

PROJECTS SUPPORTED BY PRIVATE FUNDS

PROJECTS SUPPORTED BY PRIVATE FUNDS IMPLEMENTED BY UPT 2020

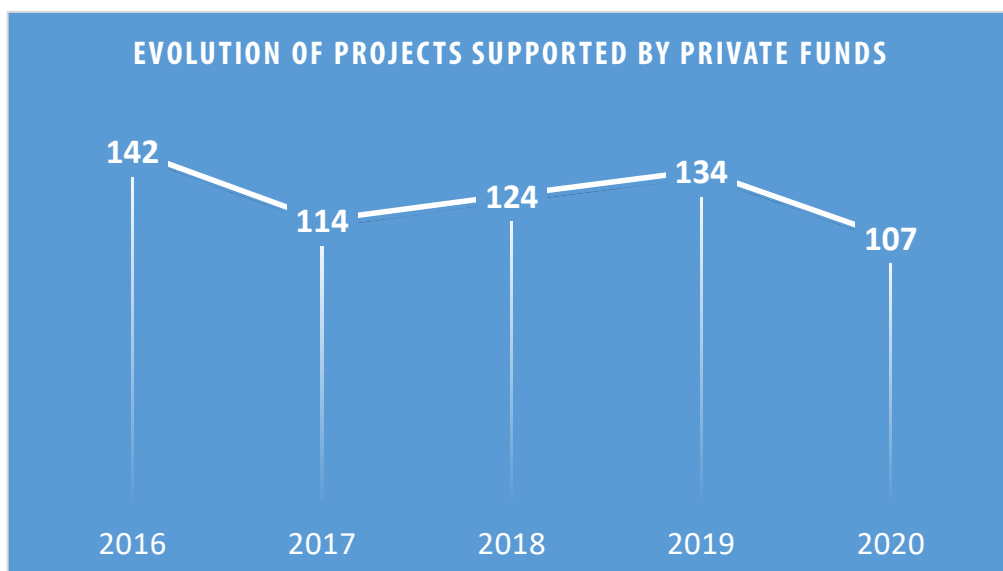
Field	Total number of projects	Number of projects presented
Environment	28	-
Transport, telecommunications and other infrastructures	35	3
Education	1	-
Energy	3	2
Industrial production and technology	37	9
Engineering and technological sciences	3	-
Total	107	14

EVOLUTION OF PROJECTS SUPPORTED BY PRIVATE FUNDS CONTRACTED BY UPT 2016 - 2020

A series of inter-institutional collaborations have crucially influenced UPT's ranking classification exercise between 2016 and 2020.

Two main categories of institutional collaborations are to be noted: inter-university collaborations and collaborations with enterprises. Each of them has clearly established, mutually-shared objectives: mutual support, know-how transfer, and cooperation objectives for a common output.

UPT has always maintained a close relationship with the community, with the external environment, this relationship being its own reason to exist. Beyond the actual research and formal education, the research accomplished through technological transfer has been a constant concern for the University departments, faculties and management structures, which is reflected in the number of contracts with private companies.



This chapter presents a selection of the research contracts with third parties.

CONSULTING FOR THE USAGE OF MACHINE LEARNING FOR MACHINE VISION APPLICATIONS

Goal of the project

Machine learning consists of scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task. Machine learning algorithms are used in a wide variety of applications (as computer vision is) where it is infeasible to develop an algorithm of specific instructions. Data mining is a field within machine learning, and focuses on exploratory data analysis through unsupervised learning. In its application across business problems, machine learning is also referred to as predictive analytics.

EVT has developed machine vision products, which not only allow precise and error-free image processing, but also products, which are one step ahead of the market. The machine vision software EyeVision by EVT is a product, which due to easy-handling is able to adopt to various applications. The research trends for it follow to enhance easy programming, easy-handling, versatility, extensibility and to get fast solutions.

Short description of the project

EyeVision is a complete image processing package for every possible field of application. EyeVision is connecting a powerful, hardware platform independent software for Windows and Linux with a wide range of hardware for image capture and digital I/O.

All industrial inspection tasks are done fast and effective by the all-in-one image processing software EyeVision.

Implementation period

01.04.2018 - 01.04.2020

Main activities

- Image Processing largely involves several processes to gain information from source data, such as for example image recognition and pattern matching. With the usual methods for image processing one can for example count objects, measure, inspect or read coded information. Image processing nowadays is used in nearly every science and engineering disciplines. One domain for image processing is the quality control at production processes such as automotive engineering, electrical and semiconductor industries, food industry and pharmaceutical industry.
- We focused on research and development of the hardware platform independent software for Windows and Linux - technical. We offer consultancy in the field of all-in-one image processing software.
- Consulting services for using applications at Machine Learning for Machine Vision.

Results

- Machine Vision Software for VisionSensors, SmartCameras and PC Systems - EyeVision the one software for all Hardware Platforms.
- For programmers a PlugIn Interface was made, which supports easy to integrate software modules.
- The software supports all major interfaces for cameras e.g. USB, FireWire, GigE, CL, CoaXPress and analog.

Applicability and transferability of the results

- A build in WebServer for easy remote control as well as interfaces to SAP Oracle and SQL.
- EyeVision Software is available.

Financed through/by

EVT Eye Vision Technology GmbH, Karlsruhe Germany

Research team

- Prof. Ivan BOGDANOV, PhD

Contact information

Prof. Ivan BOGDANOV, PhD
Faculty of Electronics, Telecommunications and Information Technology
Department of Applied Electronics
Address: Bvd. Vasile Parvan, No.2, 300223, Timisoara
Phone: (+40) 256 403 338
E-mail: ivan.bogdanov@upt.ro

TECHNICAL-SCIENTIFIC ANALYSIS REGARDING THE POSSIBILITY OF FUEL AND NOXES REDUCTION OF DIESEL ENGINES THAT EQUIPP S.C. SANGO WATER CO S.A. PERSONS TRANSPORT VEHICLES

Goal of the project

The aim of the project is to identify the technical solutions that can be implemented on a target group of vehicles in order to reduce the fuel consumption as well as the emissions exhausted during their operating regimes.

Short description of the project

Within the project, the fuel consumption of a group of vehicles was analyzed based on pollution standards and real operating conditions.

Implementation period

01.10.2019-24.05.2020

Project implemented by

The project will be implemented by S.C. Sango Water Co S.A.

Main activities

- Identification of real test conditions.
- Determining the fuel consumption for the buses in the target group.
- Measurement and verification of results.

Results

- The factors that lead to a reduction in fuel consumption at a target group of buses were identified
- Technical solutions for optimizing fuel consumption have been proposed.

Applicability and transferability of the results

The obtained results led to the identification of technical solutions to reduce fuel consumption, and implicitly, the pollution degree, so that the emission values to fall within the limits imposed by pollution standards.

Financed through/by

S.C. SANGO WATER Co S.A.

Research Centre

Research Centre for Thermal Machines and Equipments, Transportation and Environmental Pollution Control,

Research team

- Daniel OSTOIA,
- Arina Negoitescu,
- Adriana Tokar,
- Dan Negoitescu,
- Ion Silviu Borozan,
- Dan Tokar

Contact information

Prof. Daniel OSTOIA, PhD
Faculty for Mechanical Engineering
Research Centre for Thermal Machines and Equipments,
Transportation and Environmental Pollution Control,
Address: Mihai Viteazu No. 1, Postal Code 30222, Timisoara, Romania
Phone: (+40) 256 403672
Mobile: (+40) 722827957
E-mail: daniel.ostoia@upt.ro

STUDY FOR SMALL HYDROPOWER PLANTS ON BÂRZAVA RIVER, AS LOCALLY ADAPTED SOLUTION FOR INVESTMENT IN RENEWABLE ENERGY AND PUBLIC UTILITIES INFRASTRUCTURE

Goal of the project

The study is mainly concerned by the implementation of extension of the water supply and the domestic sewerage network for the area of tourist resorts of local interest Secu , Reșița municipality, construction of non-motorized pedestrian and bicycle track to the Secu resort area and providing a protective tube for the electrical cables, lighting, internet, telephony, etc., for the Secu station area.

Short description of the project

Following analysis, the project identifies two accomplishment scenarios from which the technical-economical optimum solution for the extension of the water supply and the domestic sewerage network and the construction of non-motorized track for the Secu tourist resort area.

Implementation period

2019–2020 (19 months)

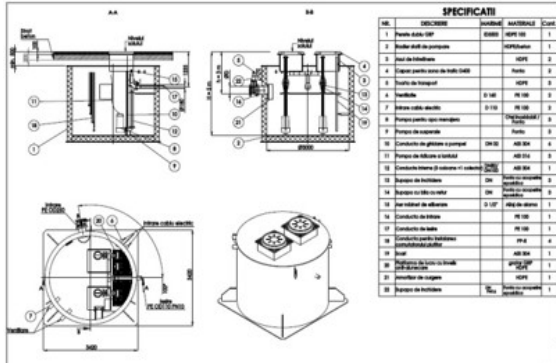
Financed through/by

Resita Municipality

Main activities



The extension of the drinking water supply network of the objective will be made of PE-HD, PE100, PN16, with De 180 mm, on a length of approximately $L = 7,469$ m. 2 tanks with the volume of $V = 200$ m³ each will be provided, a pumping station for the tank R1 and a pumping station for the tank R2.

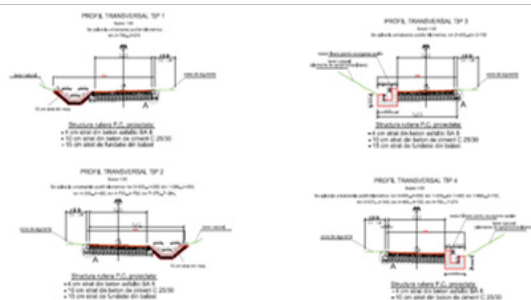
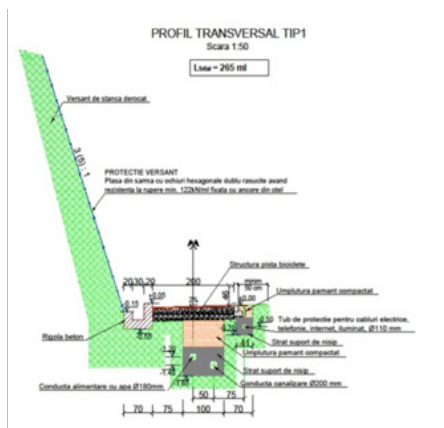


NR.	DESCRIȚIUNE	UNITATE	CANTITATE	SCARA
1	Rezervor apă caldă	CM200	1	1:1
2	Rezervor apă rece	CM200	1	1:1
3	Stație de pompare	CM200	1	1:1
4	Conducător de apă caldă	PE-HD	1	1:1
5	Conducător de apă rece	PE-HD	1	1:1
6	Conducător de apă caldă	PE-HD	1	1:1
7	Conducător de apă rece	PE-HD	1	1:1
8	Conducător de apă caldă	PE-HD	1	1:1
9	Conducător de apă rece	PE-HD	1	1:1
10	Conducător de apă caldă	PE-HD	1	1:1
11	Conducător de apă rece	PE-HD	1	1:1
12	Conducător de apă caldă	PE-HD	1	1:1
13	Conducător de apă rece	PE-HD	1	1:1
14	Conducător de apă caldă	PE-HD	1	1:1
15	Conducător de apă rece	PE-HD	1	1:1
16	Conducător de apă caldă	PE-HD	1	1:1
17	Conducător de apă rece	PE-HD	1	1:1
18	Conducător de apă caldă	PE-HD	1	1:1
19	Conducător de apă rece	PE-HD	1	1:1
20	Conducător de apă caldă	PE-HD	1	1:1
21	Conducător de apă rece	PE-HD	1	1:1
22	Conducător de apă caldă	PE-HD	1	1:1
23	Conducător de apă rece	PE-HD	1	1:1

The extension of the sewerage network of the objective implies:

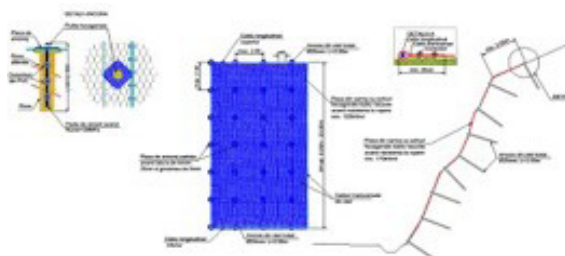
- wastewater discharge pipe from PE-HD, PE100, PN10, with De 200 x 11.9 mm in length of 3,903 m from the wastewater pumping station at the highest point on the route;
- wastewater discharge pipe from PE-HD, PE100, PN16, with 180 x 16.4 mm in length of 4,170 m from the highest point on the route to the existing manhole on Rozelor Street.

On the location of the track bikes, according to the situation plan and the transversal profile, a corrugated protection tube made of PE-HD with De 110 mm is positioned for the protection of the existing or future cables of telephony, electrical, internet, lighting, etc. The total length of the protection tube is 7,394 m.



The projected route of the runway runs over a length of 7,394 m, on the administrative territory of Reșița municipality, Caraș-Severin county.

It serves the inhabitants of the area as well as the tourists who generate the bicycle traffic in the area.



On the projected water-canal route, respectively the bicycle track, in the areas where the existing road is close to the slope, given the width of the bicycle track, respectively of the imposed safety zones, including gutters, demolition works are required in the slope, the total length (cumulated by sectors) being about 1,625 m.

Results

Ensuring the traffic of tourists by bicycle and the degree of comfort in the tourist resort Secu through the water and sewerage system.

Applicability and transferability of the results

Providing a water supply and sewerage system for the Secu tourist resort and the bicycle track for tourists.

Research team

- Albert Titus CONSTANTIN,
- Constantin FLORESCU,
- Ion MIREL,
- Marin MARIN,
- Ioan ȘUMĂLAN,
- Ciprian COSTESCU,
- Cristian STĂNILOIU,
- Serban –Vlad NICOARA,
- Alina POPESCU – BUSAN,
- Mircea VIȘESCU, Marius ADAM,
- Dan PÎRVULESCU,
- Ioana-Alina CREȚAN,
- Liliana COTOARBĂ

Contact information

Assist. Prof. Albert Titus CONSTANTIN, PhD
 Faculty of Civil Engineering
 Department of Hydrotechnical Engineering
 Address: 1A George Enescu Street, 300022, Timișoara, Romania
 Phone: (+40) 256 404091
 Mobile: +40 720 059 371
 E-mail: albert.constantin@upt.ro
<https://www.ct.upt.ro/en/hidro/index.htm>

FEASIBILITY STUDY FOR DANUBE SHORE DEVELOPMENT ON MOLDOVA NOUĂ, CARAȘ-SEVERIN COUNTY

Goal of the project

The situation considered by the present feasibility study regards the territory under the responsibility of Moldova Veche Border Police on the Danube left shore in Caraș-Severin County, institution endowed with several speed boats and floating barges as required for fulfilling its local specific missions. Still, one of the major logistical problems resides in the lack of proper mooring, locating and stationing space for the water equipment, operations that at this moment are improperly and unsatisfactory performed. Thus, according to the professional request elaborated by the beneficiary through technical specifications, the main general objective of the study was to establish the feasible options for designing a docking quay of about 50 m in length furnished with mooring (pontoon also) and boats landing equipment, with an operating/monitoring office, a fuel mobile station and a power transformation station..

Short description of the project

Following a thorough analysis, the project identifies three accomplishment scenarios from which the technical-economical optimum solution was pointed out.

Mainly, for each considered technical design scenario, there were followed the analysis of vulnerabilities that may affect the investment, the situation of expected utilities and the analysis of consumption, respectively the sustainability of achieving the objective. Afterwards, specific conclusions were drawn on the financial investment (expenditure summary, total items, quantities of machinery and technological equipment, general cost estimation). The optimum and so recommended technical accomplishment scenario was presented in an argumentative way.

Project implemented by:

Timișoara Border Police Territorial Inspectorate

Implementation period

2020–2021 – 18 months

Main activities

Following the analysis of the existing situation, it was found that due to the lack of spaces arranged for floating means in Moldova Nouă area, the border river navy basing is improperly done.

The study of the location particularities with respect to the needs of the beneficiary led to the identification, proposal and presentation of the three technical-economic options for achieving the investment objective.

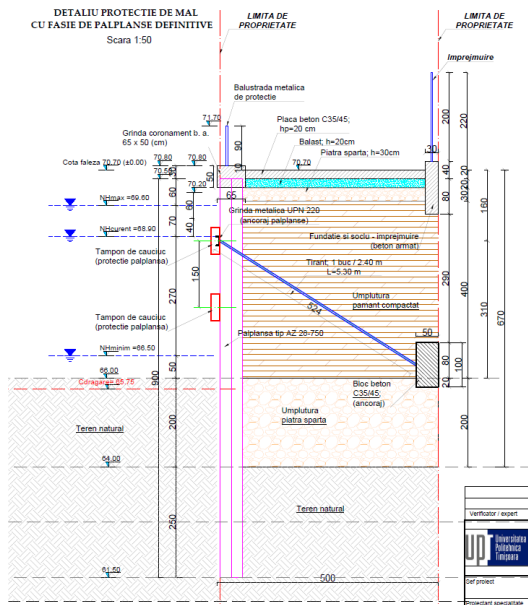


Land use general plan

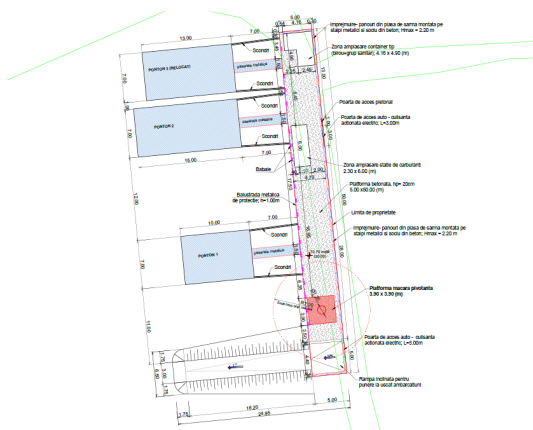
By individually and comparatively analysis of the viable options, it turned out to be optimal, both from a technical point of view and from the impact produced in the area, but also from a financial point of view, the alternative that provides the support of the quay bank through lost metal sheet-piles.



Sheet-piles quay wall – model



At the same time, the proposed arrangement option provides also for the disposition of the docking pontoons and of the constructive elements, as well as of the equipment for landing the boats, so as to ensure the development of the specific exploitation operations performed by the beneficiary.



Nevertheless, the profile of the riverbed in the arranged shore area was bathymetrically analyzed and following a specific river engineering study of the alluvial evolution, special corrective measures were proposed in order to ensure the access of ships under various water level conditions.

Results

Following the analysis of the studied feasible options and aiming to make the most of the technical-economic, financial, sustainability and risks, the optimum practical solution for arranging the Danube shore on the sector of the dedicated plot to meet the needs of the beneficiary was chosen.

Applicability and transferability of the results

The solution presented is sustainable, environmentally friendly and possible to be implemented in the shortest possible time, and that can also be fulfilled at a lower cost.

Financed through/by

Ministry of Internal Affairs – Romanian Border Police, Timișoara Border Police Territorial Inspectorate

Research Centre

Research Center in Hydrotechnics and Environmental Protection

Research team

- Albert Titus CONSTANTIN, assoc.prof.dr.eng.
- Șerban-Vlad NICOARĂ, lect.dr.eng.
- Constantin FLORESCU, prof.dr.eng.
- Gabriel ELEȘ, assoc.prof.dr.eng.
- Alina-Ioana POPESCU-BUȘAN, assist.prof.dr.eng.
- Ioana-Alina CREȚAN, assist.prof.dr.eng.
- Adia GROZAV, assist.prof.dr.eng.
- Mircea VIȘESCU, assist.prof.dr.eng.
- Cristian Adrian GÎRBACIU, lect.dr.eng.
- Alexandra RUSU
- Violeta ȘUMĂLAN, eng.
- Liliana COTOARBĂ, PhDstud.eng.
- Dănuț TOKAR, PhDstud.eng.

Contact information

Albert Titus CONSTANTIN, assoc.prof.PhD
 Faculty of Civil Engineering
 Department of Hydrotechnical Engineering
 Address: 1A Splaiul Spiru Haret, 300022, Timișoara, Romania
 Phone: (+40) 256 404091
 Mobile: +40 720 059 371
 E-mail: albert.constantin@upt.ro
<https://www.ct.upt.ro/en/hidro/index.htm>

FEASIBILITY STUDY - BRANCHING AND WASTEWATER COLLECTION PLANT NAIDĂȘ, CARAȘ - SEVERIN COUNTY, CORRESPONDING TO C.F. NUMBER: 30061, 30062, 30063, 30064, 30065, 30066, 30067, 30068, 30069, 2528

Goal of the project

The investment objective aims at extending the domestic sewerage network of the SPF location with connection to the existing sewerage network of the PTF location on a length of 397 m to connect the objectives from the SPF location, which are currently connected to a drainable basin.

Short description of the project

Domestic sewage network designed for the collection of domestic wastewater and its discharge into a newly designed treatment plant. The existing evacuation of the treatment plant in the Năidășel emissary is no longer possible due to the drastic evacuation conditions imposed by Apele Române. Discharge of treated water will be made in the river Nera by using a pumping station, a discharge pipe and a mouth of discharge.

On the proposed sewerage network there are 15 manholes and 2 road underpasses through horizontal drilling through a steel protection tube with Dn 350 mm.

The designed treatment plant is sized for 45 consumers.

The pumping station is equipped with 2 (1 + 1R) submersible electric pumps having: $Q = 3 \text{ l / s}$, $H = 40 \text{ mCA}$ and $P = 4 \text{ KW}$.

Project implemented by:

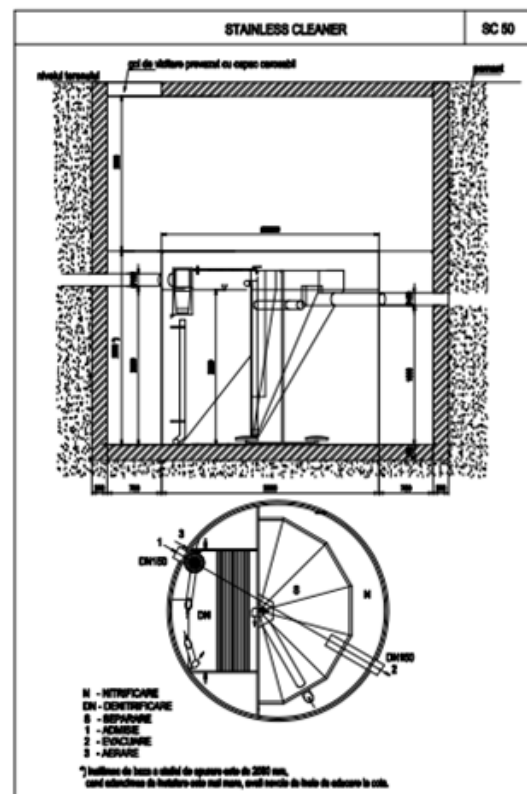
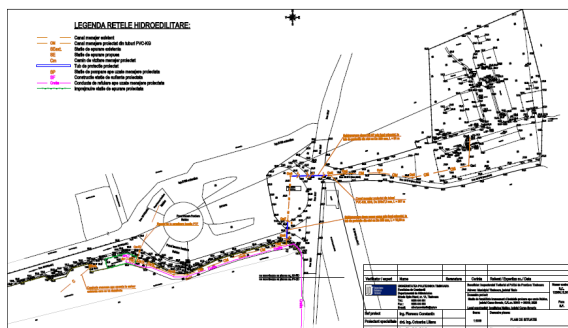
Timișoara Border Police Territorial Inspectorate

Implementation period

2020–2021 – 18 months

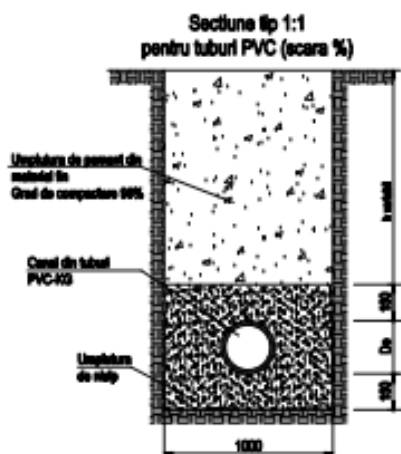
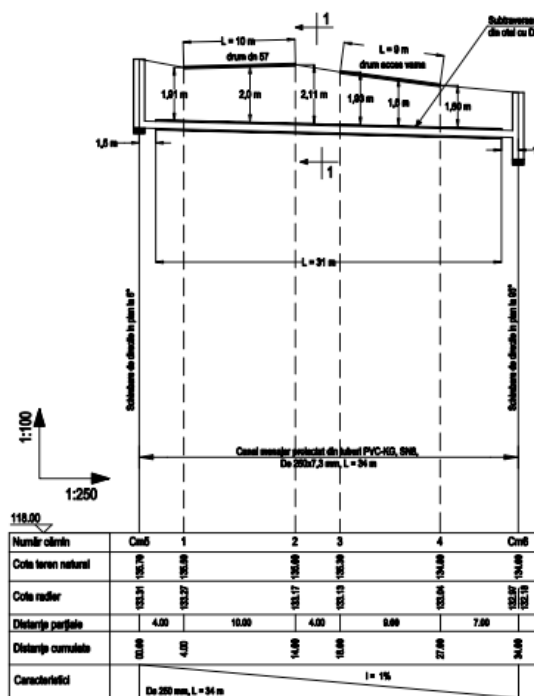
Main activities

Sewerage network designed from PVC-KG pipes, SN8 with De 250 mm in length of 397 m which will be located on the public domain.



The designed discharge pipe is made of PE-HD, PN6, 90x5.1 mm in length $L = 2,330 \text{ m}$ and will be located on the public domain.

On the designed discharge pipe were provided manhole valves, road underpasses by horizontal drilling through a steel protection tube with Dn 200 mm, reassurance chimney and an overpass with anchoring on an existing bridge with a venting - deaeration device.



Results

Giving up of the drainage basin located within the SPF and the replacement of the existing treatment plant with a new one that meets the new needs and that has an advanced technology for domestic wastewater treatment.

Applicability and transferability of the results

Collection, transport, treatment and disposal of domestic wastewater from the Romania-Serbia border point, Naidas.

Financed through/by

Ministry of Internal Affairs – Romanian Border Police, Timișoara Border Police Territorial Inspectorate

Research Centre

Research Center in Hydrotechnics and Environmental Protection

Research team

- Constantin FLORESCU, prof.dr.eng.
- Albert Titus CONSTANTIN, assoc.prof.dr.eng.
- Gabriel ELEȘ, assoc.prof.dr.eng.
- Cristian STĂNILOIU, lect.dr.eng.
- Liliana COTOARBĂ, PhD eng.
- Violeta ȘUMĂLAN, eng.
- Alexandra RUSU

Contact information

Constantin FLORESCU, Professor, PhD
 Faculty of Civil Engineering
 Department of Hydrotechnical Engineering
 Address: 1A Spiru Haret Street, 300022, Timișoara, Romania
 Phone: (+40) 256 404091
 Mobile: +40 22418160
 E-mail: constantin.florescu@upt.ro
<https://www.ct.upt.ro/hidro/index.htm>

ACCURATE GUIDANCE OF A DRONE IN A HIGH CROP FOR STREAMLINE PLANT SPRAYING OPERATIONS

Goal of the project

Design and execution of a drone that navigates autonomously in a high crop field with 2m/s spraying 15 liters of chemical substance.

Short description of the project

The drone has the following autonomous functions:

- to navigate towards the target area
- to navigate along the crop plants and spray the substance
- to return to base dock

In research activity, the team made efforts to reduce dramatically the total costs using low price components, compensating their performance with more complex algorithms.

Implementation period

03.2020- 03.2022

Main activities

- Design of autonomous navigation algorithms by image and GPS processing: plant line follower, change the plant line, target point and return point finding.
- Design of integrated manual commands
- Mechanical design of drone
- Mechanical design of spraying accessories (tank, pump, nozzles, tubes, etc)
- Integration, starting up.

Results

A 42 kg and 3.2 m diameter drone that can carry 15 liters of chemicals, that is 18 kg payload.

Applicability and transferability of the results

The interest for drones in the agricultural field is very high, and the low price is a criterion for selling. The beneficiary conducted a study and identified a number of potential customers for the drones.

Financed through/by

CARPATHIAN BERRIES SRL Company

Research Centre

ICER (Renewable Energy Research Institute)

Research team

- Lect. Sorin NANU PhD
- Lect. Ciprian DUGHIR PhD.
- Student Adrian TUCUDEAN

Contact information

Lect. Sorin Nanu, PhD
Faculty Automation and Computer Science/Department Automation and Applied Informatics
Address: Str.V.Parvan 2. 300223, Timisoara
Phone: (+40) 256 403235
Mobile: 0726713893
E-mail: sorin.nanu@upt.ro

DEFINING AUTOMATIC TESTING STRATEGIES AND THEIR IMPLEMENTATION SOLUTIONS FOR SOFTWARE VALIDATION / TESTING FOR ASTON MARTIN AND RENAULT ALPINE PROJECTS

Goal of the project

Defining strategies for automating the testing process for instrument clusters followed by proposing solutions for their implementation for different functionalities. The proposed solutions are evaluated based on metrics that include coverage and test duration.

Short description of the project

The research project analyzes the impact of identifying a test automation strategy and its implementation on the duration and testing results of various versions of software dedicated to instrument clusters.

Implementation period

01.03.2020 – 31.12.2020

Main activities

1. Identify software testing environment requirements for instrument clusters
2. Proposing a unitary architecture of test and development sequence development files
3. Defining the test automation strategy and integrating with the available testing tools
4. Defining and validating performance criteria for automation
5. Implementation of automatic testing at the level of functionality and validation based on performance criteria
6. Study of the possibility of automatic generation of automated tests based on standard requirements and specific configuration files.

Results

1. Analysis report of general and specific aspects for the automation of instrument cluster testing.
2. Proposed and validated structure for a generic automated test specification file
3. Validation of the automatic test specification implemented for Garage functionality
3. Validation of the automatic test specification implemented for the Service functionality
4. Application for extracting and analyzing test results
5. Performance report with conclusions and directions for expanding the implementation

Applicability and transferability of the results

The automated test specifications implemented and validated for Garage and Service functionalities are used in the full or regression test cycles of the various instrument cluster models.

Validation of the automated testing specifications implemented for two functionalities is the foundation for extending the implementation for all instrument cluster functionalities.

Financed through/by

SC CONTINENTAL AUTOMOTIVE ROMANIA SRL, TIMISOARA.

Research team

- Assoc. Prof. Ioan LIE, PhD

Contact information

Assoc. Prof. Ioan LIE, PhD
Faculty of Electronics, Telecommunications and Informational Technologies, Department of Applied Electronics
Address: Room B115, 1st Floor, Bd. Vasile Parvan, nr. 2, 300223 Timisoara, Romania Phone: (+40) 256 403 336
Mobile: (+40) 722734581
E-mail: ioan.lie@upt.ro
Web: ea.etc.upt.ro

HMECS - HPC MEMORY ERRORS CORRECTION SOLUTION

Goal of the project

The goal of the project is to find the most favorable way to get reliable data from an unreliable non-volatile memory, providing complete robustness for critical applications. The target is represented by all kinds of non-volatile memories, including MRAM memories.

Short description of the project

Development of innovative solutions for error correction codes used for non-volatile memories in high-performance computing systems.

Implementation period

09.12.2020 – 23.12.2021

Main activities

The main activities in our project are:

- Build a Linux functional setup for initial experiments
- Analyze the errors in current and future NVMs
- Analyze and simulate the error correction codes used in NVMs
- Analyze performance of various ECCs
- Develop the algorithm
- System simulation
- Build a demonstrator
- Issue a patent request

Results


A FPGA Linux Python setup was built based on a Xilinx EK-U1-ZCU104 board.

A simple ECC test project was simulated in Vivado. It is implemented using two free IPs from Xilinx (ECC and VIO IPs).

Two simple project (a counter and a peak detector) were implemented in MATLAB/ Simulink in order to generate VHDL code. The final VHDL code is well written, documented and easy to understand.

We studied the types of non-volatile memories used in automotive and we compared their characteristics.

The Reed-Solomon code was simulated in Simulink and Vivado.



data_in	00101	00101
out_RSenc	001012d474a0e83	001012d474a0e83
data_with_err	111112d474a0e83	111112d474a0e83
out_RSdec	00101	00101
err_in_num	3	3
errNum_after_dec	0	0

4300 ms 4310 ms 4320 ms
 Cursor 1 4317.04 ms 4317.04 ms

We communicated with a Verilog Flash memory model through a Vivado simulation.

Applicability and transferability of the results

Developed solutions for error correction codes can provide a reliable storage using current Flash memories.

They also can allow the use of less expensive memories and can extend the lifetime of the memory-based products.

Financed through/by

Continental Automotive Timișoara

Research team

- Prof. univ. GONTEAN Aurel – Ștefan
- Eng. ILIEȘ Elisei Ștefan
- Student MARINCA Magdalena Patricia

Contact information

Prof. Aurel - Ștefan GONTEAN, PhD
 Faculty of Electronics, Telecommunications and Informational Technologies,
 Department of Applied Electronics
 Address: Str. Vasile Parvan, No.2,
 300223, Timisoara
 Mobile: +40 745 121 383
 E-mail: aurel.gontean@upt.ro

USING FPGA FOR INTELLIGENT PROCESSING OF DATA FROM AN IMAGE SENSOR

Goal of the project

The goal of the project is to use an FPGA to configure an OmniVision image sensor, but also to retrieve and process data from it. Another important purpose of this project is to find a suitable method to write a value in the OTP memory of the image sensor in various setups

Short description of the project

In this project we aim to configure an image sensor in order to display the video stream from the camera module on a monitor and to automate the writing of certain data in an OTP memory.

Implementation period

15.07.2020 - 23.12.2020

Main activities

The main activities we focused on are the following:

- Build the necessary setup.
- Image sensor configuration via i2c protocol
- Process data from the image sensor and display video stream from the camera module on a monitor
- Write a value in an OTP memory using Aardvark I2C Host Adapter
- Write a value in an OTP memory using Raspberry Pi
- Development of a graphical interface to facilitate the writing of an OTP memory
- Portable solution for flashing in any remote area

Results

We built a setup with an image sensor, a development board and a computer with Linux operating system.

The image sensor was configured using a .xml script and the image transmitted by it was displayed on a monitor and saved in .raw format.

Using a Raspberry Pi to write data in an OTP memory and to read data from it, we were able to develop a method that allows remote programming of the memory.

In order to make the method for flashing even easier, we developed a graphical interface using the python language. In this way we obtained a portable and user friendly solution.

Applicability and transferability of the results

FPGA-based systems offer the possibility of fast and intelligent processing of data from different image sensors. The portable solution for flashing allows configurations or updates for devices even after the completion of the manufacturing process.

Financed through/by

Continental Automotive Timișoara

Research team

- Prof. univ. GONTEAN Aurel – Ștefan
- Eng. BĂRBULESCU Corneliu
- Eng. ILIEȘ Elisei Ștefan
- Student MARINCA Magdalena Patricia

Contact information

Prof. Aurel - Ștefan GONTEAN, PhD
Faculty of Electronics, Telecommunications and Informational Technologies,
Department of Applied Electronics
Address: Str. Vasile Parvan, No.2,
300223, Timisoara
Mobile: +40 745 121 383
E-mail: aurel.gontean@upt.ro

ADVANCED INTEGRATION OF RLC MEASUREMENT METHODS IN THE TAKAYA APT 9411 AND 1400F

Goal of the project

The goal of this project is to avoid the apparition of FP erroneous measurements, for circuit-mounted L and C components, by integration between an LCR meter with the FP. This application was implemented with the help of a partner company which provided the required equipment: the Takaya APT 1400F FP [10] and the BK Precision 891 LCR meter

Short description of the project

Advanced integration of RLC measurement methods in order to avoid the apparition of FP erroneous measurements.

Project implemented by:

- Universitatea Politehnică Timișoara
- Alfa Test S.R.L.

Implementation period

19.02.2020 – 31.10.2020

Main activities

The proposed software component was developed using NI LabVIEW. It includes two independent applications. The Frequency Response App (FRA) and The Measurement App (MA). The integration was developed and tested under laboratory conditions at the Alfa Test SRL headquarter in Timișoara, Romania. Final testing, deployment and validation were performed at the beneficiary headquarters in Sibiu, Romania. Experimental results demonstrate that the proposed integration performs as expected. In the case of accidental replacement of inductors with components of wrong values, provided results show exact confirmation of the fault.

Results

The main novelties of our work arise from the characteristics of flexibility, customization according to user needs and performances of a prototype integration solution which solved an engineering challenge issued by one of the most important automotive manufacturers in Romania and world-wide.

This concept was an industry validated solution for integrating off-the-shelf instrumentation (in this case LCR – BK Precision 891) in the Takaya FP machines. Following the integration method, other types of external instrumentation can be used to expand the technical capabilities of the Takaya FP machine. Statistical measurement accuracy evaluation demonstrates the appropriateness of such a solution, in the project industrial context.

Applicability and transferability of the results

All the results from this project were transferred to the beneficiary Alfa Test S.R.L. One student oriented laboratory was developed using the results from this project.

Financed through/by

Alfa Test S.R.L.

Research Centre

Faculty of Electronics, Telecommunications and Information Technologies

Research team

- S.I. dr. ing. Dughir Ciprian-Ovidiu-Miron – director
- Conf. dr. ing. Ionel Raul-Ciprian – member
- S.I. dr. ing. Mățiu-Iovan Liliana – member
- Anca Rogoz - member

Contact information

Assoc. Prof. Ciprian-Ovidiu-Miron DUGHIR, PhD
Faculty of Electronics, Telecommunications and Information Technologies /Department of Measurements and Opoelectronics
Address: Bl. V. Pârvan, No. 2a, 300223, Timisoara
Phone: (+40) 256 403 365
E-mail: ciprian.dughir@upt.ro
Web: www.dughir.ro

TECHNOLOGICAL LOSSES FORECAST IN ELECTRICAL DISTRIBUTION NETWORKS

Goal of the project

Distribution network real technical losses evaluation for EON Distribution System Operator. Several methodologies have been implemented in order to assess the technological losses for complex distribution networks.

Short description of the project

An algorithm is developed for technical losses forecast.

Project implemented by

Servelect Cluj-Napoca &
EON DelgazGrid Distribution System Operator

Implementation period

2020

Main activities

The study was conducted for EON DelgazGrid Distribution System Operator. Quantitative and qualitative on-field measurements are provided and discussed, followed by the technical losses computing based on the provided algorithm. Different necessary scenarios for the distribution network operator have been taken into consideration highlighting the optimal operating conditions.

Results

- Algorithm developed for technical losses evaluation;
- Comparative analysis has been performed;
- Electrical distribution network simulation model;
- Technical losses' reduction methods.

SPECIFICATIA	CANTITATIA (MWh)			
	IDRAJ	ME	JE	TOTAL
A. Energia Electrica distribuita	5.484,725	4.988,044	3.382,970	5.895,734
A.1. din Transport	3.145,294	0	0	3.145,294
A.2. din Centrale Electrice	2.096,339	328,287	11,660	2.436,286
A.3. din Retele de Transport	175,102	4.651,773	3.292,040	8.118,915
	5.484,725	5.140,094	3.393,710	13,018,529
	0	117,541	36,666	154,207
	0	2.885,100	4.937,632	7,822,732
	0	248,490	0	248,490
	584,724	966,637	0	1,551,361
	14,114	38,949	0	53,063

Applicability and transferability of the results

The algorithm used for technical losses evaluation is able to be applied in case of any distribution network operator. Also, based on the achieved experience, other (or similar) technical losses reduction methods could be highlighted in case of other distribution operators.

Financed through/by

Servelect Cluj-Napoca, total value: 17850 RON

Research Centre

Power Systems Analysis and Optimization Research Centre

Research team

- Prof. Stefan KILYENI, PhD
- Assoc. Prof. Constantin BARBULESCU, PhD
- Bittenbinder Alex, PhD Student
- Lecturer Annamaria KILYENI, PhD

Contact information

Prof. Stefan KILYENI, PhD
Faculty of Electrical and Power Engineering
Head of Power Systems Analysis and Optimization Research Centre
Power Systems Department:
Bd. V. Parvan, No. 2, 300223, Timisoara
Phone: (+40) 256 403 416
E-mail: stefan.kilyeni@upt.ro
Web: www.et.upt.ro

ELECTRICAL DISTRIBUTION NETWORKS TECHNOLOGICAL LOSSES EVALUATION BASED ON POST-CALCULATION METHODS

Goal of the project

Technical losses evaluation for Electrica Muntenia Nord Distribution System Operator has been performed. Analytical methods and power flow computing methods have been applied. Real data have been used and operating conditions specific to the power producers, renewable sources, power consumption.

Short description of the project

An algorithm is developed for technical losses assessment..

Project implemented by:

- Servelect Cluj-Napoca &
- Electrica Muntenia Nord Distribution System Operator

Implementation period

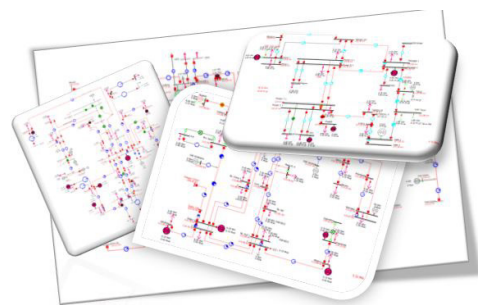
2020

Main activities

The study was conducted for Electrica Muntenia Nord Distribution System Operator. The analyses have been divided for several voltage levels, distribution branches and equipment type. Different scenarios for the distribution network operator have been taken into consideration highlighting the optimal operating conditions.

Results

- Methodologies developed for technical losses evaluation in case of different voltage levels;
- Electrical distribution network simulation model at 110 kV and 20 kV voltage levels, analyses, recommendations;
- Technical losses' reduction methods.



Applicability and transferability of the results

The developed methodologies for technical losses evaluation are able to be applied in case of any distribution network operator.

Financed through/by

Servelect Cluj-Napoca, total value: 17850 RON

Research Centre

Power Systems Analysis and Optimization Research Centre

Research team

- Prof. Stefan KILYENI, PhD
- Assoc. Prof. Constantin BARBULESCU, PhD
- Bittenbinder Alex, PhD Student
- Lecturer Annamaria KILYENI, PhD

Contact information

Prof. Stefan KILYENI, PhD
Faculty of Electrical and Power Engineering
Head of Power Systems Analysis and Optimization Research Centre
Power Systems Department:
Bd. V. Parvan, No. 2, 300223, Timisoara
Phone: (+40) 256 403 416
E-mail: stefan.kilyeni@upt.ro
Web: www.et.upt.ro

INTRODUCTION OF A UNITARY PROBLEM-SOLVING AND IMPROVEMENT SYSTEM OF THERMAL GALVANIZING PROCESSES

Goal of the project

The goal of this project was to evaluate the company based on the SWOT Analysis and the Diagnostic Analysis, to develop a unitary system for solving problems and improving processes and its implementation at the level of the entire organization. The harmful emission absorption system was also evaluated technically and economically.

Short description of the project

Specific methods of problem solving and process improvement have been introduced, which have been set up in a unitary system applicable to the entire company. SWOT Analysis and Diagnostic Analysis were performed to assess the existing situation and provide information for future actions.

Implementation period

01.02.2020 - 30.04.2020

Main activities

- Activity 1: Performing the SWOT and the Diagnostic Analysis.
- Activity 2: Evaluation, ranking and elimination of main defects.
- Activity 3: Develop a unitary system for solving problems and improving processes and implementation at the organizational level.
- Activity 4: Evaluation of harmful emission absorption system.

Results

- The diagnostic analysis revealed that the company received the grade of satisfactory adaptation and that an offensive strategy was recommended.
- The improvement methods found focused on improving the products by reducing the number of main defects by 60%.
- The harmful emission absorption system was evaluated, the reduction in the acquisition costs of hydrochloric acid, the unacquired quantity being replaced by the acidic water resulting from the filtration.

Applicability and transferability of the results

- The unitary system for solving problems and improving processes is currently implemented in all areas of the company.
- Following the implementation of the absorption system, the emissions with harmful impact on the environment are reduced to a minimum, Berg Banat SRL entering the category of companies with sustainable development.

Financed through/by

S.C. BERG BANAT SRL, Timisoara



Fig.1 Retrieving parts from thermal galvanizing process

Research Centre

Research Center in Engineering and Management, Faculty of Management in Production and Transportation, University Politehnica Timisoara

Research team

- Assoc. Prof. Adrian Pavel PUGNA, PhD
- Lect. Prof. Sabina POTRA, PhD
- Assoc. Prof. Romeo NEGREA, PhD
- Eng. Dariana MICU
- Eng. Oana LUNGU

Contact information

Assoc. Prof. Adrian Pavel PUGNA, PhD
Faculty of Management in Production and Transportation/
Management Department: Str. Remus No. 14, 300191, Timisoara
Phone: (+40) 256 404041
Mobile: (+40) 745 500 234
E-mail: adrian.pugna@upt.ro
Web: www.mpt.upt.ro/cercetare/centrul-de-cercetare.html

DEVELOPMENT OF BUSINESS MODEL AND STRATEGY FOR S.C. ANISSU AMB S.R.L.

Goal of the project

This project aims to define a sustainable business model to increase the company's competitiveness in the national and international business environment. At the same time, the development of the strategy is considered to increase the organizational capacity for sustainability and competitiveness.

Short description of the project

Increasing the company's competitiveness in the national and international business environment.

Project implemented by:

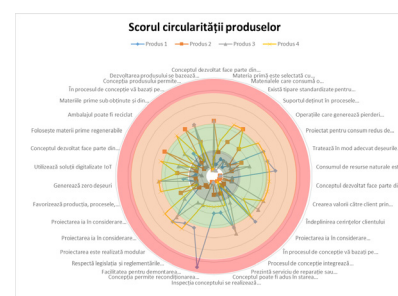
Faculty of Management in Production and Transportation, Management Department.

Implementation period

25.07.2020 – 25.09.2020

Main activities

- Outlining the apparel and shoes industry market at local and national level
- Identifying the main competitors and their profiles
- Identifying the conditions for increasing the capacity of apparel and shoes industry for sustainability
- Conditions for adaptation to international regulations
- Identifying potential international clients
- Outlining the conditions for increasing the circularity of products in the context of the circular economy
- Developing the strategy for increasing the company's competitiveness.



Results

- Model for measuring product circularity
- Model for the sustainability of the apparel and shoes industry
- The strategy for increasing the company's competitiveness in the conditions of the circular economy.

Applicability and transferability of the results

Ensuring an integrated business model to increase the company's competitiveness.

Financed through/by

S.C. ANISSU AMB S.R.L.

Research team

- Assoc. prof. eng. Larisa IVAȘCU, Ph.D.
- Lecturer ec. Alin ARTENE, Ph.D.

Contact information

Assoc. prof. eng. Larisa IVAȘCU, Ph.D.
Faculty of Management in Production and Transportation /
Management Department
Address: 14 Remus Str., 300191 Timișoara, Romania
Phone: (+40) 256 40 42 84
E-mail: larisa.ivascu@upt.ro
Web: <http://www.mpt.upt.ro/eng/research/research-center/members.html>