

# Breaking Ground in Winter: Inductive Road Charging for Bus Through Ice and Innovation

## What happens when cutting-edge technology meets the harshest of climates?

Pål Preede Revheim, AtB





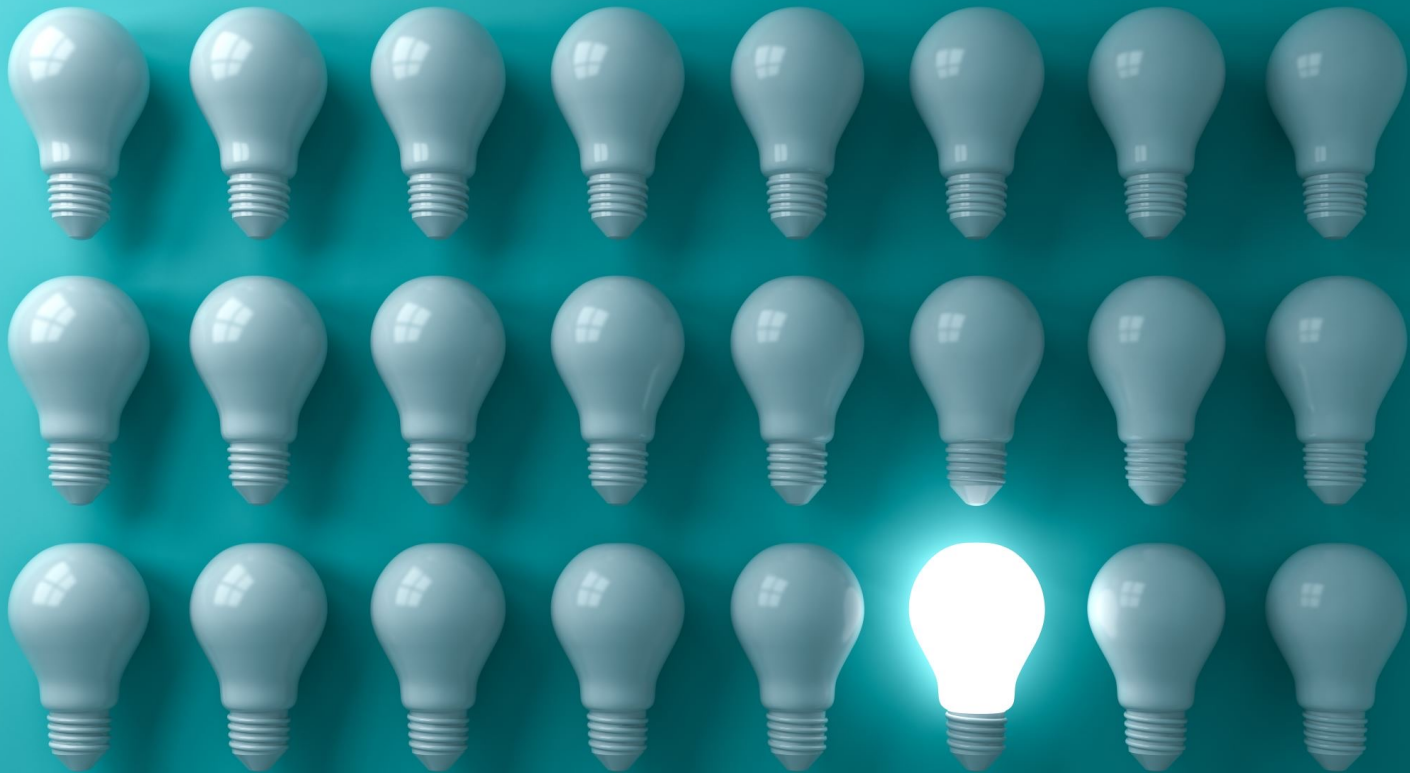


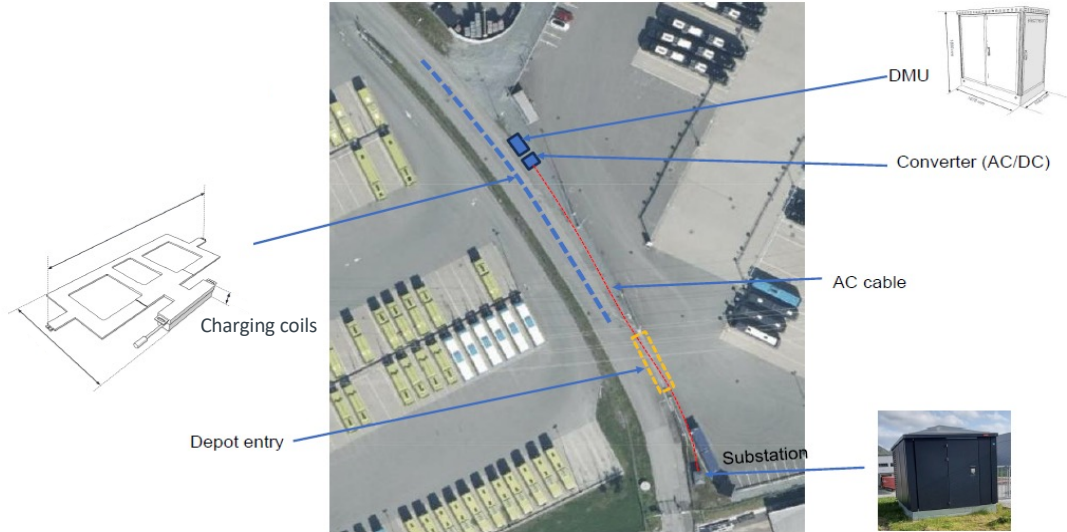




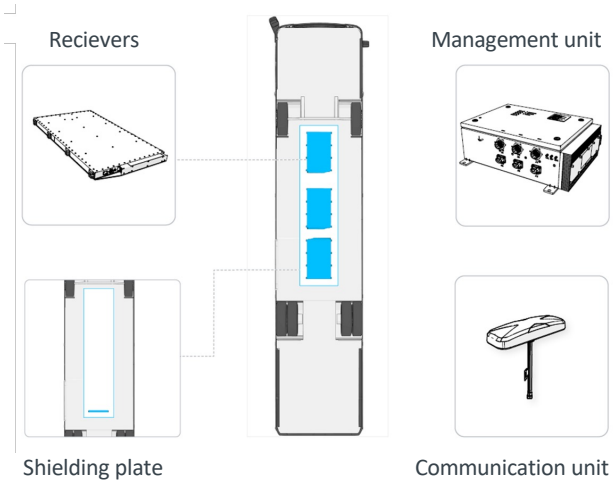




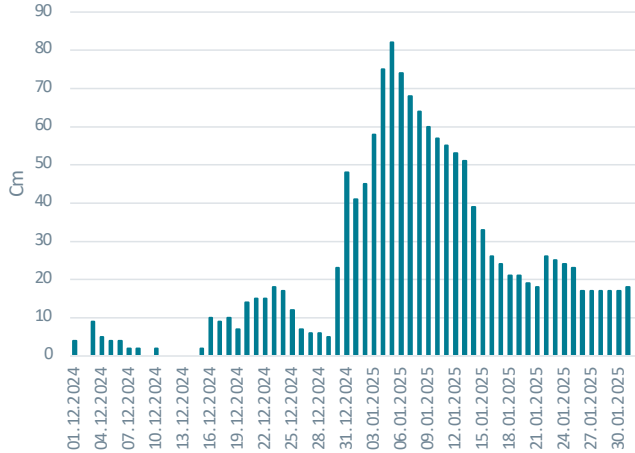




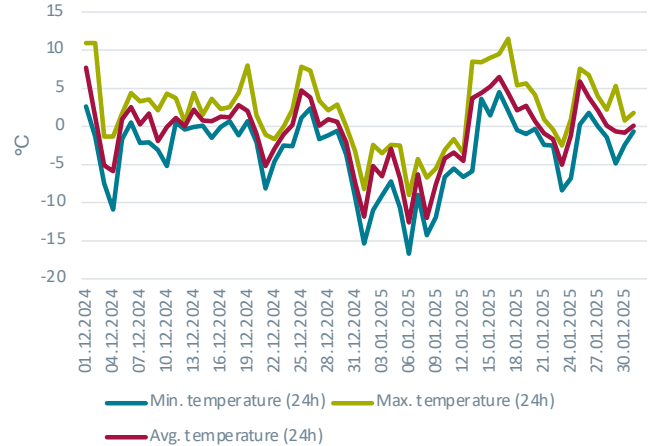




## Snow depth



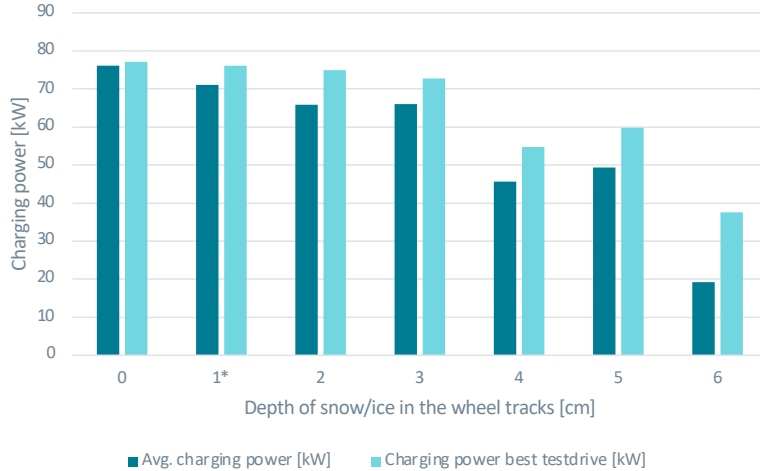
## Temperature



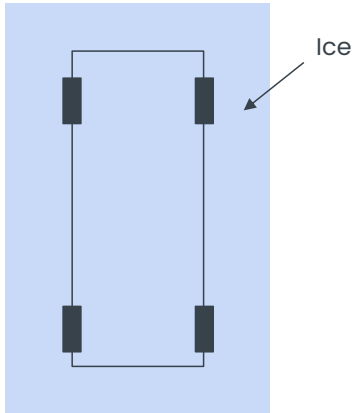


|                                               | Avg. charging power [kW] | 95 % KI [kW]  |
|-----------------------------------------------|--------------------------|---------------|
| Bare asphalt                                  | 62,70                    | 58,02 – 67,37 |
| Snow covered road                             | 64,91                    | 60,87 – 68,94 |
| Temperatur above 0°C                          | 63,98                    | 59,59 – 68,36 |
| Temperatur below 0°C                          | 62,67                    | 57,37 – 67,97 |
| Dry conditions (less than 1 mm precipitation) | 66,67                    | 62,33 – 71,00 |
| Moderate precipitation (1-5 mm)               | 62,05                    | 57,07 – 67,03 |
| Heavy precipitation(5 mm+)                    | 64,08                    | 57,39 – 70,76 |

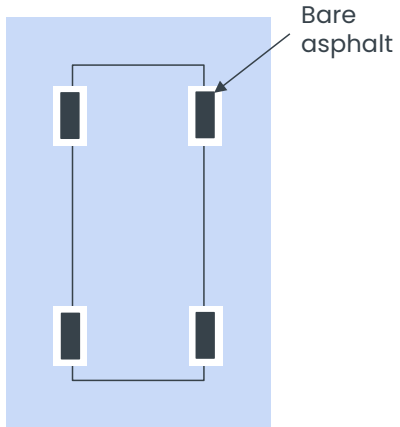
## Dynamic charging power in situations with a base of ice/snow



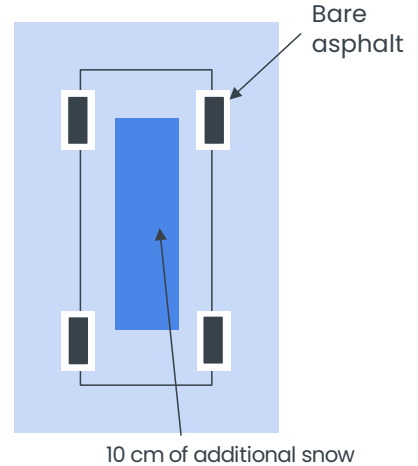
3 cm of ice on the road  
101 kW charging power  
84,3 % efficiency



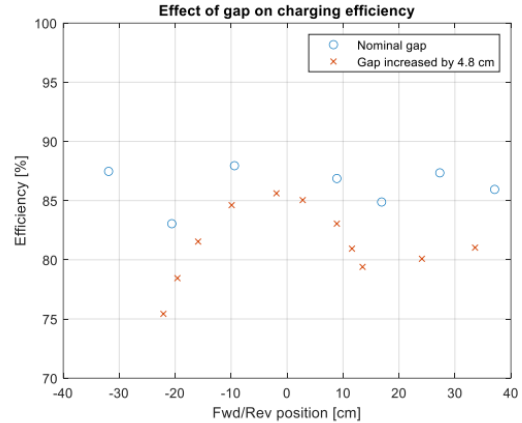
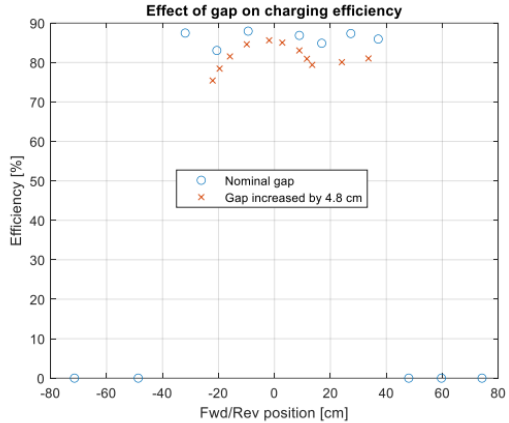
3 cm of ice on the road  
Bare asphalt in the wheel tracks  
104,7 kW charging power  
87,3 % efficiency



3 cm of ice + 10 cm of snow on the road  
Bare asphalt in the wheel tracks  
104,7 kW charging power  
87,3 % efficiency







}  $\approx \div 5\%$



# Thank you



Pål Preede Revheim, [pal.preede.revheim@atb.no](mailto:pal.preede.revheim@atb.no)