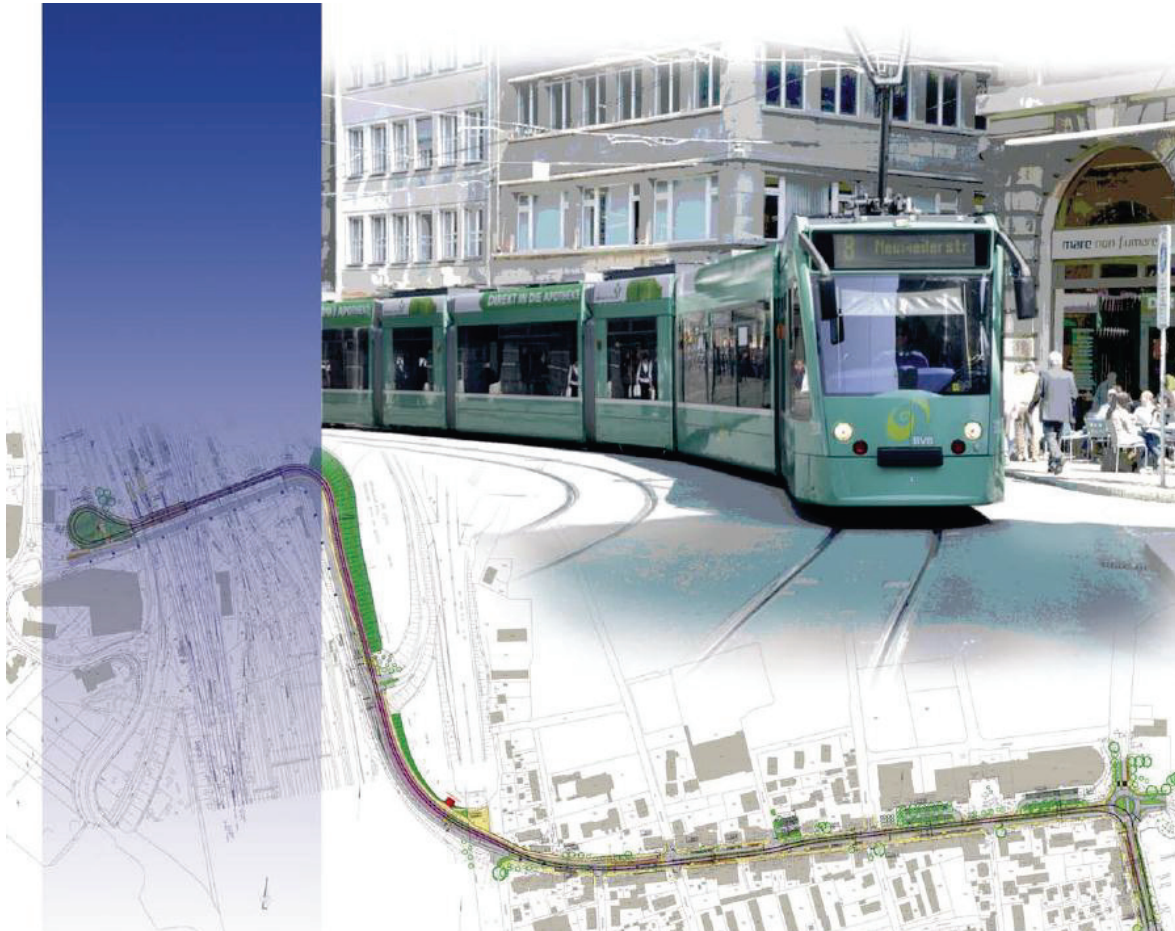


## Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa **E3S**



### Technical Details

- I. General function
- II. Vignol with boxes
- III. Cabinet design
- IV. Installations 2013
- V. GSM
- VI. Filling station

## Bybanen , Bergen, Norway

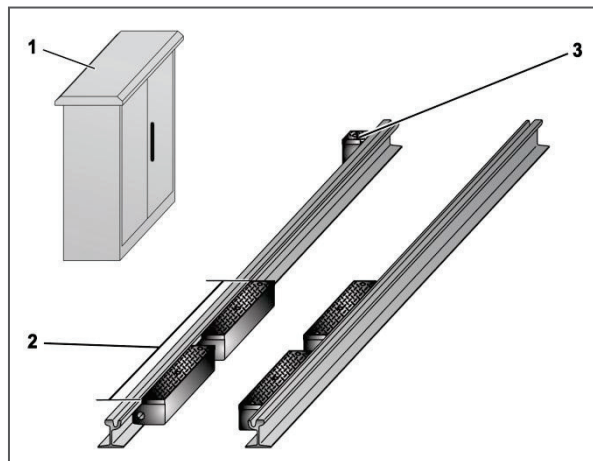
### Electronic Rail Lubrication System moklansa E3S

#### I.) General functional description

The electronic rail lubrication system E3S is a stationary lubrication system to be used at the railway embankment. On the basis of the electronically controlled application of lubricant on the contact points between rail and steel tyre, the material wear on tyre and rail, as well as the noise immission will be reduced significantly. Lower and more uniform quantities of the lubricant are pumped to the rail. The passing steel tyres collect the lubricant and distribute the lubricant as lubricating film over the critical rail section within the framework of the rolling movement.

The system consists of the following components:

System core in the housing cabinet (1), lubrication paths (2), vehicle detection (sensors) (3), connection material



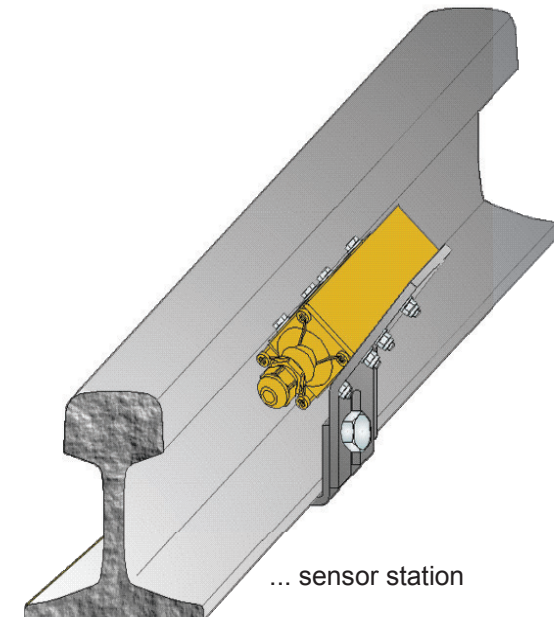
Standard fastening of revision boxes inside the track (2)

The total grease delivery rate is variably adjustable. The geometric quantity distribution per lubricating channel is constant and independent of temperature and hose length. Furthermore, the lubrication intervals are adjustable per vehicle, meaning multiple lubrication of vehicle as a function of the axles.

## Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa **E3S**

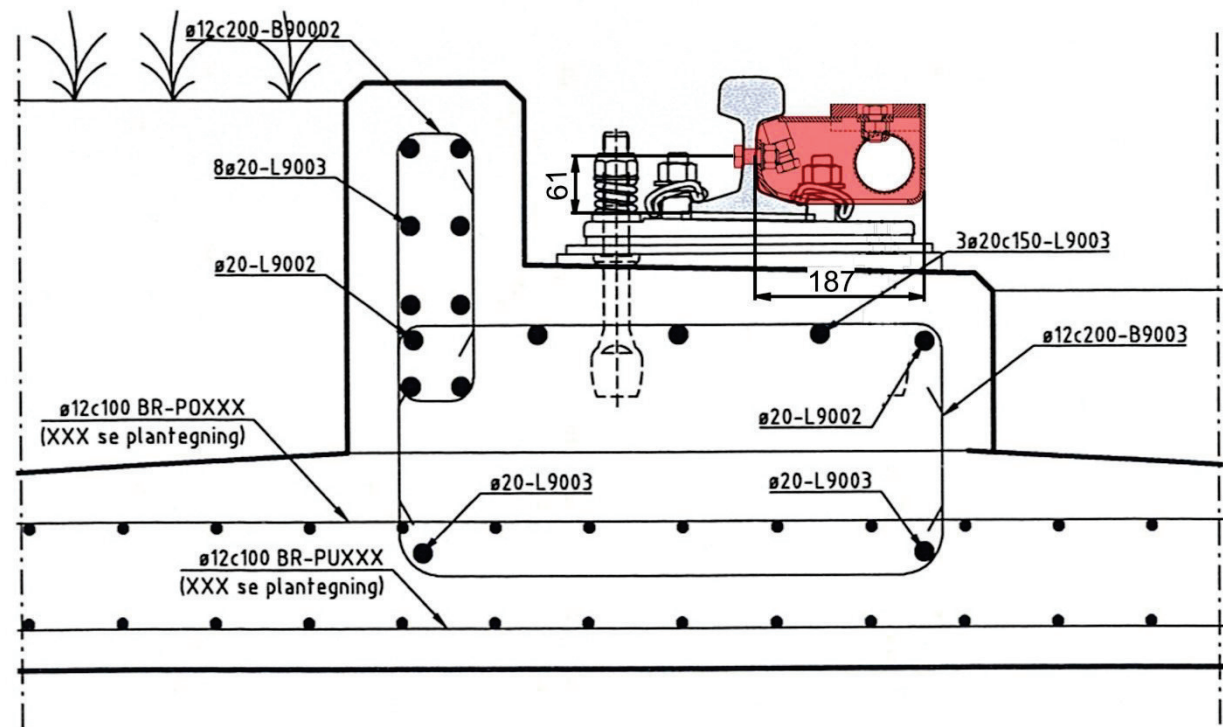
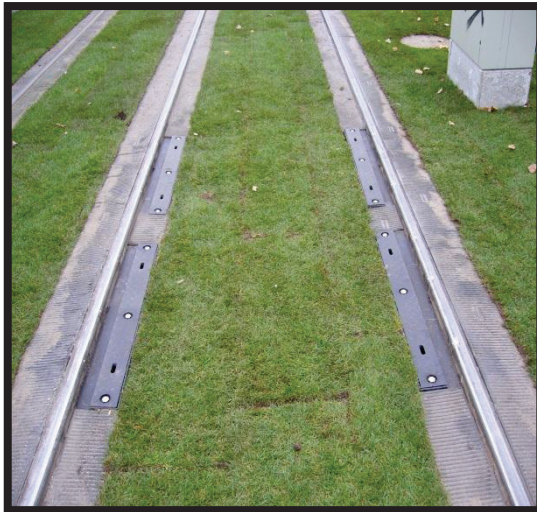
### II.) E3S Vignol with boxes



# Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa **E3S**

## E3S Vignol with boxes



## Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa E3S

### III.) Cabinet design



Cabinet design (photomontage Bergen, Norway)



## Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa E3S

### IV.) Installations 2012, Bybanen



## Bybanen , Bergen, Norway

Electronic Rail Lubrication System moklansa E3S

### V.) GSM



### VI.) Filling station (Option)



# Excerpt reference list “Electronic Rail Lubrication Systems”



moklansa GmbH  
[www.moklansa.de](http://www.moklansa.de)



# Clients



DILLINGER HÜTTE  
AG der Dillinger Hüttenwerke



BOGESTRA



Cottbusverkehr GmbH



Forchbahn AG, Forch (CH)



Berliner Verkehrsbetriebe



Braunschweiger Verkehrs-AG



Dortmunder Stadtwerke AG



HAVAG Hallesche Verkehrs-AG



HEAG Verkehrs-GmbH, Darmstadt



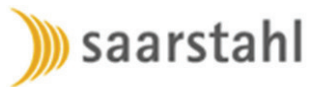
Kasseler Verkehrs-Gesellschaft AG



MAGDEBURGER VERKEHRSBETRIEBE GMBH



moBiel GmbH, Bielefeld



Saarstahl AG, Völklingen



Karlsruher Verkehrsverbund GmbH



Kölner Verkehrs-Betriebe AG



Theißen

Mitteldeutsche Braunkohlengesellschaft mbH,



Rostocker Straßenbahn AG



Schweizerische Bundesbahnen

**SIEMENS**

Siemens AG Transportation Systems



Stadtverkehrsgesellschaft mbH Frankfurt (Oder)



SWK STADTWERKRE KREFELD AG



Thüringerwaldbahn und Straßenbahn GmbH

GmbH

Thüringerwaldbahn und Straßenbahn Gotha



Verkehrsgesellschaft  
Frankfurt am Main

Verkehrsgesellschaft Frankfurt



SaarBahn+Bus

Stadtbahn Saar GmbH, Saarbrücken



Strausberger Eisenbahn GmbH



SWU Verkehr GmbH, Ulm



VBZ Verkehrsbetriebe Zürich



ViP Verkehrsbetrieb Potsdam GmbH

**Moreover, we have delivered our lubrication systems to clients such as:**

- DB AG, German Federal Railway
- SBB, Swiss Federal Railway
- Milan (Italy)
- Rotterdam, The Hague (Netherlands)
- Edmonton (Canada)
- Antwerp (Belgium)
- Lille (France)

**Reference number of turnkey-systems as:**

- |                        |   |     |
|------------------------|---|-----|
| ➤ Basle (Switzerland)  | ≥ | 30  |
| ➤ Berne (Switzerland)  | ≥ | 40  |
| ➤ Zurich (Switzerland) | ≥ | 180 |
| ➤ Bucharest (Romania)  | ≥ | 90  |
| ➤ Berlin (Germany)     | ≥ | 60  |
| ➤ Dortmund (Germany)   | ≥ | 40  |
| ➤ Mannheim (Germany)   | ≥ | 40  |
| ➤ Darmstadt (Germany)  | ≥ | 50  |

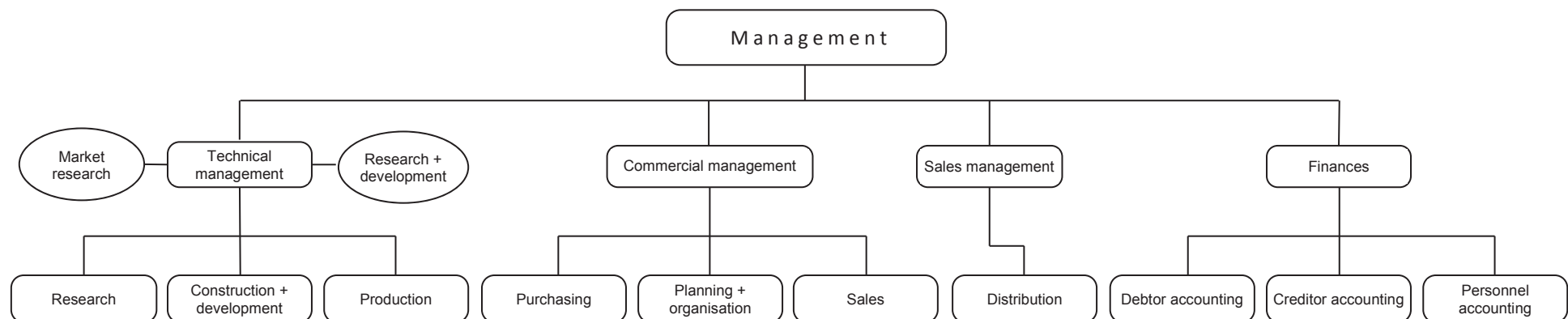
Contacts in the relevant transport authorities we post for you upon request.

## Organisation moklansa

moklansa is an innovative mechanical engineering company. Their competence is in development and construction. The associated research area, with connections to universities and institutes, ensures the necessary technical basis.

The market research affiliated with the sales department, ensures an economical basis for development.

A very flat manufacturing penetration is used in the production process. The production of parts for the forming, foundry, forging and machining technology, as well as steel construction, is passed on to partly affiliated sub-contractors.



## The process from development to product delivery

