

PROJECT PROPOSALS FOR THE 2ND CALL OF FP7

(DEC 2007 – JAN 2008)

Template for the project synopsis

1. Proposal for project name

Urban Rail systems with optimized energy consumption

2. Problem that the project will address (why is the project being initiated?)

The project will address excessive or inefficient use of energy within urban rail systems. It will further enhance and employ recently developed simulation tools to identify the most effective approaches to significantly reducing the energy consumption of urban rail systems. These identified approaches will be researched, implemented and demonstrated. Furthermore, new technologies for “green substations” will be developed.

3. Scope of the project

- Further develop, enhance and exploit the metro system energy tool (result of MODURBAN, SP MODENERGY) to identify strategies for optimizing energy consumption within metro systems. Essentially, the tool will provide a decision support mechanism to investigate:
 - Optimized operational parameters (e.g. driving behavior, ambient temperature [HVAC settings], etc.).
 - The likely impact of energy reducing technologies such as onboard / line side energy storage, vehicle light weighting, new traction technologies, etc. In this way, technological developments to reduce energy consumption can be prioritized from a systems perspective.
- Temperature and other physical parameters measurements in different configurations of a Metro line (or in different Metro lines) allowing assessing the gaps with the tool. Identification of the root causes of the gaps and improvement of the software in order to reach acceptable accuracy of the temperature prediction.
- Research, implement and demonstrate those strategies that are identified by the tool as being most effective.
- Optimization of HVAC systems.
- Reduce power consumption of trains through more effective traction and braking commands from the train control system. Development of an ATO "add on" which will take into account parameters such as
 1. Timetable
 2. Mission
 3. Line profile
 4. Passenger loading
 5. Presence of other trains in the section
 6. Possible use of line side storage (flywheels/ultra caps)
 7. Any other factors judged necessary by operators to be taken into account when determining the maximum power consumption of a train service.
- “Green Substation”: New energy reducing technologies by the use of energy storage systems and by alternative green power supply solutions.

4. Which section of the 2nd call draft is being addressed?

See last bullet under question 12

5. State of the art: previous or on-going research or standardization initiatives in this area

None

6. Estimated budget (total and EC Contribution)

(Please note that under FP7 R&D activities as well as demonstration will be 50% funded)

More than 5 Million €

7. Project duration *(indicative range: between 24 and 48 months)*

36 – 48 Months

8. The leader of the proposal preparation

Uwe Henning, Siemens, supported by UNIFE

9. Main potential partners (names of companies supporting the proposal as opposed to potentially interested stakeholders)

Main UNIFE system integrators and suppliers, urban rail operators, universities

- AnsaldoBreda
- Siemens
- BT
- Alstom
- Knorr-Bremse / Merak
- Faiveley

Operators:

- LUL
- RATP
- Metro Madrid
- UITP
- VDV
- and possibly ATM (Milano)

Universities:

- Newrail
- CMM, Chile

10. Contributions to standards – can the results of this projects be transferred into future EN standards? *(Maximum 5 lines)*

Energy consumption and Climatic comfort in Metro systems

Standardized methodology for energy related investigations in urban rail

11. Implications of the project for current individual company products and practices – is the proposal supported internally within each major partner at the strategic level? *(Maximum 5 lines)*

There is a lack of easy tool to assess the global impact of a modification on power consumption, heat rejection, temperature and comfort. As these topics are becoming

more and more important for the operators as well as for the train builders, such software is clearly a need.

12. Risk factors that could jeopardize the implementation of results. How to ensure market up-take and who will have the responsibility over the implementation?
(Maximum 5 lines)

- Efficient contribution from operators is needed, by supplying commonly agreed operational requirements expressing these needs
- One way to ease the implementation and the dissemination of the software is to put in place an EN standard referring to the inputs/outputs of the software, so that it will be used for a new line or for a modification to assess at line level the impact in terms of energy and climatic comfort.
- Major problem to be solved is to see where this topic would fit within the 2nd call. Action to be taken up with the EC!