

# CURRICULUM VITAE

Octavian Dan Căpățînă



1. **Born:** 1948, April 17th in Sibiu,
2. **School Primary:** Sibiu, **High School:** Hunedoara, 1962-1966
3. **Graduate:** Technical University of Bucharest, Electronics and Telecommunication. Applied Electronics Department. -1971
4. **Specialized:** design with  $\mu$ -processor and  $\mu$ -controllers (plotter, control units for industrial robots, etc), small photovoltaic cells
5. **Attitude:** non-communist, non-collaborator of the political police
6. PhD in E.E. - 2018
7. **Positions held:**



- Unirea – Napomar Cluj-Napoca, 1971-1972, engineer
- Institute of Research and Design of Machine Tools and Aggregates (ICPMUA), branch Cluj-Napoca 1972-1974, engineer
- Institute of Computer Technic-ITC, 1974-1990, researcher,
- Romanian Parliament, deputy, 1990-1992
- Institute of Computer Technic-ITC, 1992-1995, ITC branch manager, 1995-2000
- Astral-Telecom, branch Cluj, 2000 - 2006, executive manager,
- IPA SA (institute for automation), researcher, 2006 – 2012
- Negoiu Impex srl, manager, researcher, 2012-2020

## 8. Technical and Scientific Activity:

### Patents:

- *Generator polifazic si dispozitiv de com. pentru motoare pas cu pas* (Polyphasic generator for step motors), nr.70410/1979
- *Generator de 2 frecv. într-un raport dat* (Two freq. in a given ratio generator), nr 77738/1981
- along with Ioan Blebea from UTCN, *Dispozitiv electronic de comanda a motoarelor pas cu pas* (Electronic module for step motor command), nr 98301/1989

### Books:



\**Proiectarea cu micro-procesoare* (Designing with micro-processor), Ed. Dacia, 1983

\*\**Proiectarea cu micro-calculatoare integrate* (Designing with micro-computer one chip), Dacia, 1993. Here was presented “avant le lettre” a “Hardware in the Loop”: a Z8 microsystem under development that operates on a program developed in another microcomputer.

\*\*\**Integrarea pe scară largă a fotovoltaicelor rezidențiale în rețeaua publică*, ISBN: 978-973-650-318-4, 2019, Ed.Albastră, Cluj-Napoca,

\*\*\*\**The Large Grid Integration of Small Residential Photovoltaic Cells*, ISBN(13): 978-1-5275-4975-3, Cambridge Scholar Publishing ([www.cambridgescholars.com/product/978-1-5275-4975-3](http://www.cambridgescholars.com/product/978-1-5275-4975-3)).

#### **Articles in referred journals**

- *Bloc de afișare pe tub catodic* (Display module on CRT) –E.E.A. anul 23, nr. 4 dec.1979
- *Trasoare digitale* (Plotters) – A.M.C. nr 37/1983
- Tehnici de reducere a zgomotului în aparatura digitală, E.E.A. anul 27, nr.2, iun.1983
- Multiprocessor Hierarchical System for Industrial Robot Command – Conf. Internațională de Roboți Industriali – oct. 1987, București
- *Arhitectura unităților de comanda a roboților industriali UCR* (Structure of Command module of industrial robots – UCR) -E.E.A. anul 32, nr.3, aug 1988
- *Wind potential determination in a known area* , IEEE, AQTR, 22-25 may 2008, Cluj-Napoca DOI: 10.1109/AQTR.2008.4588931, (<http://ieeexplore.ieee.org/document/4588931/>)
- *One Holistic Vision of the Future Energy Systems*, IJEE, Apr. 2013, Vol.3 Iss. 2,
- *Hydro-eolian energetical ensemble*, IFAC, ICPS'07 iul 2007, Cluj-Napoca
- *Aspects of an Expert System on line Eolian Sites Design*, IFAC, ICPS'07 iul 2007, Cluj-Napoca
- *Large wind integration in an electrical national system* , DEWEK, nov. 2008, Bremen,
- *About wind in Romania* , SEE conference, 29-30 Jan.. 2009, Istanbul,
- *Photovoltaic Farms - today challenge*, Revista de automatica, vol XXII, 2009, ISSN1454-9077
- *The funnel effect and its practical benefits in wind applications*, IEEE AQTR, 28-30 may 2010, Cluj-Napoca, DOI: 10.1109/AQTR.2010.5520784, (<http://ieeexplore.ieee.org/document/5520784/>)
- *Online knowledge-based wind assessment tool*, IEEE AQTR, 28-30 May 2012, Cluj-Napoca, DOI: 10.1109/AQTR.2012.6237731, (<http://ieeexplore.ieee.org/document/6237731/>)
- *A new approach of the energy system*, Energetica, vol 59, ISSN 1453-2360, nr11/2011 Bucuresti
- *Aplicația de simulare energiei regenerabile–Kogaion*, Energetica, nr.08/2012, ISSN 1453-2360
- Comparații în S.E.N. între eolian și fotovoltaic*, Energetica, București, nr 11-12/2018, ISSN 1453-2360
- Steps towards to the future in the power systems*, (Octavian Căpățînă și Silviu Darie, PhD) Conference (International Conference on New Trends in Engineering & Technology), 2018, India
- About large integration of small residential photovoltaic energy cells into SEN*, (Octavian Căpățînă și Silviu Darie, PhD) CIE Conference, Oradea 2018, *Journal of Sustainable Energy*, vol9., iunie 2018
- The future in the power systems shines with small residential smart photovoltaic on/off cells*, (Octavian Căpățînă și Silviu Darie, PhD), *Journal of Advanced Research in Alternative Energy, Enviroment and Ecology*, vol5, nr 3, 2018
- Small, residential, roof-mounted photovoltaic cells should be a consistent part of the Future Power Systems*, (O. Căpățînă și S, Darie, PhD),2018, *Smart Grid and Renewable Energy (Scientifique research)*
- An Advanced Approach: One Holistic Vision of the Future Energy Syst.*, 2021, BP international, cap.11, ISBN: 978-93-5547-063-8

#### **Other some papers**

- *Hardware Structure of a Robot Command Unit*, 31st Conference Jurema Zagreb 1987
- *Multiprocessor Hierarchical System for Industrial Robots*, SAI - 7 Bucharest. mai 1987
- *The Motion Control Module as a Part of a 2 Levels*, Structure of a Robot Command, Sofia 1987
- *Future implementation of adaptive and proactive regulators*, Revista romana de automatica, vol XXII, nr. 3 ISSN 1454-9077
- *Hybrid hidro-wind energy structure*, Revista de automatizare, nr.3, 2008, vol.21, ISSN 1454-9077
- *Intelligent sensor network for wind potential assessment*, Revista română de automatizare, nr.3, 2008, vol.21, ISSN 1454-9077
- *A new concept – the proactive regulator*, Revista de automatizare, nr.3, 2008, vol.21, ISSN 1454-9077

#### **RoEnergy - renewable conferences**

Stocarea energiei in sisteme regenerabile, București, iunie 2014

Cu module fotovoltaice de 1Kwcc instalat se poate sustine o gospodarie?! Iunie 2015

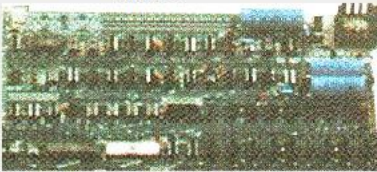
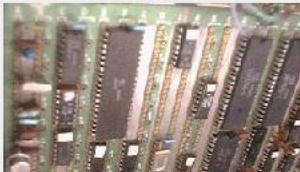

Stocarea energiei in sisteme regenerabile izolate, RoEnergy, București, noiembrie, 2016

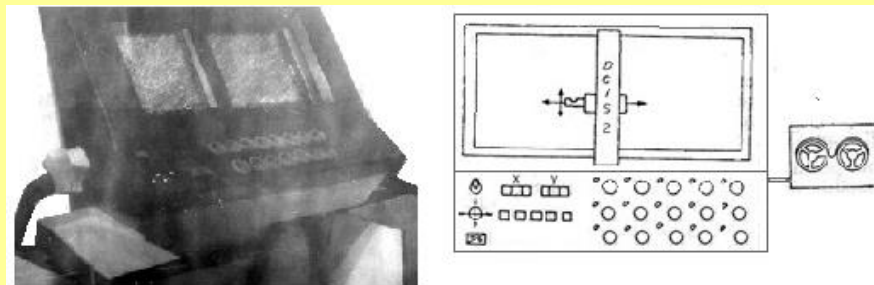
Energia din fotovoltaice mai ieftină decât din rețeaua publică, RoEnergy, iunie 2017

## 9. SOME TECHNICAL ACHIEVEMENTS:

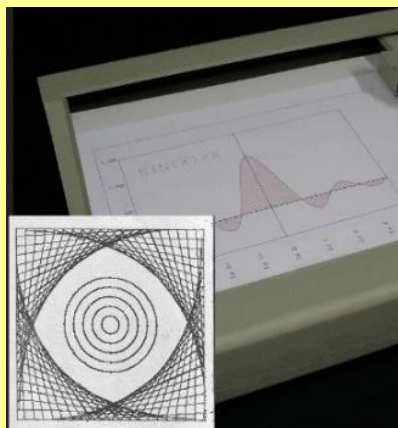
**9.1. PROM Inscriptor**, 1975 as “state machine”, first device out of “cabled logic”, designed for programming the PROM N/S83S123 (Signetics)

### 9.2. First Romanian microcomputers SMP-80, 1976/1977

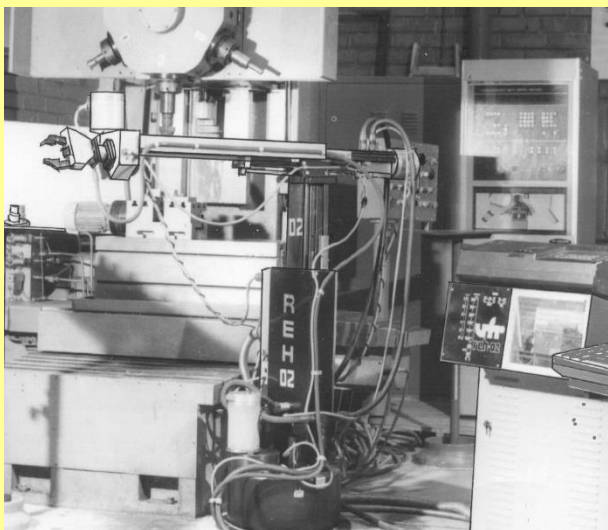
Apple I	SMP 80	IBM PC
 <p>The Apple I was a circuit board. Customers had to add a case, a keyboard and a monitor.</p> <p>Developer: Steve Wozniak Release: March 1976 Purpose: Personal computer CPU: Motorola 6502 @ 1MHz Memory: 4KB, expandable to 8KB Monitor Graphic: 40x24 characters Successor: Apple II / June 1977</p>	 <p>SMP80 was initially a single Augat board</p> <p>Developer: Octavian Căpățină First use: December 1976 Purpose: <math>\mu</math>-proc. application development tool CPU: Intel 8080 Memory RAM 2kB ROM 1kB Serial interface: RS232 110,300,600,1200bauds</p> <p>Packaged and expanded memory to the second Augat board: June 1977</p>  <p><b>Sistem Multi Procesor cu Intel 8080</b></p> <p>Some applications developed with SMP80: 2 semiautomatic wrapping machines, MD10 plotter, 3 generations of two level Commands Units for electro-hydraulic robots</p>	<p>IBM 5150 with IBM monitor 5151</p>  <p>Release: August 12, 1981 Purpose: Personal computer CPU: Intel 8088 @ 4.7MHz Memory: 16kB expandable to 256kB Operating system: DOS 1.0 Successors: IBM PC/XT, IBM PC junior, IBM portable PC</p>
 <p>Apple II</p>		



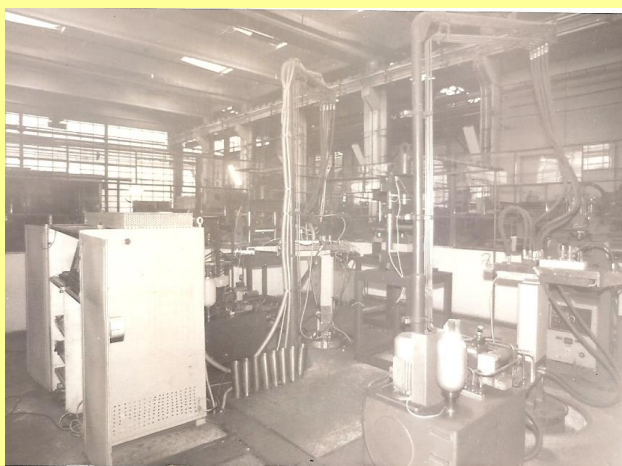
**9.3. DECIS-1M** – 1978, **DECIS-2** - 1979, Semiautomatic wrapping machines – (Dispozitive de cablare semiautomate) *DECIS-1M delivered to CCAB Bucurest (military division of ITC)*



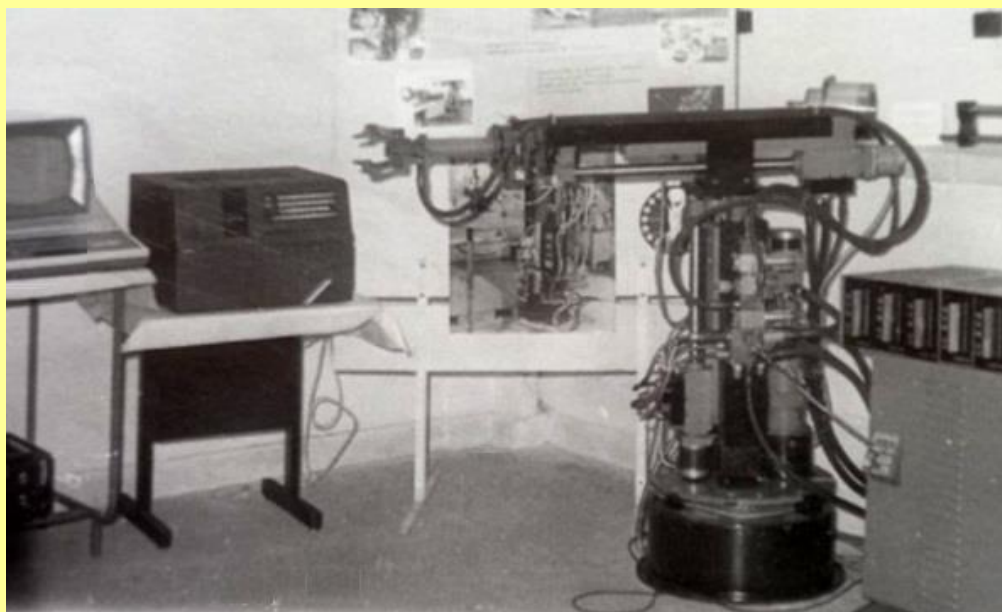
**9.4. MD-10 - first Romanian Plotter**, - 1979/81 designed for mass production at IEPER (Company for computer peripheries equipment) Bucharest.



**9.5. Command unit for a hydraulic-mechanical industrial robot - REH-02\***, (with Polytechnical University of Cluj-Napoca), 1983/1984,

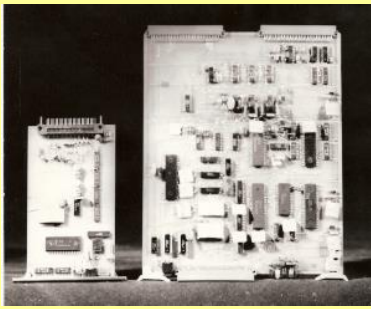


**9.6. Command unit for production flexible cell** (2 robots REH-03\* and 3 press machines) – 1985/1986, at Tehnofrig company Cluj-Napoca. This production cell was included in the technological production line of bottling machine exported in China.



**9.7. Command unit for Robot, REH-04\***, 1987/1989, for Electrocermica Turda.

Note: \* all REH robots are designed at Technical University of Cluj-Napoca (conf. Ioan Blebea) except the command units.

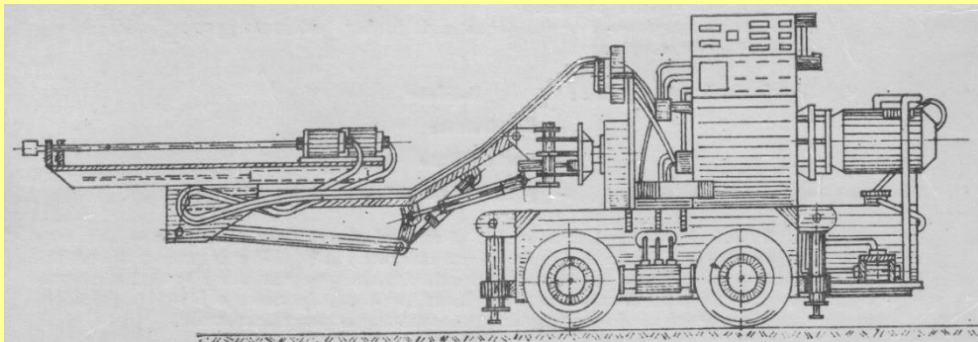


**9.8. Technological development** in 1986/87: swept from  $\mu$ processor (Intel 8080) to one chip  $\mu$ controllers (Z8), for industrial applications (Robots Command Units – see <http://www.itc-cluj.ro/CelulaRobot.pdf>)

**9.9. Command Unit for Vibration Instalation**, 1985, (With UTCN prof. Silviu Darie) for different companies (CFR, ICPIAF, Construction Faculty of UTCN, etc)

**9.10. Data acquisition system**, 1985, for ICPIAF- Research and Design Institute for the Food and Cold Industry Cluj-Napoca)

**9.11. Command Unit for the mining robot RIMM-10 (IMUM Baia Mare)**, text programming in Forth, 1988/1990



**9.12. System (device) for assessing the degree of sensory-motor coordination in human subjects** for Medical University of Cluj-Napoca. (Realised 1992-1993) In addition to psychophysiological studies, the device was used for the selection of pilots, surgeons, dentists, and the composition of risk intervention teams.



**9.13. Set up of a Z86C95 DSP development kit** (a complete technology, hard and soft: development board, monitor, crossassembler, C compiler), for Z86C95 microcomputer with Digital Signal Processor -1996, ITC. The C compiler was written by Laura Galiş)



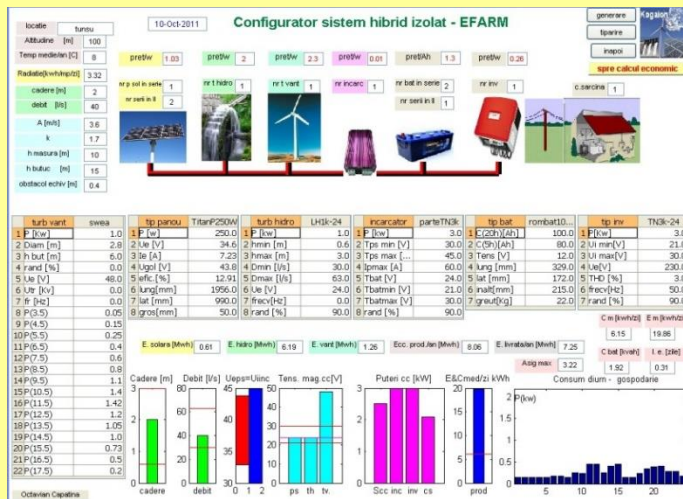
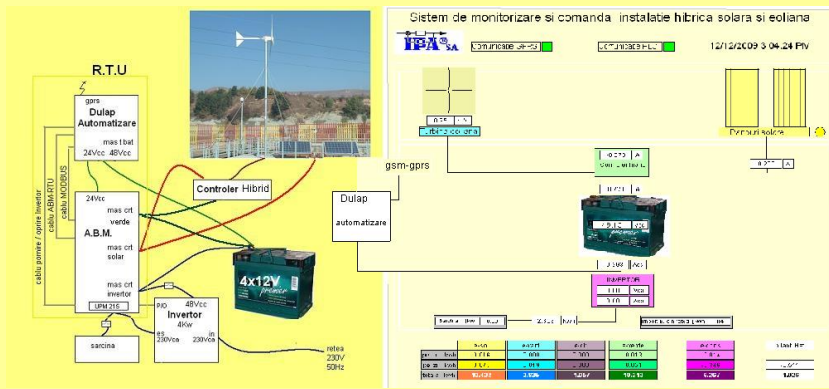
**9.14. Two generations of PLA with Z86C95 DSP processor** for food Industry with (1996-1999)



**9.15.** Four generations of Control Devices of Frequency (CDF 0x) microcomputer Z8 based, for Terapia Cluj-Napoca (2000-2006)

**9.16.** Set up a hybrid solar-eolian pilot station

A small renewable hybrid system (0,5Kw photovoltaic panels and 1,5Kw wind turbine, 48Vdc 180Ah accumulators and 4kw inverter with an own made SCADA system) for research purposes was set up in 2009, near Cluj Napoca. The monitoring SCADA system was based on Siemens PLC CPU224Xp. The current measurements are based on LEM LA25-P sensors. The anemometer is based on NRG#40 sensor. The data transmission are over a VPN GSM/GPRS connection.

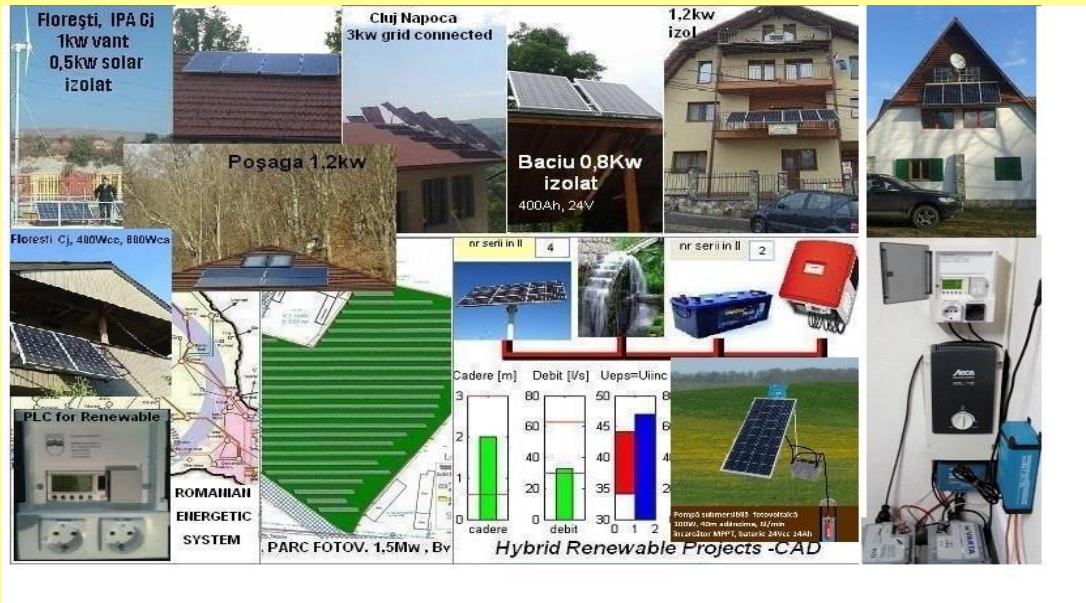


**9.17. Kogaion** - a software application written in Matlab for design, development and assessment of wind, solar and hybrid projects. Kogaion consists of several modules, each of which has its special purpose. The user has many possibilities to use all the data type known, to compare one turbine in many places, to compare the results of two turbines in one place, to compare up to four turbines one to another, to extract the power/speed curve and so on. For small projects there is a special module that structures a solar, hydro and wind hybrid project. Another special module

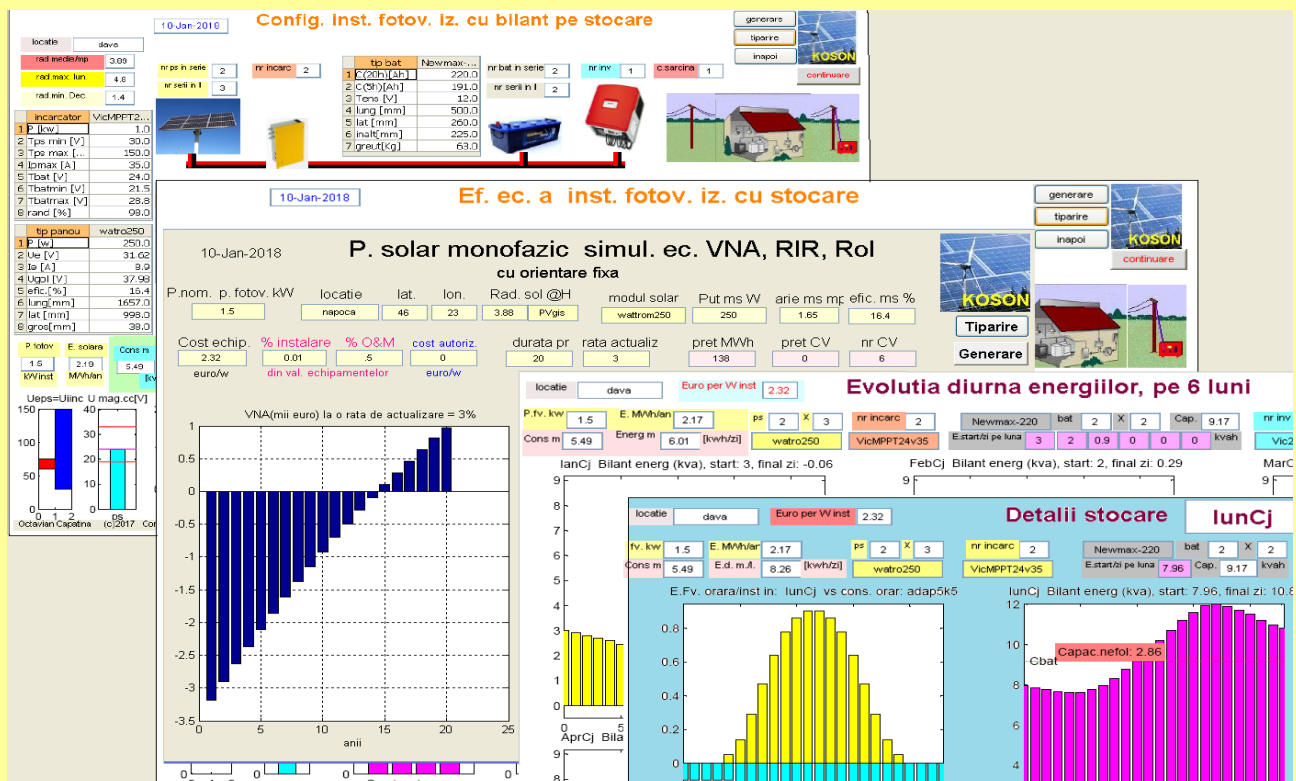
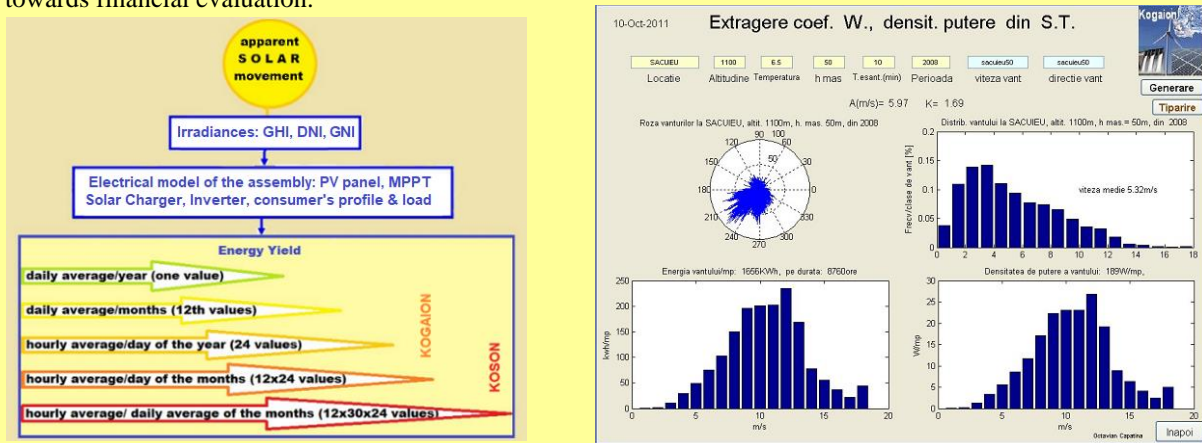
refers to wind energy conservation by water pumping into upper lake. Other features refer to economic approaches (Cost, venue, NPV, IRR, payback etc). A Matlab base application software for Wind locations assessment, Energy yield and Wind energy conservation through pumps.

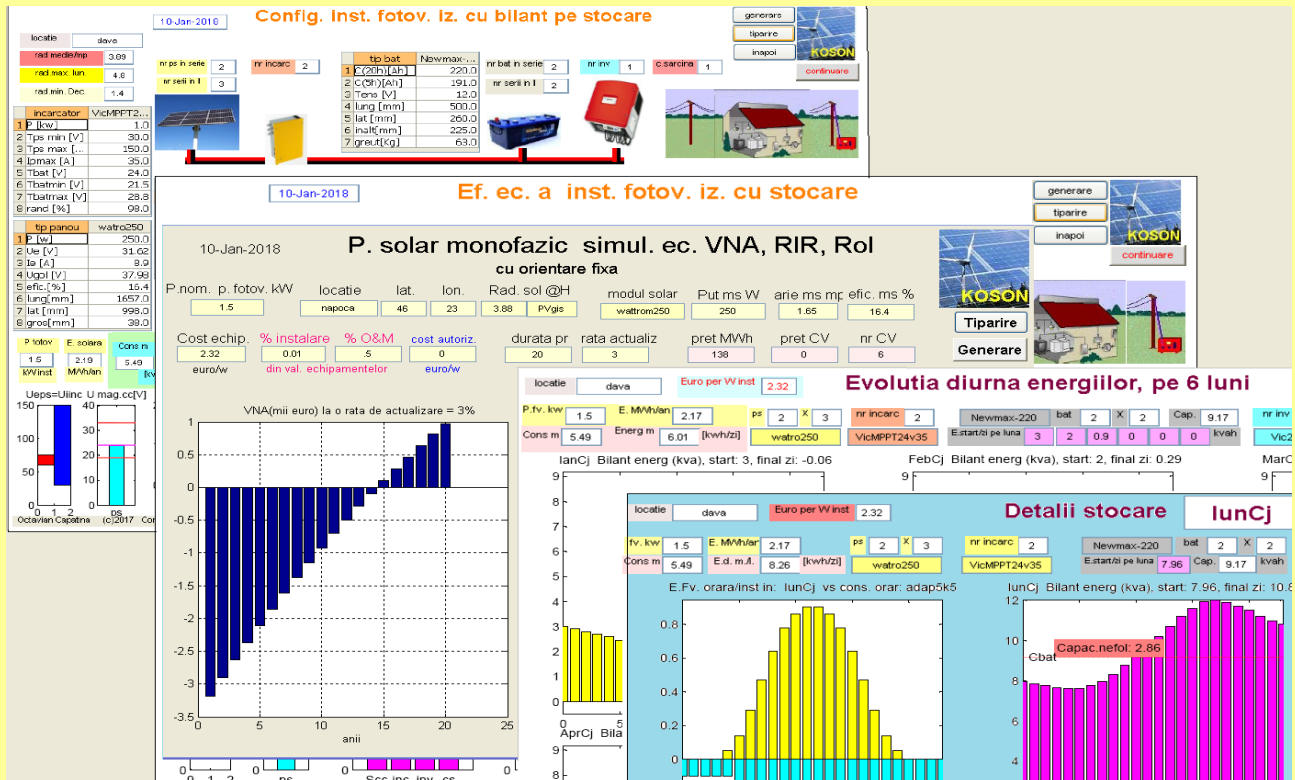
**Small renewable projects**





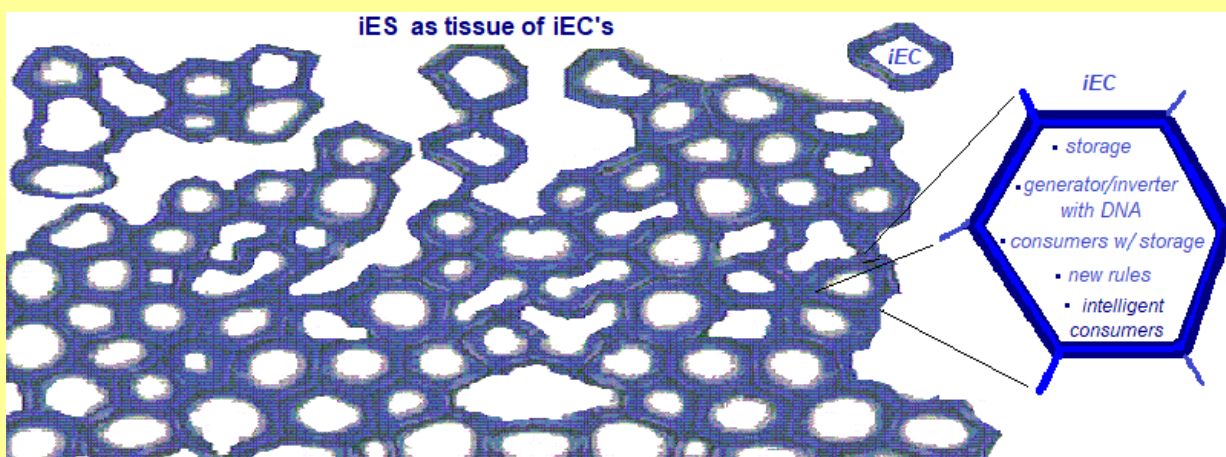
9.17 The KOSON design tool was developed in Matlab (©MathWorks) by the author to be used for the design and simulation of on-grid, off-grid, and **simultaneous on/off grid PV energy cell** operation. KOSON's predecessor, towards financial evaluation.





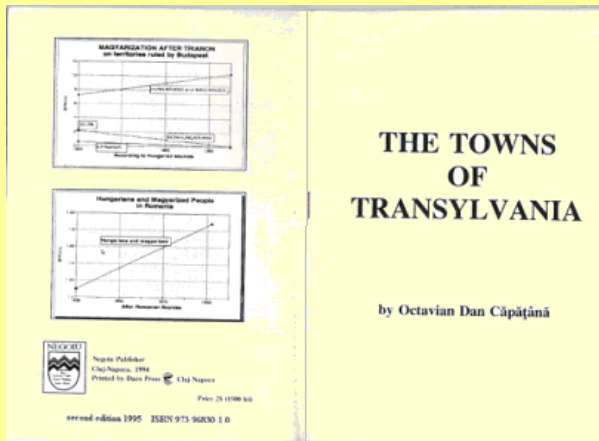
### 9.18. Machines with DNA, iEC and iES

Clearly, we are heading towards an era in which machines in all sectors will become more and more intelligent and autonomous. Their behaviour will be encrypted within themselves, like DNA in living cells. Serious efforts on developing autonomous machinery are being made in the domains of auto-vehicles and drones, etc. This tendency is also found in the energy sector. The analogy between future iES, as a group of iECs, with what we know from cellular biology can be seen in the figure. For example, a liver cell knows what it must do without any coordination; its behaviour is encoded within its own DNA. A future energy cell will obligatorily include storage facilities and a grid connection to be able to fulfil its primary task. Autonomy requires energy and so storage is compulsory. The storage elements (electro-chemical battery, compressed air, water pumping, hydrogen, salt-rocks, or combustion cells, etc.) will have an essential role in the future and will operate in a duality—they can be both source and load. If the sources are renewable, one has renewable energy cells. Since the Sun is by far the most significant energy source, PV energy cells will comprise the most widely spread distributed energy resource (DER). More here *-An Advanced Approach: One Holistic Vision of the Future Energy Syst., 2021, BP international, cap.11, ISBN: 978-93-5547-063-8*

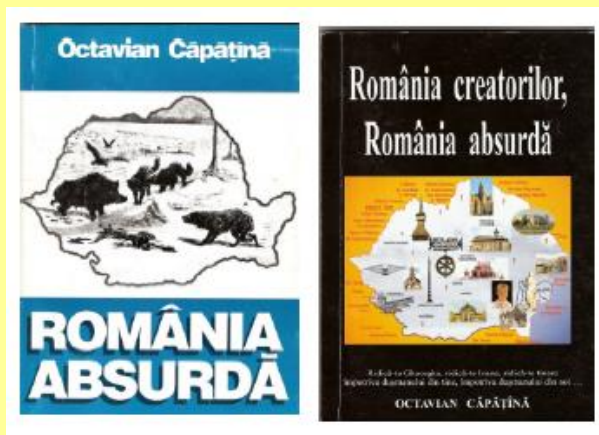




9. Other cultural publications:



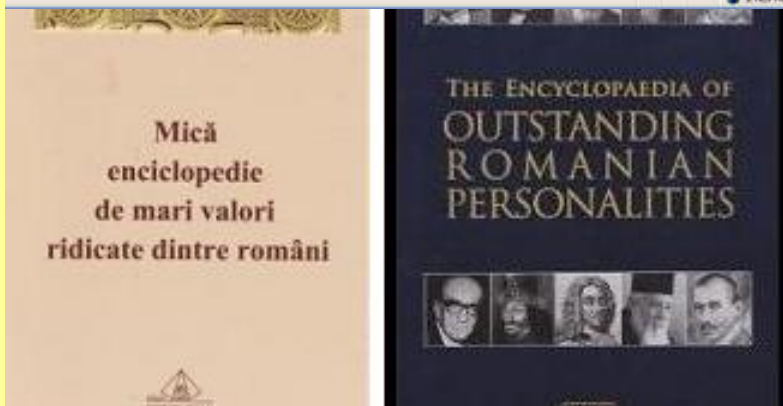
In this book “**The Towns of Transylvania**” are presented: the programmatic means by which the minority dominated, the results of this programmatic politics in the towns, who set up communism in Transylvania, how was set up communism in Transylvania.



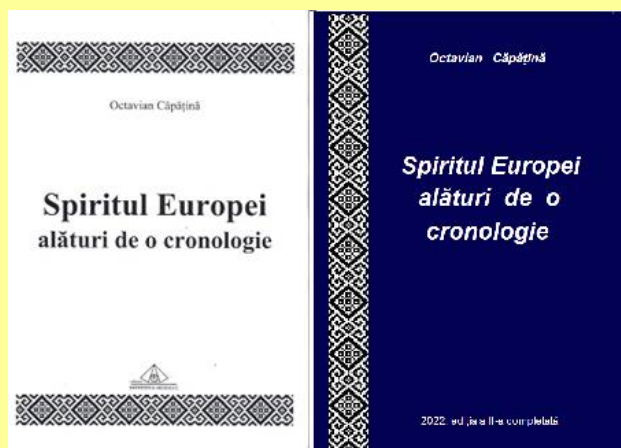
These publications “**Romania absurda**” and “**Romania absurda, Romania creatorilor**” are presented: the crude reality of Romanian society in the post communism era, the corrupted political class and its cowardice  
The second publication (1999) was described a new concept for society future development named “**Romania creatorilor**”.



*Mica Enciclopedie de mari valori ridicate dintre romani* - a book about the Romanian great personalities published with other scientist, in May 2011, and his english version *The Encyclopaedia of Outstanding Romanian Personalities*, in 2013.



## Spiritul Europei alături de o cronologie (first edition 2017, second 2022)



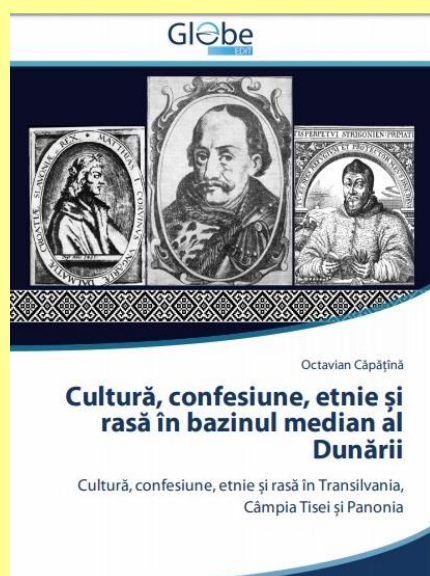
When I examine the knowledge, or rather the lack of it, in the field of history, displayed by the Romania political leaders of the last 27 years, I am frightened. If I look at the ignorance of Germany's leaders, starting with Otto von Bismarck up to those of today, regarding the history of the Eastern half of Europe, I shudder! And how could this be in any way different, when in "*Die Grosse Chronik - Weltgeschichte*" Wissen Media Verlag published in Gütersloh/Munich in 2008, for example - a book written not by ignorant persons, but by scientists,

allegedly - the references to the eastern part of Europe are either lacking probity or funny altogether. In short, I wrote a roundup of the European spirit, superimposed over a timeline starting from 1000 BC until date, an adventure of the European spirit.

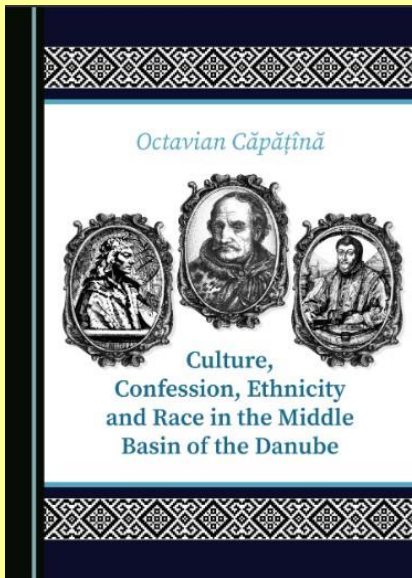
Seems that nothing significantly has been change since Voltaire wrote about the Ottomans in Western historiography: *"A hundred historiographers copy these miserable tales. Europe's dictionaries repeat them. Consult the real Turkish annals, collected by Prince Cantemir, and you will see how ridiculous all these lies are."*



***Cultură, confesiune și rasă în Transilvania, Câmpia Tisei și Panonia*** (*Culture, confession and race in Transylvania, Tisa Plain and Panonia*) gather Vatican, Hungarian, German and Romanian information on the most exciting historical process – the domination of a minority over most educated and civilization majorities. It was published in 4 editions, since February 2014 – December 2018.



***Cultură, confesiune, etnie și rasă în bazinul median al Dunării***, 2019, Globe Edit, ISBN 978-613-9-41554-0, 5th edition, 2019



***Culture, Confession, Ethnicity and Race in the Middle Basin of the Danube***, Cambridge Scholar Publishing, ISBN 978-1-0364-0874-9, 6<sup>th</sup> edition, 2024  
as a Treaty against the culture of hatred in the middle basin of the Danube.

Octavian Căpățină, February 2025, Cluj-Napoca