- personalități științifice care au vizitat Centrul de cercetare;
- asigurarea de stagii de cercetare pentru specialiști din țară și străinătate;
- cursuri și seminarii susținute de personalitățile științifice invitate;
- membrii în colectivele de redacție ale revistelor recunoscute ISI (sau incluse în baze internaționale de date) și în colective editoriale internaționale și/sau naționale;

10.2. Prezentarea rezultatelor la târgurile și expozițiile naționale și internaționale;

- târguri și expoziții internaționale;
- târguri și expoziții naționale.

10.3. Premii obținute prin proces de selecție/distincții etc.

10.4 Prezentarea activității de mediatizare:

- extrase din presă (interviuri);
- participare la dezbateri radiodifuzate / televizate.

Data:

8.03.2022

Coordonator unitate de cercetare
Conf.dr.ing Daniela Cristina CERNEGA



¹⁰ Se va descrie detaliat fiecare acțiune realizată.

7.1.1 Lista lucrărilor publicate în reviste cotate ISI

1. **Filipescu, A.; Ionescu, D.; Filipescu, A.; Mincă, E.; Simion, G.** – *Multifunctional Technology of Flexible Manufacturing on a Mechatronics Line with IRM and CAS, Ready for Industry 4.0.* – MDPI, Processes 2021, Volume9, 864. <https://doi.org/10.3390/pr9050864>, 2020, ranked Q2 (Engineering&Chemical), **Impact factor: 2,847.**
2. **Condrachi, Larisa, Vilanova, Ramon, Meneses, Montse, Barbu, Marian** – *Anaerobic Digestion Process Control Using a Data-Driven Internal Model Control Method* – ENERGIES, Volume 14, Issue 20, Article Number 6746, DOI 10.3390/en14206746, **Impact factor: 3,004;**
3. **Mînză V, Ifrim G, Aramă I.** – *Control of Microalgae Growth in Artificially Lighted Photobioreactors Using Metaheuristic-Based Predictions* – Sensors. 2021; 21(23): 8065. DOI10.3390/s21238065; **Impact factor: 3.576;**
4. **Oprea SV, Bâra A, Ifrim GA.** – *Optimizing the Electricity Consumption with a High Degree of Flexibility Using a Dynamic Tariff and Stackelberg Game* – Journal of Optimization Theory and Applications. 2021; 190(1):151-182; **Impact factor: 2,249**

7.1.5

1. **Ionescu, D., Cernega, D., Solea, R., Filipescu, A., Simion, G., Filipescu, A., Jr.,** - *CAS and IRM Integrated into a Multifunctional Flexible Manufacturing Technology on an A/D/RML* - Proceedings of the 25th International Conference on System Theory, Control and Computing, Iasi, Romania, October 20-23, 2021, 978-1-6654-1496-8/21/\$31.00 ©2021 IEEE, pp: 541-546.;
2. **George Ifrim, Marian Barbu, Georgiana Horincar, Mariana Titica** - *Data-Driven Multivariable Control of a Microalgae Growth Process* - 2021 25th International Conference on System Theory, Control and Computing (ICSTCC);
3. **Larisa Condrachi, Ramon Vilanova, Marian Barbu** - *Data-Driven Internal Model Control of an Anaerobic Digestion Process* - 2021 25th International Conference on System Theory, Control and Computing (ICSTCC);
4. **Iulian Vasiliev, Laurențiu Luca, Marian Barbu, Alina Pricopie, Sergiu Caraman** - *Mathematical Model of a Collecting and Wastewater Treatment Integrated System* - 2021 25th International Conference on System Theory, Control and Computing (ICSTCC);
5. **Irina Luca, Larisa Condrachi, Laurențiu Luca, Ramon Vilanova, Marian Barbu** - *Testing Platform for Real-Time Controllers Based on Hardware In the Loop Simulation* - 2021 26th IEEE International Conference on Emerging Technologies and Factory Automation (ETFa);
6. **Liliana Maria Ghinea, Ion Necoară, Marian Barbu** - *Random coordinate descent methods for non-separable composite optimization* - 2021 European Control Conference (ECC);
7. **Mînză V, Ifrim GA.** - *Optimal Control of Microalgae Growth in Artificially Lighted Photobioreactors: Case study: closed-loop solution for a bilocal optimization problem* - 7th International Symposium on Electrical and Electronics Engineering, ISEE 2021, Oct. 28 – 30, Galati, Romania, IEEEExplore Digital Library, 2021: 1-7;
8. **Horincar G, Mogodan M, Simionov I, Ifrim GA.** - *Batch cultivation of *Desmodesmus pseudocommunis* in a flat-plate photobioreactor* - The 10th International Symposium Euro-Aliment 2021, Oct. 7 – 8, Galati, Romania

1. Optimal-Setpoint-Based Control Strategy of a Wastewater Treatment Process –

Barbu M. et al.

Citată în

-Removal of Dissolved Oxygen from Water by Nitrogen Stripping Coupled with Vacuum Degassing in a Rotor-Stator Reactor, Zhao, ZM; Liu, ZB; (...); Shao, L, Aug 2021 | PROCESSES 9 (8);

2. Educational Data Mining for Tutoring Support in Higher Education: A Web-Based Tool Case Study in Engineering Degrees - Barbu M. et al.

Citată în

A. How A. Does Learning Analytics Contribute to Prevent Students' Dropout in Higher Education: A Systematic Literature Review, de Oliveira, CF; Sobral, SR; (...); Moreira, F, Dec 2021 | BIG DATA AND COGNITIVE COMPUTING 5 (4)

B. Digital Communication Tools and Knowledge Creation Processes for Enriched Intellectual Outcome-Experience of Short-Term E-Learning Courses during Pandemic, Pokrovskaja, NN; Leontyeva, VL; (...); D'Ascenzo, F, Feb 2021 | FUTURE INTERNET 13 (2);

3. Dissolved Oxygen Control in Biological Wastewater Treatments with Non-Ideal Sensors and Actuators - Barbu M. et al.

Citată în

A. Transfer Learning in Wastewater Treatment Plant Control Design: From Conventional to Long Short-Term Memory-Based Controllers, Pisa, I; Morell, A; (...); Vicario, JL, Sep 2021 | SENSORS 21 (18)

B. Integrated data-driven strategy to optimize the processes configuration for full-scale wastewater treatment plant predesign, Xu, RZ; Cao, JS; (...); Luo, JY, Sep 1 2021 | SCIENCE OF THE TOTAL ENVIRONMENT 785

C. Industrial Control under Non-Ideal Measurements: Data-Based Signal Processing as an Alternative to Controller Retuning, Pisa, I; Morell, A; (...); Vicario, JL, Feb 2021 | SENSORS 21 (4);

4. Multivariable control strategy for the photosynthetic cultures of microalgae - Barbu M. et al.

Citată în

Control of Microalgae Growth in Artificially Lighted Photobioreactors Using Metaheuristic-Based Predictions, Minzu, V; Ifrim, G and Arama, I, Dec 2021 | SENSORS 21 (23);

5. Dissolved oxygen control in wastewater treatment plants considering sensor noise and actuator delays - Barbu M. et al.

Citată în

Supervisory control configurations design for nitrogen and phosphorus removal in wastewater treatment plants, Sheik, AG; Seepana, MM and Ambati, SR, Aug 2021 | Feb 2021 (Early Access) | WATER ENVIRONMENT RESEARCH 93 (8), pp.1289-1302;

6. Control Strategies of Phosphorus Removal in Wastewater Treatment Plants - Barbu M. et al.

Citată în

A. Design of Feedback Control Strategies in a Plant-Wide Wastewater Treatment Plant for Simultaneous Evaluation of Economics, Energy Usage, and Removal of Nutrients, Sheik, AG; Tejaswini, E; (...); Vilanova, R, Oct 2021 | ENERGIES 14 (19)

B. Second-Generation Phosphorus: Recovery from Wastes towards the Sustainability of Production Chains, Hollas, CE; Bolsan, AC; (...); Kunz, A, Jun 2021 | SUSTAINABILITY 13 (11)

C. Supervisory control configurations design for nitrogen and phosphorus removal in wastewater treatment plants, Sheik, AG; Seepana, MM and Ambati, SR, Aug 2021 | Feb 2021 (Early Access) | WATER ENVIRONMENT RESEARCH 93 (8) , pp.1289-1302;

7. Data-driven tool for monitoring of students performance - Barbu M. et al.

Citată în

The Best Ensemble Learner of Bagged Tree Algorithm for Student Performance Prediction, Zakaria, AZ; Selamat, A; (...); Krejcar, O, 19th International Conference on New Trends in Intelligent Software Methodologies, Tools and Techniques (SoMeT), 2020 | KNOWLEDGE INNOVATION THROUGH INTELLIGENT SOFTWARE METHODOLOGIES, TOOLS AND TECHNIQUES (SOMET_20) 327, pp.55-64;

8. Control Strategies of a Wastewater Treatment Plant - Barbu M. et al.

Citată în

Enhancement of biological nutrient removal process with advanced process control tools in full-scale wastewater treatment plant, Palatsi, J; Ripoll, F; (...); Romero-Guiza, MS, Jul 15 2021 | WATER RESEARCH 200;

9. Fuzzy logic for plant-wide control of biological wastewater treatment process including greenhouse gas emissions - Barbu M. et al.

Citată în

A. *Minimizing greenhouse gas emissions of an industrial wastewater treatment plant in terms of water-energy nexus*, Yapicioglu, P and Demir, O, Dec 2021 | *APPLIED WATER SCIENCE* 11 (12)

B. *Reinforcement-Learning-Based Tracking Control of Waste Water Treatment Process Under Realistic System Conditions and Control Performance Requirements*, Yang, QM; Cao, WW; (...); Si, J, Nov 2021 (Early Access) | *IEEE TRANSACTIONS ON SYSTEMS MAN CYBERNETICS-SYSTEMS*

C. *A supervisory fuzzy logic control scheme to improve effluent quality of a wastewater treatment plant*, Kumar, SS and Latha, K, Nov 15 2021 | Jun 2021 (Early Access) | *WATER SCIENCE AND TECHNOLOGY* 84 (10-11), pp.3415-3424

D. *Interoperating data-driven and model-driven techniques for the automated development of intelligent environmental decision support systems*, Pascual-Panach, J; Cuguero-Escofet, MA and Sanchez-Marre, M, Jun 2021 | *ENVIRONMENTAL MODELLING & SOFTWARE* 140

E. *Dairy wastewater processing and automatic control for waste recovery at the municipal wastewater treatment plant based on modelling investigations*, Simon-Varhelyi, M; Tomoiaga, C; (...); Cristea, VM, Jun 1 2021 | *JOURNAL OF ENVIRONMENTAL MANAGEMENT* 287

F. *Robust optimal control for anaerobic-anoxic-oxic reactors*, Han, HG; Zhang, JC; (...); Qiao, JF, Jul 2021 | May 2021 (Early Access) | *SCIENCE CHINA-TECHNOLOGICAL SCIENCES* 64 (7), pp.1485-1499

G. *Minimization of greenhouse gas emissions from extended aeration activated sludge process*, Yapicioglu, P, Jan 2021 | *WATER PRACTICE AND TECHNOLOGY* 16 (1), pp.96-107;

10. Applying Control Actions for Water Line and Sludge Line To Increase Wastewater Treatment Plant Performance - Barbu M. et al.

Citată în

A. *Design of Feedback Control Strategies in a Plant-Wide Wastewater Treatment Plant for Simultaneous Evaluation of Economics, Energy Usage, and Removal of Nutrients*, Sheik, AG; Tejaswini, E; (...); Vilanova, R, Oct 2021 | *ENERGIES* 14 (19)

B. *Demand response through reject water scheduling in water resource recovery facilities: A demonstration with BSM2*, Liu, QP; Dereli, RK; (...); Casey, E, Jan 1 2021 | *WATER RESEARCH* 188;

11. Event-based control for dissolved oxygen and nitrogen in wastewater treatment plants - Barbu M. et al.

Citată în

A *Software Emulator for the Modelling and Control of an Activated Sludge Process in a Wastewater Treatment Plant*, Selisteanu, D; Popescu, IM; (...); Mehedinteanu, S, Nov 2021 | *PROCESSES* 9 (11);

12. Simultaneous control of pH and dissolved oxygen in closed photobioreactor - Barbu M. et al.

Citată în

Investigation of the photosynthetic response of Chlorella vulgaris to light changes in a torus-shape photobioreactor, Bonnanfant, M; Marec, H; (...); Pruvost, J, Dec 2021 | Nov 2021 (Early Access) | *APPLIED MICROBIOLOGY AND BIOTECHNOLOGY* 105 (23), pp.8689-8701;

13. Control strategies for nitrous oxide emissions reduction on wastewater treatment plants operation - Barbu M. et al.

Citată în

Influence of critical factors on nitrogen removal contribution by anammox and denitrification in an anammox-inoculated wastewater treatment system, Wang, LM; Hong, YG; (...); Lin, JG, Apr 2021 | JOURNAL OF WATER PROCESS ENGINEERING 40;

14. On the evaluation of the global impact of control strategies applied to wastewater treatment plants - Barbu M. et al.

Citată în

A. Minimizing greenhouse gas emissions of an industrial wastewater treatment plant in terms of water-energy nexus, Yapicioglu, P and Demir, O, Dec 2021 | APPLIED WATER SCIENCE 11 (12)

B. Bionor sewage sludge technology - Biomass to fertiliser and a soil addition
Kamizela, T; Lyng, KA; (...); Grobelak, A, Oct 15 2021 | JOURNAL OF CLEANER PRODUCTION 319

C. A supervisory fuzzy logic control scheme to improve effluent quality of a wastewater treatment plant

Kumar, SS and Latha, K, Nov 15 2021 | Jun 2021 (Early Access) | WATER SCIENCE AND TECHNOLOGY 84 (10-11), pp.3415-3424

D. A hybrid machine learningbased multi-objective supervisory control strategy of a full-scale wastewater treatment for cost-effective and sustainable operation under varying influent conditions

Heo, S; Nam, K; (...); Yoo, C, Apr 1 2021 | JOURNAL OF CLEANER PRODUCTION 291,

E. Integrated plant-wide modelling for evaluation of the energy balance and greenhouse gas footprint in large wastewater treatment plants, Zaborowska, E; Czerwionka, K and Makinia, J, Jan 15 2021 | APPLIED ENERGY 282

F. Minimizing greenhouse gas emissions from leachate treatment by using zeolite column, Gulsen, H and Yapicioglu, P, Jan 2 2021 | Jan 2021 (Early Access) | CARBON MANAGEMENT 12 (1), pp.51-68

G. Minimization of greenhouse gas emissions from extended aeration activated sludge process

Yapicioglu, P, Jan 2021 | WATER PRACTICE AND TECHNOLOGY 16 (1), pp.96-107

H. Greenhouse Gas Emission Mitigation of Large-Scale Wastewater Treatment Plants (WWTPs): Optimization of Sludge Treatment and Disposal, Zhao, G; Liu, W; (...); Li, GM

2021 | POLISH JOURNAL OF ENVIRONMENTAL STUDIES 30 (1), pp.955-964;

15. An Adaptive Control Structure for an Anaerobic Digestion Process with Unknown Inputs - Barbu M. et al.

Citată în

Control of an anaerobic bioreactor using a fuzzy supervisory controller, Ghanavati, MA; Vafa, E and Shahrokhi, M, Jul 2021 | JOURNAL OF PROCESS CONTROL 103, pp.87-99;

16. Multivariable feedback linearizing control of Chlamydomonas reinhardtii photoautotrophic growth process in a torus photobioreactor - Barbu M. et al.

Citată în

A. Control of Microalgae Growth in Artificially Lighted Photobioreactors Using Metaheuristic-Based Predictions, Minzu, V; Ifrim, G and Arama, I, Dec 2021 | SENSORS 21 (23)

B. Integrated biomolecular and bioprocess engineering strategies for enhancing the lipid yield from microalgae, Behera, B; Unpaprom, Y; (...); Paramasivan, B, Sep 2021 | RENEWABLE & SUSTAINABLE ENERGY REVIEWS 148

C. A review on photobioreactor design and modelling for microalgae production, Legrand, J; Artu, A and Pruvost, J, Jul 1 2021 | Apr 2021 (Early Access) | REACTION CHEMISTRY & ENGINEERING 6 (7), pp.1134-1151

D. Modelling and control of microalgae production in industrial photobioreactors, Guzman, JL; Acien, FG and Berenguel, M, Jan-mar 2021 | REVISTA IBEROAMERICANA DE AUTOMATICA E INFORMATICA INDUSTRIAL 18 (1), pp.1-18;

17. Filipescu, A.; Minca, E.; Filipescu, A.; Coanda, H.G. **Manufacturing technology on a mechatronics line assisted by autonomous robotic systems, robotic manipulators and visual servoing systems.** *Actuators* **2020**, 9, 127.

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