



This project is co-funded by the European Union
and the Republic of Türkiye



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

16 November 2023



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023



KOÇ %38
STELLANTIS %38
Publicly traded %24
Borsa Istanbul Stock Exchange
(BIST 30 and BIST 100 Indexes)



TOFAŞ

TÜRK OTOMOBİL FABRİKASI A.Ş.

Founded in 1968



1,000,000 m2
Operational Facility in
Bursa / Türkiye

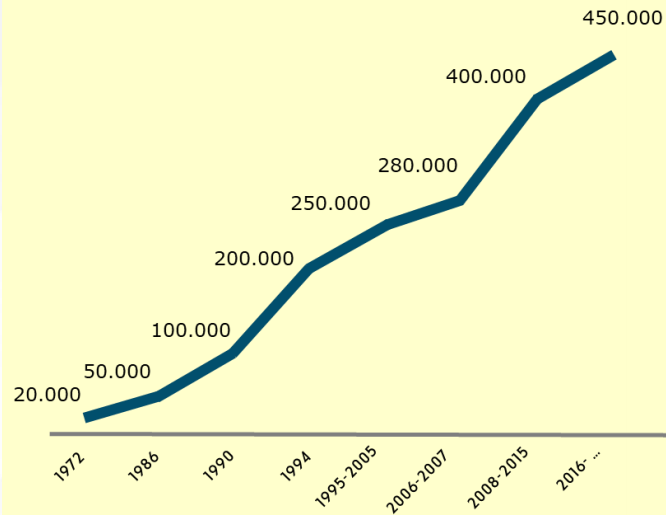


R&D Center founded in 1994



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023
Passenger cars

450.000 units/year
Production Capacity



DODGE



EGEA SEDAN HYBRID



EGEA HB



EGEA SW HYBRID



EGEA CROSS HYBRID

Light Commercial vehicles



FIORINO



KO



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

TOFAŞ R&D

Body

Chassis

Interiors

E&E

Propulsion
Systems

Total
Vehicle
Integration

Advanced Research



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

Test Benches & Rigs

BODY

- Road Simulation
- Fatigue
- Stiffness
- Rigidity
- Misuse
- Closures
- Static&dynamic Water Leakage
- Sun Simulation
- Torsional Stiffness
- Seat
- Mechatronic Systems



CHASSIS

- 6 DOF 4C ROAD Simulator
- Monoaxial Simulation TABLE
- Dynamic Impact BENCH
- 4 DOF HALF Vehicle ROAD LOAD Simulator
- 6 DOF HALF Vehicle ROAD LOAD Simulator



Laboratories

MATERIAL LAB

- Atmospheric Aging Equipments
- Mechanical TESTS
- Microscopic Analysis
- Physical & Chemical Analysis
- Instrumental Analysis

NVH LAB

- Engine Radiated Noise
- Interior Cabin Noise & Vibration
- HVAC, Transmission Noise & Vibration
- Mechanical System (Fuel Pump, Driveline, Steering, etc...) Noise & Vibration
- Air Induction & Exhaust System Noises
- Door Closure Noise
- Electrical Cooling Fan Noise & Vibration
- Vehicle & Body & Mechanical Components Modal Analyses
- Powertrain Mount Vibration & Transmissibility
- Noise Reductions from outside noises to cabin
- Vehicle Acoustic Sensitivity to Intrusion Noise
- Vehicle Buzz, Squeak and Rattle Noise
- Tyre & Road Noise
- Pass-by Noise

Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023



Laboratories



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

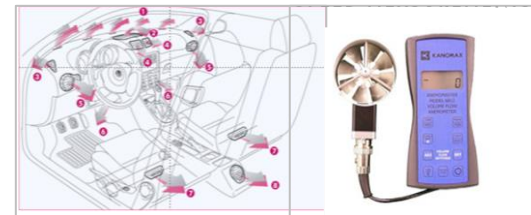
EMISSION LAB

- Conditioning ROOMS
- Portable Emission Measurement Sys (PEMS)
- Mileage Accumulation Dynamometer
- Emission Gaseous Analyzer System
- Emission Test Benches With Chassis Dynamometers
- Evaporative Emission Determination (Shed)
- Test Cabin
- Driver Robot



HVAC LAB

- Air distribution&speed measurements
- Body air leakage/body air ejection measurements
- Thermal measurements via thermal camera & thermocouple
- Leakage control for subcomponents (diffusers, airvents etc)
- Software testing (compressor activation & thermal comfort)
- Refrigerant loading with leakage controls
- ACM calibration with CANape software

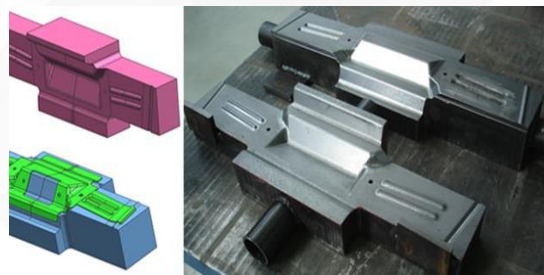


Prototype Manufacturing

Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

PROTOTYPE SHOP

- BIW Equipment Manufacturing
- Sheet Metal Part Production
- Carbon Fiber Part Production
- Vacuum Moulding
- Vacuum Casting Silicone Moulding
- Additive Manufacturing

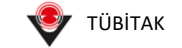
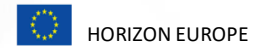


- ✓ Sheet Metal Forming
- ✓ Metal Part Manufacturing
- ✓ Additive Manufacturing
- ✓ Plastic Parts Production
- ✓ Composite Parts Production
- ✓ Vehicle transformation
- ✓ Concept Car Production
- ✓ World Class Manufacturing Requirements
- ✓ 5 Axis milling machine with die shop support
- ✓ 5 Axis milling machine with die shop support
- ✓ FDM, MJF, SLS, SLA, Polyjet, metal sinter
- ✓ Silicone molding based production
- ✓ Vacuum bagging, Vacuum Infusion
- ✓ Armored, Motor Sports, S-Design Body Kit Cars
- ✓ 5 Axis milling machine with die shop support
- ✓ 5S, Cost Deployment, Autonomus Maintenance (step3)

Tofaş Research Projects Portfolio



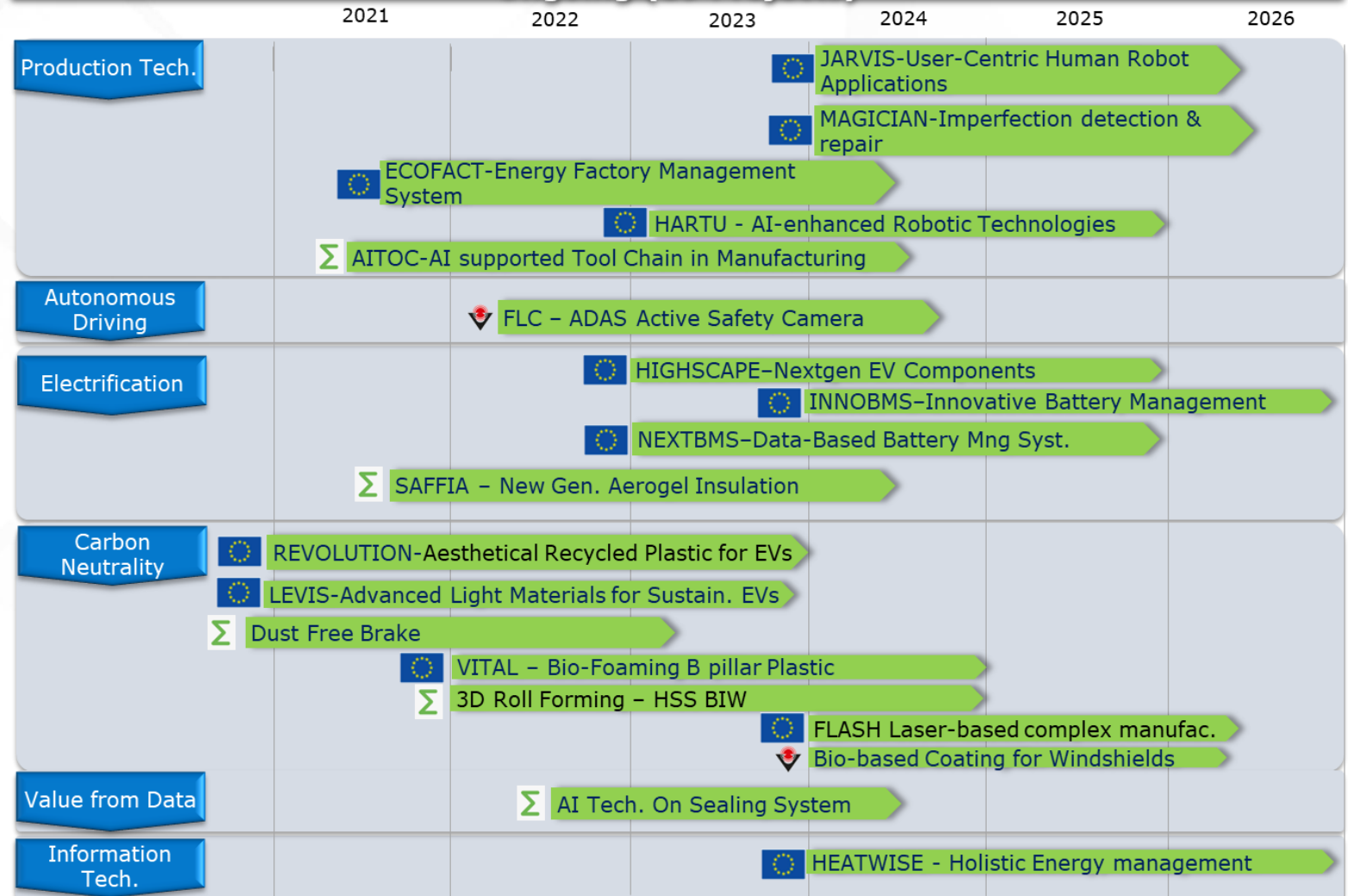
Towards the Green Future:
The European Green Deal
 Brokerage Event, Brussels 2023



Completed

1. APSN- Passive Safety Network
2. SpotTrack-Innovative Factory Energy Management
3. AUTORECON-Auto Machines for Assembly
4. HeERO
5. X-Act-Cooperative Robotic Systems
6. AEROCEPTOR-Intensive use of non-cooperative vehicles
7. SME Robotics- Robotic Assembly
8. IMPROVE-Electified LCV
9. ROBOPARTNER-Human Robot Cooperative Assembly
10. Trustvehicle-L3 Autodrive
11. ASSURED-Wireless EV Charging
12. HI-FI ELEMENTS-EV Comp. Test
13. PICKPLACE- Robotic Arm Grapper
14. MULTICYCLE - Chemical Recycle
15. SYS2WHEEL- Hub E.Motor
16. Robust Welding
17. LightBee - AI Battery Carrier
18. Anti-microbial Textile
19. Caring Cars
20. AMALTHEAT-une-up Software dev.
21. CarCoDe - Remote Diagnostics Service

Ongoing (19 Projects)



Possible Collaborations

Towards the Green Future:
The European Green Deal
 Brokerage Event, Brussels 2023



| Call | Contribution |
|---|---|
| HORIZON-CL5-2024-D5-01-01: Smart, low-cost pervasive stationary slow charging and bi-directional solutions synergic with the grid for EV mass deployment (2ZERO Partnership) | Charging station location information via FYA (Fiat Connect) to maximize use of electric grid power |
| HORIZON-CL5-2024-D5-01-03: Advanced battery system integration for next generation vehicles (2ZERO Partnership) | End-User role (Passenger & LCVs), adopter for road applications, post-project exploitation, provide guidance on the specification, testing and assessment of the battery pack |
| HORIZON-CL5-2024-D5-01-05: Advanced digital development tools to accelerate the development of software defined vehicles that enable zero-emission mobility (2ZERO Partnership) (RIA) | Validation of simulation tools for modeling and testing of total vehicle systems. Demonstrate integration into development frameworks for virtual approval (early demonstrators) of L category or LCV. |
| HORIZON-CL5-2024-D5-01-06: New designs, shapes, functionalities of Light Commercial Vehicles (2ZERO Partnership) | Coordinator/ End-User Role, New design studies LCV for cold chain/ grocery/ e-commerce sectors to meet current and future market needs, Road testing activities |
| HORIZON-CL5-2024-D2-01-01: Advanced sustainable and safe pre-processing technologies for End-of-Life (EoL) battery recycling (Batt4EU Partnership) | End-User role (Passenger & LCVs), provide guidance on the specification, testing and assessment of the battery pack |
| HORIZON-CL5-2024-D2-01-02: Non-Li Sustainable Batteries with European Supply Chains for Stationary Storage (Batt4EU Partnership) (IA) | End-User role (Passenger & LCVs), provide guidance on the specification, testing and assessment of the battery pack |
| HORIZON-CL5-2024-D2-01-05: Furthering the development of a materials acceleration platform for sustainable batteries (combining AI, big data, autonomous synthesis robotics, high throughput testing) (Batt4EU Partnership) | Provide guidance on the specification, testing and assessment of the battery materials |

Zero
Emission
Road
Transport

Batteries



Towards the Green Future:
The European Green Deal
Brokerage Event, Brussels 2023

Recep Özkök

Tofaş – Türk Otomobil Fabrikası A.Ş. / R&D

Türkiye

+90 (549) 596 74 17 / recep.ozkok@tofas.com.tr / [linkedin.com/in/recep-ozkok/](https://www.linkedin.com/in/recep-ozkok/)