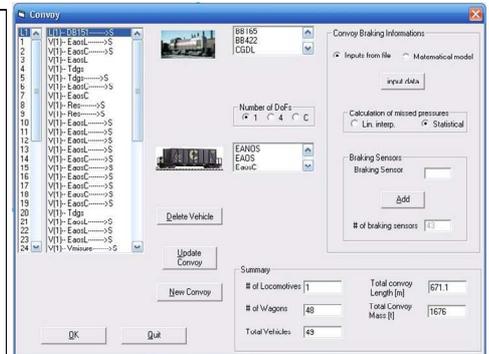


TRAINDY

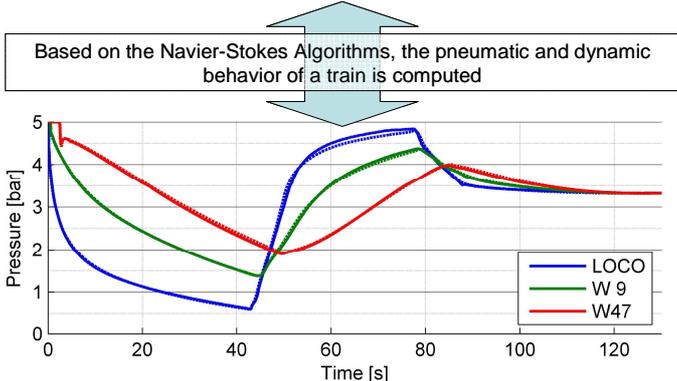
Software for Train Dynamic Simulation

The aim of the TrainDy project is the development of a system to compute longitudinal dynamics in trains. The Scope of TrainDy at UIC is to harmonize Inter-European traffic and to speed up the velocity of international Freight Trains due to:

- ⊗ Shorter dwell times
- ⊗ Simplification of multilateral negotiation on international freight trains for train tonnages over 1200 t.



$$\left\{ \begin{aligned} \frac{\partial \rho}{\partial t} + u \frac{\partial \rho}{\partial x} + \rho \frac{\partial (uS)}{\partial x} &= - \frac{\dot{m}}{S dx} \\ \frac{\partial u}{\partial t} + \frac{1}{\rho} \frac{\partial p}{\partial x} + u \frac{\partial u}{\partial x} &= \frac{\tau}{D} + \frac{u}{\rho} \frac{\dot{m}}{S dx} \\ \frac{\partial q}{\partial t} + u \left(\frac{\partial q}{\partial x} + r \frac{\partial T}{\partial x} \right) + r \frac{T}{\rho S} \frac{\partial (\rho u S)}{\partial x} &= 4 \frac{\phi_T}{\rho D} - \frac{\tau u}{D} - \frac{\dot{m}}{S dx} \frac{1}{\rho} \left[(c_v + r) T_{vc} + \frac{1}{2} u_{vc}^2 - q \right] \end{aligned} \right.$$



The Validation of the System is done using experimental Test runs of the participating Railway Operators and experimental Data delivered by Test benches to assure the accuracy of TrainDy.

An UIC expert group led by Deutsche Bahn Systemtechnik monitors and provides the certificate for the software.

The source code of TrainDy is available to the members of an UIC consortium to allow maximum speed of development of the software. The access to the consortium is unrestricted.



The System has been developed on behalf of UIC by University of Rome "Tor Vergata" and Faiveley Transport Italy.

Now, since June 2007 it is subjected to a validation process by main Railways Operators (DB AG, SNCF, TRENITALIA)

In December 2007, the pneumatic module of TrainDy gains the UIC Certification. The Dynamic Certification is scheduled for end of March 2008. The System will be available to the public at Sept. 2008.



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