

# PSA Automobiles SA

## Subject : SCR efficiency model using a neural network and a pseudo 1-D model

Marion Lorieul Review : B (15/20)

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All PSA Group diesel vehicles are equipped with a SCR system to achieve the NOx emissions limitation, defined by the EU legislation.

The SCR system requires a performing dosing control to inject the optimal AdBlue quantity in every condition. To reach this goal, several control strategies and model was developed in PSA and are embedded on the Engine Control Unit of the vehicle.

One important model is the SCR efficiency estimation.

The subject of the work experience was the study of two possibilities to improve the actual zero dimensional efficiency estimation of the SCR catalyst :

An extension of the 0D-model to a pseudo 1D-model, or rather 2 0D-model.

A neural network to learn an efficiency profile.

We expected Marion Lorieul to develop the technical and behavioural skills :

- She has a good **autonomy**, indeed Marion must not hesitate to ask questions or advices when she is face to a blocking issue. She used to wait for the weekly point.
- She has acquired a **good technical understanding** of the 0D-model but has had some difficulties to extend to a 2 0D-model. A good approach would have been to make more simulations in order to test several possibilities. It is difficult and not conceivable to have the correct 2 0D-model at the first attempt. She also has acquired a good **technical understanding** of the Matlab tool use to develop a neural network.
- She has acquired good skills on **Matlab script development**. The actual work, Marion with more experience will develop more readable and complex scripts.
- She has a good **communication** to present the results. But she must not hesitate to also present the wrong results, they are interesting and allow better understandings.
- She has a good **synthesis** despite of the subject differences and difficulties.
- She has a **good time organization** to realize the tasks listed during the weekly point. But she must not hesitate to share the blocking points and propose different solutions.