

ANNUAL REPORT 2022















INTRODUCTION

2022 STEPS KEEPING OUR FEET FIRM ON THE GROUND AND OUR EYES FIXED TO THE SKY



George Effraimidis



For ATLANTIS Engineering, 2022 was one more year added to its 25-year history, and the starting point along a new growth path.

- Technological upgrading of AIMMS (CMMS/CAFM),
- entering new market-countries,
- launching Sibyl (Predictive Maintenance) with striking results,
- enhancing our human resources,
- leveraging digital marketing, and
- implementing modern management and corporate strategy tools,

were the main pieces of our success and achievement puzzle.

Confident that the quality of our people, our values and corporate culture are the keystones for us to move forward on solid ground, we will continue in the New Year to turn our **creative passion** into useful solutions for businesses and society.





THE COMPANY ENTRY INTO NEW MARKETS

2022 was an outward-oriented year for Atlantis Engineering!

Our activities were further expanded both in **Europe** and the **Middle East**, adding **8 new projects** of international footprint to our portfolio. We remain committed to our promise to continuously evolve and innovate, in order to see our products "travel" in international markets next year as well!

THESSALONIKI NEW HOME!

The year 2022 was marked by the upgrading of our working environment and a new home for Atlantis Engineering!

The team was staffed with 6 new members, while the ever-increasing needs led Atlantis Engineering to new, comfortable & welcoming premises! An opportunity for renewal and a new meeting place for all employees and partners of Atlantis Engineering, at the 12th km of the Thessaloniki – Moudania Road, in Thermi.





TEAM BONDING EVENTS

Hackathon 2022

A tradition turned into practice.

The AIMMS and Sibyl development teams met this year in Elassona and joined forces! **New ideas**, new challenges & projects were developed this year as well.

Atlantis Engineering's 3-day Hackathon has now become an institution, because good ideas are born from teamwork and moments to remember!



Wine Tasting!

The team of Atlantis Engineering celebrated its run of success in high spirits, tasting fine wines at Domaine Gerovassiliou degustation event.



This **special team-bonding occasion** sealed the warm and intimate climate because amid ambitious ideas and strategic goals, Atlantis Engineering never forgets to take a break from work and raise a glass!



MENA Region The strategic investment of Atlantis Engineering



Welcome from Atlantis Engineering Middle East. Operating out of beautiful **UAE**, third globally emerging country. Atlantis Engineering has grown in the Middle East across UAE, Bahrain and Oman.

Ahmed El-Badri

Furthermore, the company has a new partnership with **ADEPT ENGINEERING SERVICES in Oman**. ADEPT is an approved supplier to the **Oman Oil & Gas Industry's** join supplier registration system (JSRS). ADEPT has long expertise in Energy, Refinery, petrochemical in Oman & GCC markets.

Atlantis Engineering participated in 2022 in the Opening ceremony of the largest Arab maintenance conference **OMAINTEC.** MEA Facility Management Market Analysis: The **Middle-East** and Africa (MEA) facility management market is estimated to register a growth of 7.63% from 2022 to 2027. Several private and public projects, including construction, infrastructural, energy projects, etc., are creating a huge demand for FM services.





New Projects

Atlantis Engineering have successfully won a project with Drill & Hammer, a Emirati based Facility Management company in the UAE. Furthermore, major project in Tatweer in the free zone of Oman moved into the implementation phase.



Collaborations

The collaboration with AssetCoreXL, with specialized solutions in the field of Asset Management, strengthens the presence of Atlantis Engineering in the wider region both in terms of software solutions and in the provision of services.





The leading software for organizing your technical department.

AIMMS is a must-have tool for any company wishing to **organize** the processes of its maintenance department, to minimize bureaucracy and, above all, to use the necessary information for **modern and effective management.**



PRODUCT OWNER

Introduction



The drive of the software engineering team to develop the new generation of AIMMS software and high market acceptance were the main features of a strong year for the product.

Dimitris Oustampasidis

The first step for the radical upgrade of AIMMS and its application infrastructure was taken in 2022. The modern updating of the task list, the **automation of notifications**, the **geographical imaging** of equipment and tasks on a map, and the use of **webhooks** to implement real-time Integrations are some of the new AIMMS functions implemented. At the same time, aiming at a better user experience, particular attention has been paid to upgrading the visual, aesthetic and interaction aspects of the application.



NEW FEATURES



UI Modernisation

Upgrading the application infrastructure also enhanced the visuals, aesthetics, and user experience of the software. The new tools provide users with additional possibilities:

Advanced filtering

Increased execution speed



Real time data update

Modern updating of the task list and coloring of additions contribute to controlling and efficiently managing tasks.

- Monitoring new tasks
- > Monitoring task status

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Notifications

The configurability of Notifications ensures quality communication between departments and timely response to maintenance needs.

- Notification history
- > Management of notifications (view & Assignment-onset)
- Send notification on demand
- Reminder of maintenance x days before any scheduled execution

Geographical imaging

The geographic visualization of AIMMS data (equipment, tasks, craftsmen) allows for faster localization of information and coordination of crews:

- > Filtering tasks based on geographical distance.
- Search for the nearest crew.
- > Configuration of optimal routes, connection to navigator.
- On-site work certification.



NEW PRODUCTS



ETEM-GESTAMP

BULGARIA

International group of aluminium extrusion companies, active in the design, development and manufacturing of metal components and aluminum systems, with 50 years of continuous activity and experience in more than 23 countries.



MUNICIPALITY OF NICOSIA CYPRUS

A leading municipality of the Republic of Cyprus pioneering development projects and actions, such as the 42,500 m² Eleftheria Square that connects the medieval city with the modern city center of Nicosia.



MEVGAL

GREECE

One of the largest dairy industries in Greece, steadily active since 1950 and very outward looking, exporting in more than 30 countries. It has more than 4,000 pieces of equipment and one of the most extensive networks in Greece, exceeding 17,000 points of sale.

Additionally they trusted us in 2022















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Products



/lumil CASE STUDY

The use of AIMMS Software in ALUMIL

Cobtaining reliable data from the maintenance department's activity, while also dramatically reducing paperwork, has been the biggest benefit of using AIMMS. Its user-friendly screens and mobile app have "won over" all technicians, who trust it as their daily go-to tool».

> Georgios Skodras Head of Maintenance



ELIMINATION OF COMMUNICATION PROBLEMS

The Production Dpt submits its requests to the supervisor digitally; the supervisor prioritizes them after approval and the Maintenance Dpt is notified accordingly in a fully transparent and clear environment.



70% REDUCTION IN LOGGING TIME

Technicians use exclusively the AIMMS App to perform numerous tasks: from logging repairs, verifying preventive checks, and consuming spare parts to briefing the technician and taking photos.

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DATA COLLECTION FROM PLC

AIMMS was directly connected to the application of the core machinery PLCs, automating the process of recording and coding faults, and increasing the reliability of logging times.





The smart failure prediction platform

Sibyl is an integrated solution for monitoring equipment health. Incorporating machine learning algorithms and Industry 4.0 technologies, it collects and analyses sensor signals to detect, diagnose or predict failure incidents and calculate the remaining life of equipment.



Apply Sibyl and

- Prevent unplanned halts in production;
- Avoid unnecessary maintenance;
- Improve maintenance planning;
- Avoid serious damage;
- Increase equipment availability ;
- Extend the life of machinery.

PRODUCT OWNER

Introduction



Thanasis Naskos



In ancient times, Sibyls were powerful soothsayers. Today in the age of Industry 4.0, Sibyl is a predictive maintenance platform for diagnosing and predicting failure incidents of any type of equipment. ATLANTIS Engineering's new product is the result of years of research and the company's extensive experience in the field of maintenance.

The algorithmic quiver of the platform already implements and uses 13 techniques that cover needs for detection, recognition and prediction of faults. The platform integrates algorithms that can be applied from the first hours of operation of the platform (unsupervised learning) by identifying abnormal situations in equipment operation. Long-term operation of Sibyl ensures a healthy operation profile for each piece of equipment, while the software allows failure-prediction techniques to be applied, and models adapted to the special features of the machine to be trained.



FEATURES

Anomaly Detection

Instant recognition of failures in your mechanical equipment, using the platform's algorithms and techniques. By combining multiple algorithmic approaches, we cover a wide range of failure profiles, using self-adjusting techniques to **dynamically determine the limits** of normal equipment operation.



Fault Prediction

Early warning of impending equipment failures to help you prepare accordingly. The prediction range is adjusted to the requirements of your production process by utilizing **time series forecasting techniques** or **identification of hidden event sequence patterns.**

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Fault Identification

Accurate determination of the nature of the damage caused to your equipment using advanced pattern recognition techniques. **The appropriate techniques are selected on a case-by-case basis**, tailoring the solution according to the amount of historical data pertinent to the damage encountered.

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Remaining Useful Life Estimation

Continuous flow of information about the remaining lifetime of your equipment to ensure long-term monitoring of sound operation and **estimation** of the remaining production cycles or **operating time** of the equipment.

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The successful faults prediction in Philips

Philips Consumer Lifestyle is a leader in the global market for mass-produced electric shavers, occupying over 50% of the €1 billion market share. The Philips Consumer Lifestyle site in Drachten the Netherlands, is one of Philips' biggest development and production centres in Europe. On this site, employees from all over the world collaborate enthusiastically on the development of products that improve people's lives, such as rotary shavers, lady shaves, beard trimmers, and hair clippers.

Addressing challenges

The need

Sibyl's journey at Philips starts by its implementation at the electric shaver manufacturing plant. It was prompted by Philips' aim to **fundamentally address breakdowns** and quality problems in the presses of the metal cold forming line before occurrence.

First indications

In a short time, Sibyl's models began to perceive with great clarity the "pulse" of the machines and give their first predictions. The successful results in identifying different failure modes and quality problems strengthened the acceptance of the production staff to adopt it in their daily work routine. The project of the innovative Sibyl platform contributed to the adoption of modern Industry 4.0 technologies and strategic transition to predictive models for Philips C.L., as well as the efficient use of the critical production equipment in its factory

03

Products





Choosing Sensors

After the project team's analyses, the selected prediction models relied on acoustic signals (ultrasound). The whole sampling procedure of the high-density signals has been achieved by placing seven (7) sensors on the head of each press. It is worth noting that thousands of point measurements are selected from each stroke of the press.



Products

03

RESULTS

Robotic Arms

The impressive results led the robotics unit to adopt Sibyl as well, incorporating the approximately **270 robotic arms** primarily for an assembly operations role. The technologically advanced equipment of this department provided from the first moment all the necessary measurements required by the models, without requiring the installation of additional sensors.

User Interface

In the second phase of the project, particular emphasis was given to the **User Interface (UI)**, where in close cooperation with the factory staff, appropriate screens were configured for both the engineers and the machine operators. Through a friendly, fully graphical environment, every user can directly monitor the operating status of their equipment and take the appropriate actions.



Joint Working Group

It is worth mentioning that a critical point of added value for the successful implementation of Sibyl was the **joint working group** between Philips' engineers and Atlantis Engineering' data scientists. The high-end project is reflecting the quality of the executives and teamwork, while Atlantis' frequent and organized onsite meetings allowed rapid interpretation of outcomes and fast training of Sibyl's models. Finally, the transfer of know-how by DataLab laboratory of the Informatics department of the Aristotle University of Thessaloniki (AUTh) was valuable for the project.





M ATLANTIS

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STEPPING INTO MAINTENANCE 4.0

From preventive to predictive maintenance

After the 10-year implementation of AIMMS and the organization of daily maintenance, Loulis company aimed at even greater control over the reliability of its equipment. By installing **vibration and temperature sensors** on two of the most important machines (air separator, fan), the company started applying Sibyl's dynamic algorithms. The main objective was to respond as early as the onset of problems, but also to avoid undesirable effects within a relatively flammable environment. Initial results are more than encouraging and the road to 2023 is paved with new challenges.



RESEARCH

NEW RESEARCH AREAS FOR 2022



Kalliroi

Marini

Atlantis Engineering R&D team had another fruitful year, exploiting new technological opportunities to create business value and develop new products. New research focus areas predominantly concerned **advanced analysis techniques** for **incident detection and prediction** in industrial environments, **vibration sensor signal analysis** as well as acoustic emission analysis.

At the same time, in 2022, the Atlantis research team participated in the preparation of numerous innovative projects and research proposals submitted in response to Horizon Europe calls. The main area of interest was once again innovative AI applications supporting **digital transformation** of industry, but also further exploration of the humancentered design of these applications.



FAULT PREDICTION FOR VEHICLE FLEETS

Predictive maintenance of the Thessaloniki Public Transportation Organization (OASTH) vehicle fleet through early fault detection using advanced critical parameter analysis techniques obtained from telematics devices and IoT sensors. The project is implemented within the framework of the M&L Cluster in collaboration with Link Technologies S.A.

PREDICTIVE MAINTENANCE ON EXTRUSION LINES

Early fault detection in aluminium extrusion presses by monitoring ultrasound, temperatures and operating parameters and using failure incident diagnosis and prediction algorithms. The pilot application was implemented at EXALCO's facilities as part of Open Call 2 of the H2020 QU4LITY project.

COLLABORATION RESEARCH

Enhancing our strategic cooperation with the Data Science and Web Laboratory of the School of Informatics of Aristotle University of Thessaloniki by supporting a PhD thesis entitled "Advanced analysis techniques for phenomenon prediction".



Research

ATLANTIS NEW RESEARCH PROJECTS IN "HORIZON EUROPE"

DIGITAL TRANSFORMATION OF THE PRODUCTION PROCESS

Re4DY

Green, circular and digital transformation of a production process requires integration of innovative data-driven processes. The project envisages the development of a conceptual framework for "data as a product" to facilitate the implementation of digital continuity aimed at the transformation of the industrial sector in Europe.



iQonic Final Project Review Meeting in Turin, Italy, 25th October 2022

MODULAR FACTORIES OF THE FUTURE

Modul4R

The project envisages reliable, maintainable, affordable and **autonomous modular factories** capable of promptly responding to unexpected events and changes in the supply chain. Developing a holistic framework for production lines that ensure flexibility, rapid response and sustainability by leveraging cutting-edge technologies such as digital assistants, multi-level decision making systems and interpretable artificial intelligence.



DIGITAL ASSISTANTS AT THE SERVICE OF INDUSTRY WASABI

Innovation project supporting **industrial SMEs** to achieve their sustainability goals through the provision of smart digital assistants using artificial intelligence

ACTIVE PARTICIPATION IN ASSOCIATIONS

DFA











OUTWARD ORIENTATION

EFNMS Chairmanship

Atlantis Engineering CEO, Cosmas Vamvalis, was elected Chairman of the European Federation of National Maintenance Societies (EFNMS) for the 3rd consecutive term.







European Federation o National Maintenance

Societies vzw



Toli and Christine Lerios are the mentors to support, on a pilot basis, Atlantis Engineering in its effort for **technological innovation** and involvement in international markets.

MENTORS CORNER TOLI & CHRISTINE LERIOS

Paving the way to the future

The skills of Toli Lerios (an expert of outstanding experience gained through professional involvement with SRI International, Microsoft, Facebook and Sun Microsystems) and Christine Lerios (a Stanford University graduate with vast experience in Marketing and Human resources), as well as their highly creative ideas and proposals are expected to give a rapid boost to the growth and development of Atlantis Engineering. Every moment of cooperation with them is unique!

EVENTS

MAINTENANCE FORUM

For the **15th time**, Atlantis Engineering co-organised along with HMS, the Maintenance Forum, the conference that has already become an institution.

This conference started as a **vision of Atlantis Engineering** to strengthen and organize the industry and FM companies, as well as to develop company staff in order to jointly transform the map of Maintenance.

New practices, methodologies and innovative digital tools were presented this year, along with the launching of Maintenance in the Era of Industry 4.0! Experienced executives and experts in the field of maintenance shared valuable know-how and experiences with the participants.



ENERGIA.TEC

Atlantis Engineering was also present at the International Exhibition Energia.tec!

Company executives had the opportunity to communicate with **field maintenance** professionals, to listen to their daily problems and present simple and effective solutions through Atlantis Engineering products.





EVENTS

9th Technology Forum

Atlantis Engineering played an active role as **sponsor** and coordinator of the 9th TF held at the I. Vellidis Conference Centre in the framework of the "Beyond" exhibition.

The TF, co-organized by 25 organizations and aimed at sharing knowledge and developing synergies, featured 6 speakers from Silicon Valley, the highlight being the speech by James Juffner, Chief Digital Officer of Toyota Motor Corporation.



Economist Impact's Western Balkans Summit 2022

At the Economist Summit, held in Pristina, the CEO of Atlantis Engineering highlighted the importance of maintenance for achieving sustainable development for companies and society in general. The panel also included the Deputy Prime Minister of Kosovo, Mr. Besnik Bislimi and the Deputy Prime Minister of North Macedonia, Mr. Fatmir Bytygi.









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