



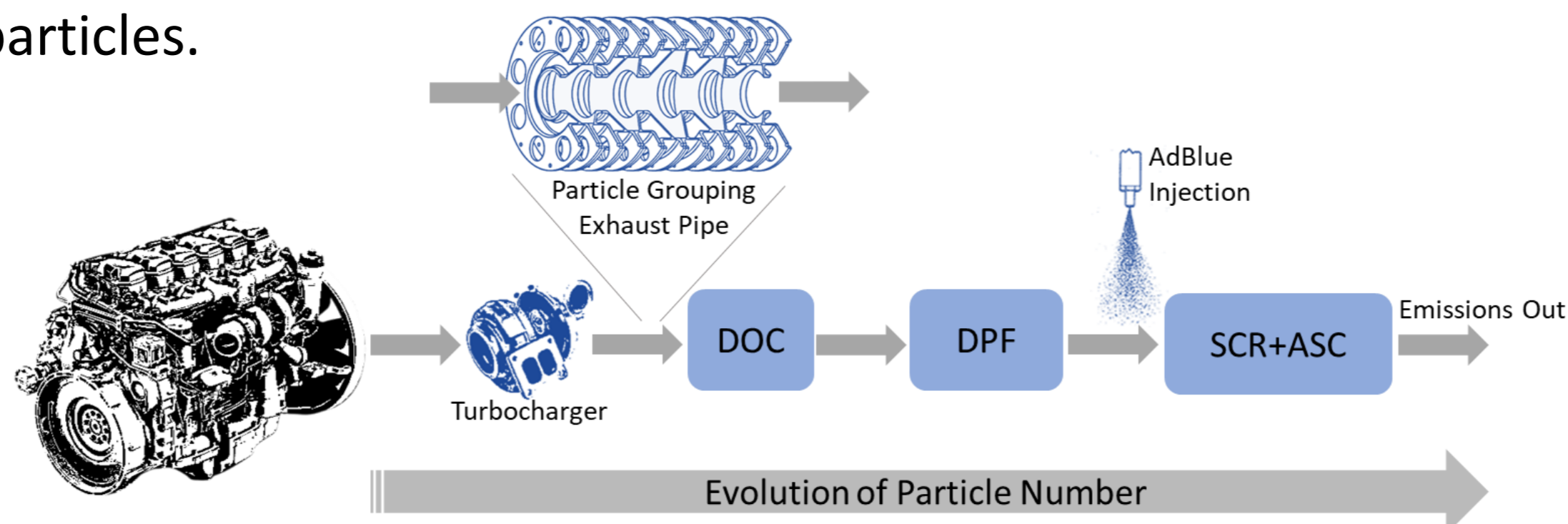
KTH CCGEX

Particulate characterization in the gas exchange system of DI/SI engines

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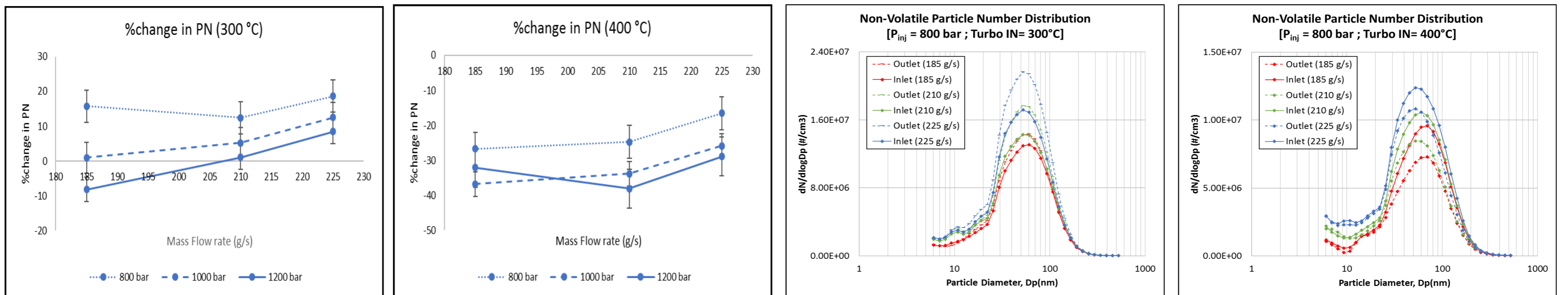
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The work is aimed at reducing the particles emitted from a DI/SI engine. Understanding the evolution of particles in the exhaust system of a DI/SI engine is a step towards it. The influence of the various exhaust systems in the exhaust line was studied. For this purpose, particulate size distributions were measured along the exhaust system of an engine including the turbine of the turbocharger. In addition, a hydrodynamic agglomeration device was tested for particle grouping in comparison to a straight pipe for agglomeration of particles.

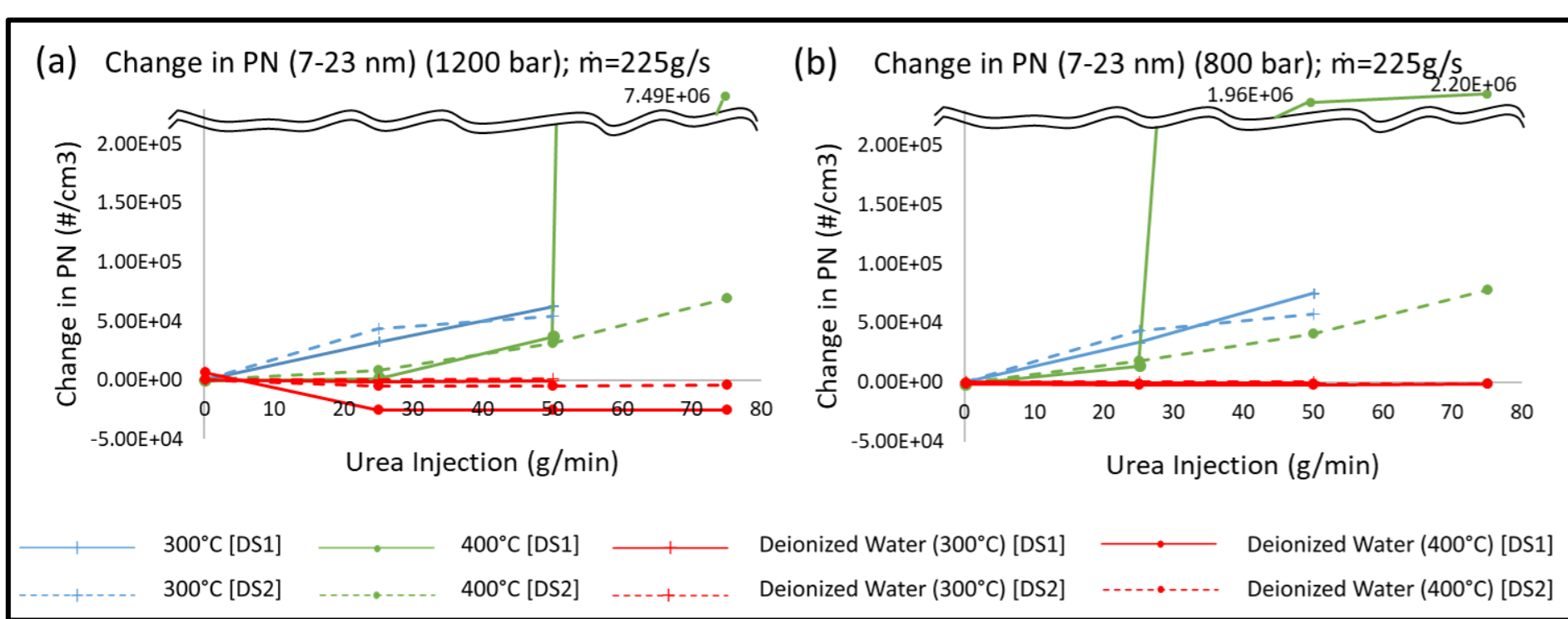


Results Summary:

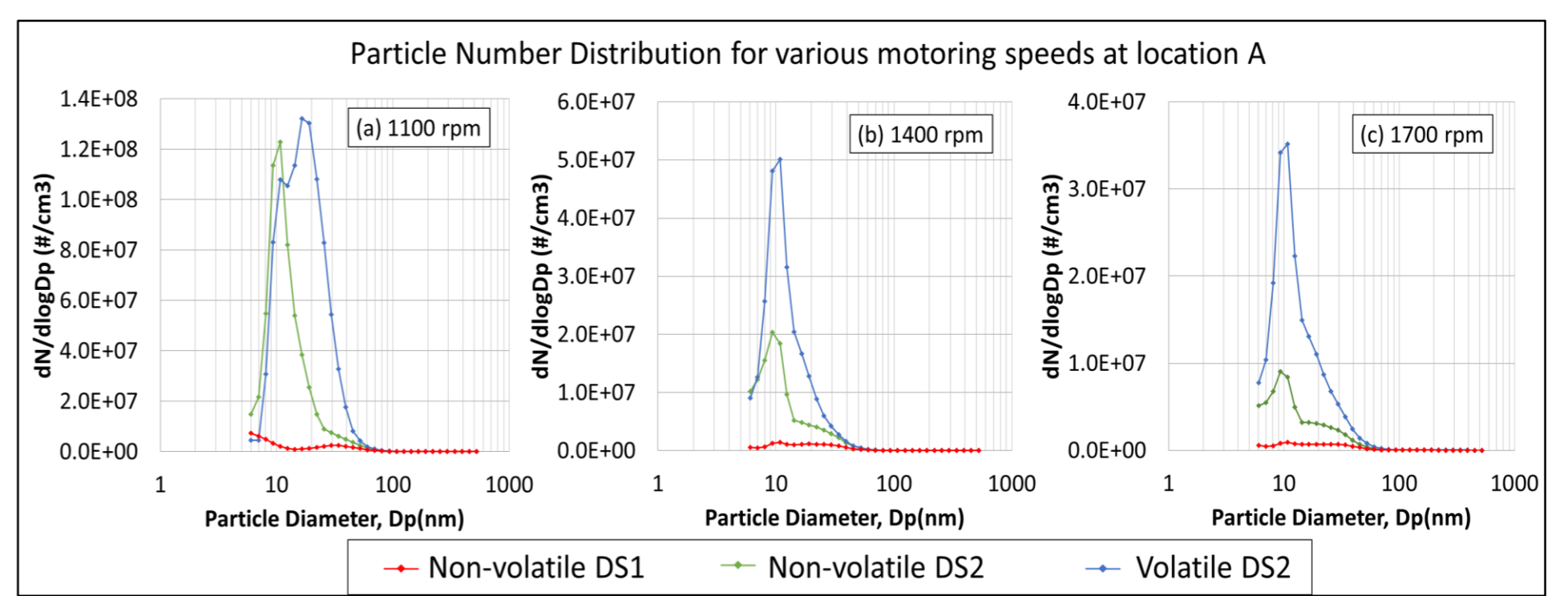
(i) Effect of Turbocharger on Particle Number



(ii) Effect of SCR on Particle Number



(ii) Effect of sample conditioning on Particle Number



Publications:

- Prasath, K.A., Stenlås, O., Bernemyr, H., and Erlandsson, A., 'Agglomeration and Nucleation of Non-Volatile Particles in a Particle Grouping Exhaust Pipe of a Euro VI Heavy-Duty Diesel Engine', SAE Technical Paper 2019-01-0044, 2019, DOI: 10.4271/2019-01-0044.
- Prasath, K.A., Bernemyr, H., and Erlandsson, A., 'On the Effects of Turbocharger on Particle Number and Size Distribution in a Heavy - Duty Diesel Engine', SAE Int. J. Adv. & Curr. Prac. in Mobility 3(2):882-893, 2021, DOI: 10.4271/2020-24-0007.
- Prasath, K.A., Bernemyr, H., and Erlandsson, A., 'On the Effects of Urea and Water Injection on Particles across the SCR Catalyst in a Heavy - Duty Euro VI Diesel Engine', SAE Technical Paper 2020-01-2196, 2020, DOI: 10.4271/2020-01-2196.
- Prasath, K.A., Bernemyr, H., and Erlandsson, A., 'Comparison of two dilution and conditioning systems for Particle Number measurements along the exhaust after-treatment system of a HD diesel engine', SAE Technical Paper 2021-01-0619, 2021, DOI: 10.4271/2021-01-0619.
- Larsson, T., Prasath, K.A., Olofsson, U., and Erlandsson, A., 'Undiluted Measurement of sub 10 nm Non-volatile and Volatile Particle Emissions from a DISI Engine fueled with Gasoline and Ethanol', SAE Technical Paper 2021-01-0629, 2021, DOI:10.4271/2021-01-0629.

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