

Electrification of Moving Heavy Construction Equipment

Tomi Voutilainen 11.09.2024

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Short intro

- Tomi Voutilainen, Director of Engineering & Product Management
 - > 10+ years at Junttan
 - One of the "Fathers" of the world's first battery powered piling rig
 - Degree in automotive engineering from 2009, thesis "Modern battery technology for electric vehicles"





Junttan Oy is a family-owned company with headquarters and factory in Kuopio, Finland.



We specialize in the design, manufacture, marketing and servicing of piling equipment and related solutions.



We are determined to drive sustainable change and aim to hold our place as the most sustainable brand in the industry.



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9 nationalities Average age

42

Around

95%

of our sales is export sales and our customers operate in more than

40

countries.

E Net sales 2023 600 Million € Paid taxes, total 1,2m€ Corporate taxes 0,4m€ Social taxes 0,7m€

Companies in 7 countries Located in Australia, Canada, Finland, Netherlands, Sweden, UK and USA.

In addition we have dealers worldwide.



40%

Other taxes 0,1m€

of net sale

OUR PROMISE

Together we build a world that stands on solid and sustainable foundations.





Goals that guide the development

Green deal targets for zero emission construction sites

The requirements apply to procurement made after the target dates.



(Keino-Osaamiskeskus 2023)

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KEINO

Customers and ESG

The carbon hierarchy



(Keller Group 2023, Sustainability at Keller)



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Challenges of the operating environment

unttan



What is the problem?

 "Germany Faces \$1 Trillion Challenge to Plug Massive Power Gap" About 250 gigawatts of new electricity capacity needed by 2030 (Bloomberg 2023)



Spot the errors in this picture?





Tiel-Waardenburg dyke reinforcement project and Watthub





Our solution

Junttan

Case example: Junttan PMx2e

- 64t locally CO2 free pile driving rig
- Battery electric powerline with hydraulic actuators
- Optimized layout without weight increase
- Detachable battery pack
 - > Two sizes: standard and extended range
 - » 7h / 10h working time with single charge
 - Daily load/recharge cycle optimized for 63A/400V limited power supply but supports +250kW quick charging
 - > Easy to replace, store and transport
- Currently does not give enough ROI without government subsidies
 - > Diesel powered version sales price approx. 1,1m€
 - → Battery electric approx. 1,5-2,5m€
 - Cost increase mainly related to battery modules (400kWh-1,2mWh per machine)



Industry leading flexibility

- Dutch customer recharges and stores electricity in Junttan PMx2e battery packs by their own solar farm
- Transports to worksites are done with battery electric / hybrid trucks
- Junttan PMx2e is normally the only equipment needed at the worksite during piling
 - CO2 free operation (ESG Scope 1&2) if only equipment emissions are taken into consideration
 - » Even without recharging grid at the worksite



How we see the future?

- New multi power source machine platform
 - > Diesel
 - Battery electric
 - > (Fuel cell)
- New modular actuator portfolio
 - Selected electric actuators
 - » Cost vs. performance
 - More efficient hydraulic actuators
- Target: most sustainable equipment lineup for global needs





Thank you!

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