Project Final Report

2023-1-CZ01-KA121-VET-000117584

BETWEEN

The Sending Organization

Gymnázium a Střední průmyslová škola elektrotechniky a informatiky Frenštát p. R., p. o.

The Intermediary Organisation

Euromind Projects SL

AND

The Host Organization

Dronetools S.L.

Training Programme Dates:

12-02-2024 - 23-02-2024

EUROMIND AS PROJECT PARTNER

1. Profile Description

euroMind is an international training consultancy and VET provider with headquarters in Seville and Úbeda in Andalusia (Spain).

euroMind as a training provider delivers vocational education trainings, general and job-related language courses, VET training-related workshops and study visits, workshops on culture, lifestyle and customs of EU countries as well as classes on skilful and effective job search in the EU.

It promotes and delivers trainings for teaching staff and secures work placements and exchange activities for VET students and graduates enabling at the same time young people and professionals to make the most out of opportunities of competencies & skills development offered by European educational programmes.

euroMind in partnership with Andalusian vocational colleges and companies delivers school based vocational trainings for students of different educational fields, such as: CNC, automation, electricity, renewable energy sources, plumbing, industrial and graphic design, 3D design, ICT, electronics, administration.

euroMind as a VET provider works in partnership with a wide array of private companies in almost all the sectors, such as tourism, business administration, medicine, fashion, hairdressing, health & beauty, physiotherapy, marketing, media, advertising, public relations, tourism, IT, social work, logistics, nursing, construction, geodesy, analytics etc.

2. euroMind experience and expertise

The euroMind possesses extensive experience and expertise in the field of European mobility projects preparation and management which allows it to assist Spanish vocational colleges and governmental institutions with the preparation of project applications, finding trustworthy and competent host partners in Europe for their project participants, teaching and HR staff.

Over last 3 year euroMind has participated as a receiving – host partner in over 60 mobility projects with the participation of a total of 1800 persons: students from technical and vocational schools, university students, graduates, unemployed and teaching and HR staff. These projects involved partners from Poland, Great Britain, Czech Republic, Slovakia, Germany, Portugal, Turkey, Croatia, Italy, Greece, Bulgaria, Lithuania, Latvia, etc. The full list of projects including numbers and titles is available on the euroMind website: www.euromind.es in the Gallery.

euroMind is also responsible for the participants' linguistic, socio-cultural and practical preparation and also, if necessary, for the project administration and management issues.

euroMind has been participating as a sending and host organization in more than 100 projects including Leonardo Partnership, Erasmus Placement and Leonardo Mobility – PLM, VETpro and IVT and Erasmus + projects.

euroMind monitors that all the required documentation is prepared and submitted on time at every stage of the project lifecycle and makes sure that all the partners carry out their responsibilities.

euroMind participates in seminars organised by ECVET team regarding the use of system of transfer of competences and skills in the vocational training. euroMind experts have extensive knowledge in the field, hence they are able to train their partners on how to make use of this system in their projects.

euroMind has an impressive network of partner companies from different economic sectors. More than 800 entities both private and public cooperate with euroMind in Ubeda, Seville and Malaga. This extensive activity is a perfect guarantee that all the students received by euroMind will be successfully placed.

PROJECT PARTICIPANTS' LIST

Participants' Name	Placement Sector
Jan Dostál	Electric Programmer (Drones)
Radek Otřísal	Electric Programmer (Drones)
Vojtěch Gajdušek	Electric Programmer (Drones)
Patrik Pícha	Electric Programmer (Drones)
Daniel Pospišilík	Electric Programmer (Drones)
Ondřej Uherek	Electric Programmer (Drones)
Patrik Zelenka	Electric Programmer (Drones)

TRAINING PROGRAMME

Host Organization: **Dronetools S.L.**

Tutor's name: Jorge Juan Gutiérrez Riego/Octavio Perez Lagares

1. Description of the host organization

Dronetools S.L. is a manufacturing company of RPAs (Remotely Piloted Aircraft systems). In their workshops, they mould carbon fiber, aluminum and plastic with the latest technology to create the pieces that make up a flying platform, with precision standards of the aeronautical industry. They design the RPAs specifically for each client, which involves; using 3D parametric software, manufacturing the prototype, and doing flight tests. Moreover, the company specializes in industrial mechanization, microelectronics, robotics, design and control systems, and is equipped with such tools as: machining centre, industrial CNC cutting machine, high-precision fusion modelling 3D printing machines, cubic vacuum baking oven, insertion press, Hyundai Wia numerical control lathe, and CNC milling machine.

2. Description of the training programme and objectives

The training program is The training program is divided into 3 stages in accordance with the length of the trainees stay in the host company

1st Stage
- Getting to know the company tutor and the team
- Getting familiar with the company structure, premises, rules, health and safety procedures
- Getting familiar with the company affairs and projects
- Getting familiar with the extent of the company's business activity: local, regional, national or international
- Providing a brief overview of the tasks and projects the trainee will get involved in
- Getting familiar with the work stand
- Getting to know the programs and applications used by the company
- Getting to know the system of working, timetables and work culture
- Starting to perform job-related tasks gradually

After the internship
- Completing training diaries regularly, in particular, taking notes of the tasks delivered and the progress made
- Taking part in Spanish language activities with the aim of breaking the language barrier and improving communication as well as expanding the sector related vocabulary
- Taking part in dissemination activities, the aim of which is to promote the internship on a local, regional and national level (preparation of PowerPoint presentations, Facebook fan page, or a short

movie depending on preferences)
- Cultural activities involving getting to know Spanish customs, culture, and language

2nd Stage
- The trainee will gradually be introduced to more demanding and more complex tasks that require more responsibility. The trainee will be developing their professional skills further as well as slowly taking up new tasks
- Performing job-related tasks assigned to the trainee depending on a daily workload, customers' needs, new projects and tasks coming in

After the internship
- Completing training diaries regularly taking notes of the tasks delivered and the progress made
- Taking part in dissemination activities, the aim of which is to promote the internship on a local, regional and national level (preparation of PowerPoint presentations, Facebook fan page, or a short movie depending on preferences)

3rd Stage
-The trainee will be given more responsibilities and tasks depending on their development and performance review. During the last week of his or her work placement, the trainee should be able to carry out all the tasks envisaged for him or her in the program.
- Performing job-related tasks assigned to the trainee depending on a daily workload, customers' needs, new projects and tasks coming in

After the internship
- Completing training diaries regularly taking notes of the tasks delivered and the progress made
- Taking part in dissemination activities, the aim of which is to promote the internship on a local, regional and national level (preparation of PowerPoint presentations, Facebook fan page, or a short movie depending on preferences)
- Roundup: sharing experiences, presentation of dissemination activities and handing out certificates
divided into 3 stages in accordance to the length of the trainees stay in the host company:

1st Stage
- getting to know the company tutor and the team
- getting familiar with the company structure, premises, rules, health and safety procedures
- getting familiar with the company affairs and projects
- getting familiar with the extent of the companys business activity: local, regional, national or international
- providing a brief overview of the tasks and projects the trainee will get involved in
- getting familiar with the work stand

- getting to know the programs and applications used by the company
- getting to know the system of working, timetables and work culture
- starting to perform job-related tasks gradually

After the internship:
- completing training diaries regularly, in particular, taking notes of the tasks delivered and the progress made
- taking part in Spanish language activities with the aim of breaking the language barrier and improving communication as well as expanding the sector-related vocabulary
- taking part in dissemination activities, the aim of which is to promote the internship on a local, regional and national level (preparation of Power Point presentations, Facebook fan page, or a short movie depending on preferences)
- cultural activities involving getting to know Spanish customs, culture and language

2. Main responsibilities & tasks carried out during the training

- Preventing potential accidents that may happen during the assembly
- Welding process with tin before putting it into practice on the assembly
- Building a drone from scratch
- Completing the drone
- Using Arduino with JAVA, from Eclipse and knowledge of API
- Creating a joystick to control the drone flight. Multimeter presentation on LCD screen
- Controlling a drone using different types of movements, flight modes, configuration, etc
- Testing the drone and connection of the transmitter to the receiver
- Calibrating the drone and outdoor flight

Jan Dostál

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

At the beginning, we had to check all components to ensure that they would work. Then, we tried to create the base of the drone in CAD2D, which we successfully accomplished, leaving us with some free time to work on the legs. After that, we practiced soldering to ensure proficiency when applying it to the drone. Following the soldering process, we designed a base for the autopilot in Free CAD and 3D printed it. Approaching the finish, we carefully screwed and mounted all the pieces together, ensuring no wires were loose. The last step involved the calibration of the compass, controller, modes, etc. In the very end, we practiced flying on a simulator and performed any necessary fixes on the drone. I mainly learned theoretical knowledge about drones as some of the skills as smoldering or designing in CAD were already thought in school. I learned how to calibrate the drone, why are used two colors on legs, how to setup motors or using mission planner.

Radek Otřísal

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

I have been designing plates in Cut2D, creating specific components in FreeCAD and measuring them. In addition, I learned more about soldering, and then I assembled the drone itself. After making sure, the drone is assembled correctly; I connected hardware parts and started the calibration. At first, I started hardware calibration by connecting the drone directly to the remote controller and then calibrated it by moving the levers in specific ways. Software calibration was about connecting the drone to computer and to joystick, where we practiced planning routes and simulated flying a drone in programs called "Mission Planner" and "Flight Controller". In addition, I learned more about programming languages called "Arduino" and "Java". After configuration and some checks, I was ready to fly the drone outside. Nevertheless, after this internship I feel more advanced and confident in team communication, teamwork and leading. I genuinely improved my communication skills in English and Spanish by having conversations with locals and on internship as whole. I learnt to work in a team of people, I do not specifically know and I learned about leading a team of this kind. In addition, assembling a drone from scratch and programming in Java were a huge premiere for me. During the internship, I must have been careful, so I could not break anything and not harming anyone.

Vojtěch Gajdušek

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

We started the drone construction process and carefully built the flying drone from the total beginning. Starting with CAD 2D drawings, we moved quickly forward to putting together the drones base and installing its motors. Before assembling the parts into the main board, we refined our soldering skills during soldering sessions. Using a simulated test task, insights regarding drone part selection were obtained. Using CAD 2D and free CAD, we created a component that contains the autopilot. The top plate came as we finished attaching the last few parts and, guided by our mentor began the process of calibrating the drone. In our last meeting we tried and adjusted our designs before taking our drones for supervised flights with an experienced pilot. My understanding of drone development grew as a result of this engaging experience. Deepened soldering and 2D CAD proficiency along with practical calibration and setup work. Working together with new students improved my ability to work in a team and created a more comprehensive learning environment.

Patrik Pícha

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

During our two weeks of internship, our primary objective was to build a drone from scratch. We began with a presentation covering various types of drones and their components. Using CAD2D software, we designed the main boards, facing some challenges with the complexity of the top board. After successful design, we practiced soldering, ensuring a smooth process when working on the actual components. Assembling the drone's skeleton with a screwdriver and screws followed, including legs, top and bottom plates, and motors. We also attempted to design a platform for the autopilot using FreeCAD, but 3D printing delays prevented its integration into the final drone. Despite this, we completed the assembly, leaving only the battery and propellers for the final flight-test. In the last days, we delved into drone missions waypoints and honed our skills in a drone flight simulator. Throughout this experience, I refreshed and improved my soldering skills. Additionally I gained proficiency in working and designing using both CAD software tools.

Daniel Pospišilík

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

We have been constructing a drone from the ground up to the point where it can be flown without any issues. First day we were tasked with drawing the main drone parts in 2D CAD, and after that, we assembled the base of the drone and mounted the motors. Next, we were introduced to soldering. Before soldering the components that needed to be attached to the main board, we were given cables to practice with. In our next task, we were given a program where we could choose parts for our drone and see if it could fly. This task was only to show us how to proceed if we were buying our own drone, as our drone already had all the components ready. Next, we were introduced to 3D CAD, where we created our own part into which we mounted the autopilot. Now came the best part (in my opinion), where we mounted the remaining components to the body and started to calibrate the drone. Our mentor showed us a program in which we were tasked to calibrate the drone. We calibrated the compass, GPS, autopilot, and controller. In our last lesson, our mentor reviewed the drones and pointed out the things we missed and needed some repairs/recalibrations. We were also able to practice piloting the drone in a simulator so that we could get the hang of it. When the drones were in good shape, we were then allowed to fly them. While flying with our drones, we were supervised by a professional pilot who guided us as we piloted the drone. I have learned about the process of creating a drone, from the moment the parts arrive at your doorstep to the fully functional drone capable of flight. For example, I have enhanced my skills in 2D/3D CAD software, using them to design and then print my own pieces on a 3D printer. I have also improved my skills in soldering. I was introduced to the process of constructing a drone from provided parts and later learned how to calibrate and set up the drone. Additionally, I have improved my teamwork skills by collaborating with my classmates.

Ondřej Uherek

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

I worked in a team, where each member had specific job to do, so the team could save some time. I was measuring holes and sides of the bottom plates, so our colleagues could create the models in Cut2D and in FreeCAD. I drew some blueprints on paper so the team could better understand each measure. After creating the models and measuring them, my team and me went to the assembling part, which consisted of soldering specific parts and connections. After we correctly soldered the parts, we mounted the components together with screws. Then we checked the state of motors and made sure, if they work correctly and lastly, we did some cable management However before that, we had to learn about these specific components, so we could understand the function of the drone. After assembling the drone, we calibrated the drone in hardware way and in software way. Hardware calibration consisted of connecting to the joystick and adjusting the motors, so they were in correct order. In software calibraion I learnt computer programming and how to manipulate with a drone in software programs like Mission Planner or Arducopter. Before flying a drone, we tried some simulators like Arducopter or HELI-X. Lastly, after the drone was checked, we could fly it. As for a future electrician, there was so many new things for me, like programming in Arduino and Java, preparing the blueprints or assembling the drone as whole. In addition, I learnt to communicate in Spanish a bit and I learnt to work in a team of several people.

Patrik Zelenka

Tutor's final note

6 (Excellent)

1. Participant's opinion about his/her personal & professional development

I have been designing plates in Cut2D, creating specific components in Free CAD and measuring them. Also I learned more about soldering, then I assembled the drone itself. After making sure, the drone is assembled correctly, I connected hardware parts and started the calibration. At first, I started hardware calibration by connecting the drone directly to the remote controller and then calibrated it by moving the levers in specific ways. Software calibration was about connecting the drone to computer and to joystick, where we practiced planning routes and simulated flying a drone in programs called "Mission Planner" and "Flight Controller". Also I learned more about programming languages called "Arduino" and "Java". After configuration and some checks I was ready to fly the drone outside. Nevertheless after this internship I feel more advanced and confident in team communication

I learn assembling a drone from scratch and programming in Java were a huge premiere for me. During the intership I must have been careful, so I could not break anything and not harming anyone.

I mostly enjoyed the whole internship and I am happy, that we had mentor called Octavio. Working and learing with him was simple, because of almost none language barrier and his explaining skills. Moreover working with drones is also positive thing, because otherwise there are not many chances to find this type of internship. One negative was time and traffic to the company.

This internship was a great adventure and I met a lot of new people. Working was fun for me.. I advanced in teamwork and leading, which was not easy sometimes, especially when time was short. Seville is a beautiful city and discovering the city centre and local culture was so calming but also bringing the energy, which boosted my moral ethics. Local people were so pleasant and local cuisine was tasty and hearthy. I enjoyed working at DRONETOOLS and this internship was a big succes for me.

PROJECT MANAGEMENT

1. Mobility Project Preparation & Induction

Before the arrival of your trainees in Spain, euroMind provided them with the pre-arrival guide, including useful information, local transport & social life, emergency numbers.

euroMind has also arranged Skype meeting with the participants in order to get to know them and to interview them.

After the Skype interview, euroMind created a Facebook group to which all the selected participants were invited, together with their Teachers. This way euroMind Coordinator had constant contact with the target group already before their arrival in Spain.

euroMind took responsibility for preparing Learning Agreements individually for each participant and made sure that all the parties involved signed all the necessary documents.

On the first day after the arrival, euroMind organized the welcome session during which the participants got to know the euroMind team, were reminded about the programme agenda, accommodation rules and dissemination strategy options.

Later on, the participants were taken for a walk around the neighborhood to get to know the area and find out where banks, mail box, workplace, supermarkets, bus station are.

2. Monitoring & Mentoring

In order to make sure that the objectives of the Learning Agreement were going to be achieved and that the participants would be fully integrated in the companies' work culture, the monitoring was delivered by all of the parties involved in the project.

euroMind assigned a Mentor for the group of participant who was responsible for the introduction of the participants to the host organisation. During the training the Mentor delivered monitoring visits to the host organisation in order to revise the tasks of the trainees, their progress as well learn from the first hand the level of satisfaction of both the participants and the training centre Tutor.

The Mentor in cooperation with the Tutor carried out the evaluations of the trainees in the middle and at the end of the training.

After obtaining the results of the half-way through evaluation, the Mentor met the participants to give them the results of this evaluation. The least favourable results were discussed with the

participants in private so that both the Mentor and the trainees had the comfort of sharing the information and exchanging the opinions and finding solutions to some problematic issues.

The Tutor from the host organisation was responsible for helping, informing and guiding and supervising the work done by the participants. The tutor had regular meetings with the participants in order to assess their progress during the training.

euroMind at the end of the programme during the goodbye session handed out evaluation sheets to the participants so that they could assess their stay in Spain, training programme, as well as the work of the euroMind.

euroMind was also available to the participants 24/7 in case of emergency.

3. Communication

EuroMind takes good care of successful communication between host organizations and trainees. Each evaluation of work is aimed at improving the quality of cooperation. Each party is thoroughly checked and assessed and the necessary improvements are introduced. Moreover, euroMind mediates in this tutor-trainee collaboration by translating and solving language-connected complicated matters.

4. Dissemination strategy

euroMind took active part in the process of preparing and dissemination results of the project together with the sending organisation and participants.

While the trainees were in Spain, euroMind involved them in a number of activities the aim of which was to make students monitor and collect all the information related to the progress of their work placements and stay in Spain. The materials produced by the participant would be then used as tools for disseminating results by the school in their country and by the partner in Spain.

The participants could work in groups or individually. On the first day they needed to decide on the form or forms of recording their professional experiences.

As a rule the whole group needed to create a Facebook fun page as it is an effective and quick means of accessing large numbers of people. What is more, it is a form that appeals to young people as they can share their experiences instantly and receive instant feedback, too. The fan page is always linked to the euroMind's Facebook fan page. The sending organisation was also asked to do the same thing.

This way the material produced by the trainees reached bigger audiences and was more effectively disseminated.

The trainees were encouraged to prepare a presentation in English which they would be able to use to disseminate the results of the project back home (conferences, meetings with other students, parents, etc.). Link: https://www.instagram.com/p/Cru8mQoq9us/?igshid=YmMyMTA2M2Y%3D

euroMind also disseminates the project at a local level. It organises language and cultural exchanges between the international trainees and students from local vocational colleges. During those meetings both Spanish and International students are involved in a number of activities the aim of which is to get to know each other, share experiences related to work experiences and in general their stay in Spain. The students also exchange information about their countries and cultures.

5. Certification

To validate the acquired skills, the trainees, at the end of their stay, received complete proof of their participation in the project by means of several methods of recognition:

- Training Certificate
- Europass Mobility Certificate

CULTURAL & LINGUISTIC PREPARATION

1. Cultural activities, Andalusian cities & places visited during the programme

Walk around Seville city center : Seville is the artistic, cultural, and financial capital of Andalusia in the southern region of Spain. The city is a historical masterpiece full of monuments, gardens and flamenco festivals. The city reflects the harmony between different Christian, Jewish and Muslim cultures and religions. As Seville is the capital and the largest city of the autonomous community of Andalusia, it is easy to get lost here, however thanks to the tour organised by euroMind´s team, the trainees were able to admire the city safely and in a pleasant atmosphere. The euroMind coordinator helped the trainees understand the city from a historical and artistic point of view, but also gave them some shopping and eating tips. The group were shown the best places where they could go and grab something to eat, drink and have fun or just relax and hang out.

SUMMARY OF THE PROJECT

euroMind team did their best in order to deliver the best professional and cultural experience to the trainees of the project being always ready to help, give advice and solve any problems or doubts.

The trainees were fully satisfied with their training. They gained much needed professional experience abroad which is highly appreciated and sometimes even specifically asked by today's employers.

We have no doubt that our trainees will use their new knowledge and experience at their current work in their home country or increase their chances at the labour market and dazzle their future potential employers.

Moreover, the trainees learnt the basics of the Spanish language were able to work in a multi-cultural environment and proved themselves with the ability to work individually as well as in a team.

euroMind team was extremely satisfied with the trainees' involvement in the project and personal interest in whatever they participated in.

This project was very successful and we hope to realize other successful projects with Gymnázium a Střední průmyslová škola elektrotechniky a informatiky Frenštát p. R., p. o. in the future.

SEVILLA, 23-02-2024

Carlos Hoyo de la Torre

Director