

# -R-PODID-

## R-PODID - Reliable Powerdown for Industrial Drives

Welcome to the second edition of the R-PODID Newsletter! Our consortium is pleased to introduce in more detail the project's objectives, main facts, and the latest news from the R-PODID developments.

**36**

Duration in months

**2023 09 01  
- 2026 08 31**

Start and end date

**University of  
Bologna**

Coordinator

**33**

Number of partners

**€ 23.7M**

Total budget

**€ 7.2M**

EU budget contribution



# R-PODID OBJECTIVES

Methodology for fault-prediction model generation from sparse training sets or system simulation

Power electronics with integrated support for embedded AI

24 h fault-prediction for Gallium Nitride (GaN) and Silicon Carbide (SiC) based power converters

24 h fault-prediction and fault mitigation for electric drives





# R-PODID NEWS

## R-PODID Consortium Meeting in Eindhoven

In March 2024, a Consortium Meeting of the R-PODID project, hosted by NEWAYS, saw Project Coordinator Marco Crescentini, representing the University of Bologna, leading discussions on the project's status.

The meeting centered on tracking progress, featuring detailed presentations by Work Package leaders and Use Case representatives. These **sessions highlighted the diverse expertise within the project and encouraged collaborative innovation**. In particular: It laid the groundwork for future collaborations, both within the consortium and with external partners. This means that the R-PODID project has the potential to create an even greater impact and achieve more ambitious results.

The consortium **meeting clarified in detail the role of each partner within the different use cases**. This way, all consortium members know what is expected of them and can work together more efficiently. It saw an increased interest from partners in expanding their involvement in use cases beyond those they were initially involved in. This demonstrates that the R-PODID project is generating excitement and that partners are eager to contribute to its success.

Parallel sessions delved into specific aspects of Use Cases, allowing for nuanced exploration and targeted discussions. The collective expertise promises advancements in key areas, contributing to the overall success of the R-PODID project.

After thorough discussions, the Consortium Meeting reached its **conclusion with a comprehensive outline of plans for the forthcoming six months**. Each milestone and plans for deliverables were meticulously detailed, with clear objectives, timelines, and allocated responsibilities. The team emphasised the importance of cohesion and communication to ensure seamless execution.

Furthermore, preparations were initiated for the upcoming first-year review meeting, recognising its significance in assessing progress, identifying challenges, and recalibrating strategies. With a collective commitment to excellence, the team departed the meeting with a renewed sense of purpose and determination to achieve their objectives.



## R-PODID Seminar Understanding Perceptive Deep Learning and Generative AI in Automotive Applications

The R-PODID project held a trailblazing seminar titled 'Understanding Perceptive Deep Learning and Generative AI in Automotive Applications' in Bologna, Italy, on the 16th of April 2024.

The seminar featured an enlightening lecture delivered by esteemed STMicroelectronics Engineer, Dr. Francesco Rundo. The **seminar served as a platform to delve into the forefront of technological innovation**, focusing on the intersection of perceptive deep learning, generative AI, and their application in the automotive industry. Dr. Rundo, with his extensive expertise, guided attendees through a comprehensive exploration of various themes, including Perceptive Deep Learning techniques, Advanced Driver Assistance Systems (ADAS), and Cutting-edge advancements in automotive safety.

Of significant importance was the discussion surrounding the R-PODID project, highlighting its pivotal role in pushing the boundaries of automotive technology. Dr. Rundo elucidated on the project's objectives, methodologies, and the transformative impact of Chips JU funding.

The event concluded with a forward-looking perspective on AI-Based Lifetime Predictor and Power Cycle Test, showcasing the trajectory of innovation in the automotive sector.

The R-PODID **seminar underscored the collaborative efforts of academia and industry in driving technological advancement**. Attendees left with a deeper appreciation for the potential of perceptive deep learning and generative AI to revolutionise automotive applications.

**R-PODID**

# SEMINARY

UNDERSTANDING PERCEPTIVE  
DEEP LEARNING AND  
**GENERATIVE AI** IN  
AUTOMOTIVE APPLICATIONS

Lecture given by **ST-I Engineer**  
**Francesco Rundo**

**16 APRIL 2024**  
**9:00 - 13:00**

**BOLOGNA UNIVERSITY - ALMA MATER STUDIORUM**  
Via Saragozza 8 - 40123 Bologna  
Aula 7.4



## 2024 IEEE International Workshop on Metrology for Automotive in Bologna

R-PODID was present during the 2024 IEEE International Workshop on Metrology for Automotive (IEEE MetroAutomotive 2024) in Bologna, which was held on June 26-28, 2024. MetroAutomotive 2024 **aims to be a solid reference of the technical community to present and discuss the most recent advances and results of both scientific and technological research activities in the automotive industry**, with particular emphasis on new trends and applications.

Attention was paid, but not limited, to new technologies for metrology-assisted production in automotive industry, sensors/diagnostics and associated signal conditioning for automotive, and calibration methods for electronic test and measurement for automotive. The program was **designed to raise the interest of a wide group of researchers, operators and decision-makers** from metrology and automotive fields, by presenting the most innovative solutions from the scientific and technological points of view. The Workshop covered all aspects of the segment, with a particular focus on hybrid/full-electrical vehicles, connected autonomous cars and related mobility.





## R-PODID Consortium Holds Third Project Meeting in Lisbon

On the 9th and 10th of September, **over 50 contributors from the R-PODID consortium gathered in Lisbon for the third project meeting.** The event brought together representatives from a wide range of partner organisations, including research institutes, universities, large industry players, and small and medium enterprises (SMEs), reflecting the diverse and collaborative nature of the consortium.

During the two-day event, partners presented updates on the progress made across the project's Work Packages. Leaders of the Work Packages and specific Tasks showcased the significant technological advancements achieved over the first 12 months of the project. A standout highlight of the meeting was the progress in Work Package 1: Fault Models and Artificial Intelligence, where key breakthroughs were demonstrated, underscoring the innovative edge of the project.

On the second day workshops were held for the project's four use cases: Use Case 1 - Industrial Drives GaN Inverter for Conveyor belt motors, Use Case 2a - Automotive SiC traction inverter, Use Case 2b - Heavy duty Testbed, and Use Case 3 - Industrial Lighting, providing teams with the opportunity to deep dive into specific areas of focus and refine their approaches. This second day also featured the project's General Assembly, a critical forum for steering the project's strategic direction.

With the consortium now preparing for the upcoming annual report, the R-PODID team is well-positioned for its first project review and remains on track to continue its cutting-edge work in the months ahead.



## R-PODID at MEDNIGHT 2024

R-PODID project was presented with a project booth during the MEDNIGHT 2024 event on the 27th of September 2024.

Mediterranean Researchers' Night – MEDNIGHT – is an annual gathering where Mediterranean countries unite under the banner of science, bringing knowledge and excitement to audiences of all ages. This night marked the culmination of three months of science-filled activities, taking place in gardens, streets, beaches, and—new this year—beach bars across the Mediterranean!



## Johannes Kepler University Linz Presents R-PODID at SyMSpace Days



Researchers from the Johannes Kepler University Linz presented R-PODID during the SyMSpace Days on the 18th – 19th of September 2024 in Linz, Austria.

This two-day event provided **a platform for experts and interested parties to exchange ideas about current trends, advanced simulation methods and future developments in the field of electrical machine simulation.**

The event's agenda this year was packed with technical presentations and discussions. The first day featured topics like SyMSpace Web technology, rotor strength simulation, and tolerance analysis for various systems, including vernier motors and mechanical systems. The day ended with a networking dinner, fostering deeper collaboration among participants.

On the second day, presentations delved into cutting-edge subjects such as bearingless motors, magnetic bearing technology, and accelerated FE simulation of electrical machines. Other topics included the calculation of transient overvoltage in motors, 3D simulations, and material measurement. The R-PODID project garnered attention as part of this event, contributing to discussions on bearingless motors.



[www.r-podid.eu](http://www.r-podid.eu)



[@RPODID](https://twitter.com/RPODID)



[@R-PODID](https://www.linkedin.com/company/r-podid)

**ACKNOWLEDGMENT:** R-PODID is supported by the Chips Joint Undertaking and its members, including the top-up funding by National Authorities of Italy, Turkey, Portugal, The Netherlands, Czech Republic, Latvia, Greece, and Romania under grant agreement n° 101112338.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the granting authority. Neither the European Union nor the granting authority can be held responsible for them.