ADVANCED PROCESS CONTROL METHODS

Contact details

<table>
<thead>
<tr>
<th>Name</th>
<th>Advanced Process Control Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronym</td>
<td>MACP</td>
</tr>
<tr>
<td>Logo</td>
<td><img src="image" alt="Advanced Process Control Methods Logo" /></td>
</tr>
</tbody>
</table>


Address: 2 Observatorului Str., 400489, Cluj-Napoca, Romania

Faculty Department: Faculty of Automation and Computer Science, Automation Department

Telephone: +40 264 401821

Fax: +40 264 401220

Director: Prof. Eva H. Dulf

e-mail: Eva.Dulf@aut.utcluj.ro

Areas of expertise

- **Complex process modeling and simulation**
  - Detailed models and simulations of various industrial applications
- **Tuning, design and testing of various control solutions including advanced control algorithmssuch as predictive, fractional or robust control**
  - Conceptual design of various control loops from classical PID to advanced control algorithms
  - Control strategy implementation
  - Control optimization
- **Particular advanced monitoring, supervising and control methods for non-conventional processes and technologies**
  - Conceiving of new, efficient technologies in isotopic and molecular processes
  - Structural modeling, monitoring and control of isotopic and molecular processes
  - Improved efficiency based on optimization; process maintenance

Team


Representative projects

- SCMISC, "Structural Complex Modeling of Isotope Separation Columns for Advanced Control Strategies", PNII
**Significant results**

The most representative publications of the past 5 years:


**Significant solutions:**
Monitoring, modeling and control of isotope separation processes and separation cascade
Fractional order control strategies for time delay and MIMO processes

**Products and technologies:**
1. Mathematical models of complex chemical processes
2. Special transducer for cryogenic liquid nitrogen level in the condenser of an isotope separation column
3. Special transducer for carbon monoxide level in the boiler of an isotope separation column
4. Monitoring system for ^13C cryogenic isotope separation column
5. Advanced control strategies for ^13C cryogenic isotope separation column and a separation cascade
6. Frequency analyzer based on a direct, simplified algorithm

**Patents:**
R.A. Munteanu, E.H. Dulf, C. Festila, R. Munteanu, G. Todoran, “Analogue electronic transducer for measuring power in direct current circuits, has circuit for generating filling factor which is an astable flip-flop circuit based on amplifier”, patent no. RO128666-A2, July 30, 2013

**The offer addressed to the economic environment**

<table>
<thead>
<tr>
<th>Research &amp; development</th>
<th>Identifying fundamental principles and methodologies that enable systems to exhibit intelligent, goal-oriented behavior, and developing innovative instruments to monitor, manipulate, and control systems on Tuning, design and testing of various control solutions using advanced control algorithms, such as predictive, fractional or robust control on Control of non-conventional processes on Generation (and possible solution) of new theoretical formulations, appeared from the practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consulting</td>
<td>Consulting in simulation, design, implementation and maintenance of control systems for multiple industrial field; Consulting in structural and nonlinear modelling of complex processes on Consulting in process management using different simulation environment</td>
</tr>
<tr>
<td>Training</td>
<td>Complex process modeling and simulation on Tuning, design and testing of various control solutions including advanced control algorithms such as predictive, fractional or robust control</td>
</tr>
</tbody>
</table>