

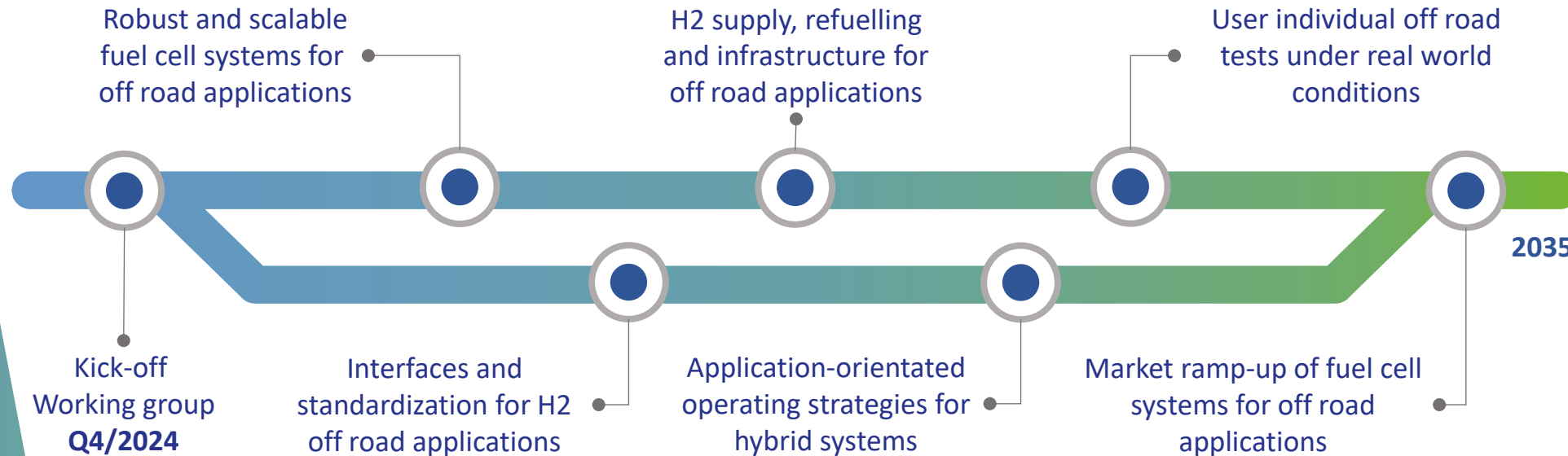
Registration:

<https://hzwo.eu/arbeitskreis/mobile-arbeitsmaschinen/>



# HZwo Working Group: Hydrogen for Non Road Mobile Machinery

The working group is committed to the further development of hydrogen based energy and power supply for non road mobile machinery (NRMM). It thus supports the target of a technology-neutral decarbonization in heavy duty applications along the following topics. In addition to developing future proof and sustainable components and systems, the working group also focuses on scientific methods and tools for the design, layout and integration of such systems.



**Target groups:** Machinery and component manufacturers, construction and mining companies, systems developers,...

**Working group leader**  
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Chair of Construction Machinery

**Deputy**  
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Construction + Mining



Agriculture + Forestry



Municipal

## HZwo Working Group: Motivation, Content and Goals

- **Starting point:** Diesel is the energy source of choice for NRMM, alternative solutions are only available to a very limited scale
- Normative and legal regulations will require alternative (CO<sub>2</sub>-neutral and low-emission) drive concepts for NRMM  
⇒ Inner-city construction sites, carbon neutrality by 2035, competitive advantages
- Many players want to be part of the hydrogen business, but there are **numerous unsolved challenges**  
⇒ Lack of practical implementation experience  
⇒ Insufficient H<sub>2</sub> infrastructure and excessive investment costs for users
- Answering questions  
⇒ In which NRMM applications and under which conditions can hydrogen (used in H<sub>2</sub>-ICE or H<sub>2</sub>-FC) be part of the solution?  
⇒ How must components and systems be designed and configured in this application to operate reliably?
- **Combining scientific and industrial expertise** (mobile machinery and hydrogen)
- **Identification of research topics** that can be addressed in **collaborative R&D projects**  
⇒ Creation of a roadmap identifying possible areas for R&D projects  
⇒ Target-oriented establishment of consortia for R&D projects, search for suitable funding
- Drafting of position papers ⇒ arguments to politicians for necessary funding

# HZwo Working Group: Characteristics of non road mobile machinery

## Wide performance ranges and machine weights depending on the application



Mini Excavator  
18 kW / 2,5 t  
Source: JCB



Wheel loader  
55 kW / 5,6 t  
Source: Kramer



Excavator  
130 kW / 20 t  
Source: Liebherr



Asphalt Milling  
560 kW / 29,3 t  
Source: Wirtgen



Mining  
2000 kW  
386 t  
Source: CAT

## Wide range of work functions for specialized construction tasks



Earthmoving  
Source: Liebherr



Demolition  
Source: Epiroc



Deep foundation engineering  
Source: Bauer



Road construction  
Source: Vögele



Building construction  
Source: IBAU

## Conventional and emission-reducing drive concepts



Diesel  
Source: JCB



Battery  
Source: Liebherr



Tethered electric  
Source: CAT



HVO  
Source: Bobcat



Hydrogen  
Source: Liebherr