



## Halftime – an ambitious goal !

### Richard RUIJTENBEEK

Civil Engineer  
Engineering Dept.  
Rotterdam, NL  
*RR.Ruijtenbeek@rotterdam.nl*

### Cees BUIJS

Senior Advisor  
Engineering Dept.  
Rotterdam, NL  
*CEHM.Buijs@rotterdam.nl*

### Flip KOLET

Construction Engineer  
Engineering Dept.  
Rotterdam, NL  
*F.J.Kolet@rotterdam.nl*

### Jelle VAN ATTEN

Civil Engineer  
Engineering Dept.  
Rotterdam, NL  
*J.vanAtten@rotterdam.nl*

### Henny STOLWIJK

Senior Advisor  
Engineering Dept.  
Rotterdam, NL  
*HF.Stolwijk@rotterdam.nl*

## Summary

In recent years the Dutch building and construction industry has produced much knowledge related to renewal of the construction sector. All studies conducted by the Dutch building industry allegedly discovered that the benefits of renewal of the construction sector are numerous. The outcomes did not automatically ensure success in practice.

Each of the results of every study performed have their merit. When it came to practical implementation in projects, the insights did not lead to improvements needed within the supply chain. The improvements achieved mostly are related to individual partners in the supply chain, and also related to a single task.

In new construction and refurbishment an accelerating change is required, allowing for more innovation, sustainability, licence to operate from client and user etc. Since none of these improvements that have been achieved were satisfactory, the Rotterdam municipality together with CURNET adopted the idea of Catalyst management (ref Jim Collins). Where most of the time money is considered the criterion to optimise, Halftime adopts time to optimise against, keeping quality for routine procurement at least on the same level.

Earlier, Halftime has been successfully adopted as in company improvement programme for a large construction company assisted by TNO.

The Halftime approach adopted by Rotterdam municipality focuses on routine procurement of infrastructural services and objects. In routine projects of several companies a waste of between 30 and 50 % has been proved. Waste is caused by institutions, miscommunication and habits related to routine work. ‘This is how we normally do our work .....’. Routine prevents also the application of innovation related to material use, work processes, new arrangements of supply chain cooperation etc. As a consequence of applying the Halftime-catalyst, the City of Rotterdam will improve on accessibility. In addition it will decrease nuisance from refurbishment and construction. In that way Halftime claims to contribute to sustainable management of infrastructure.



**Keywords:** Routine projects, innovation stimulated, reduction of squandered money, reduction of emissions, environmental, risk, construction time, new construction materials, prefabrication, sustainable, bridges.

## 1. The Halftime concept

Halftime is looking to halve the overall time span of project development, from initiative to completion of the work. In this stage of the programme Rotterdam focuses on the time to execute the on site construction. Even then the ‘Halftime’-ambition does have implications for all partners

in the supply chain. It affects not only the work of the engineer, the contractor, but also the licence provider, the communication department, etcetera.

In many routine cases a time saving of 50% is achievable. Implementation of Halftime provides benefits to the city, i.e. less inconvenience.

Halftime applied in other sectors of industry cuts waste up to 30 %. This waste is caused by conventions, miscommunication and habits related to routine work.

## 2. 'Halftime' and it's environmental effects

Annually some 2.2 million tons of construction related material is transported in the Rotterdam region. The traffic related amounts up to 15 to 28% of the overall cargo traffic in the region. This overall cargo traffic is estimated to be 250 million kilometres every year, with subsequent environmental effects.

From these facts onward Rotterdam started a survey to explore how the building traffic and it's potential reduction affects the environment.

The core of this survey [4] consists of 15 case studies: 7 in housing, 4 in general building and 4 in infrastructure. Analysis of the administration resulted in a profile of the traffic of personnel and the transport of building materials during the course of construction. In the traffic analysis only the last links in the supply chain were included, meaning the suppliers- and personnel transport.

A model has been developed to calculate the building traffic. Analysis of the cost estimate (project budgets) provided the quantity of construction materials as well as the number of labour. These quantities were used to derive the number of truck rides and car rides and subsequently the discharges of CO<sub>2</sub>, NO<sub>x</sub> and Micro Dust for trucks, vans and personnel cars. The planning of each project was used to relate these emissions with time.

This analysis [5] resulted in a detailed weekly profile of the transport rides, the kilometres and the emissions of Carbon dioxide, Nitrogen and Micro dust. The next figures show the kilometre profile and the Carbon dioxide profile for a reconstruction project of roads.

Rotterdam aims at cost savings of 20 to 30 percent in construction or refurbishment of roads, roundabouts, viaducts, tunnels and sewers.

## 3. Conclusions and recommendations

In Rotterdam the Engineering Department together with private partners are well underway. Each finding specific merits when applying Halftime in routine projects. It took some years to prepare ourselves for a real start. This paper shows results following first analysis of projects executed and provides provisional guidelines to others to apply the Halftime concept.

From our first stage of the Halftime introduction following conclusions and recommendations can be derived:

**Halftime** is accepted to be a stimulating challenge for the public and private partners to adapt the work flow;

**Halftime** is causing a different way of collaborating in the supply chain;

**Halftime** is a catalyst to really apply new techniques and materials in routine projects;

**Halftime** really reduces transport kilometres of building materials and personnel. As a consequence thereof building traffic is reduced with subsequent reduction of emissions;

The **Halftime** concept should NOT be introduced too rigorously. '**Halfimish**' could be adopted as an in between step.

Although Halftime seems ambitious, it can be achieved. Public and private perseverance is however required. It promises new challenges for new entering craftsmen and crafts women in a more dynamic innovative construction sector. Furthermore Halftime will affect projects in the more strategic part of Rotterdam's purchase portfolio.