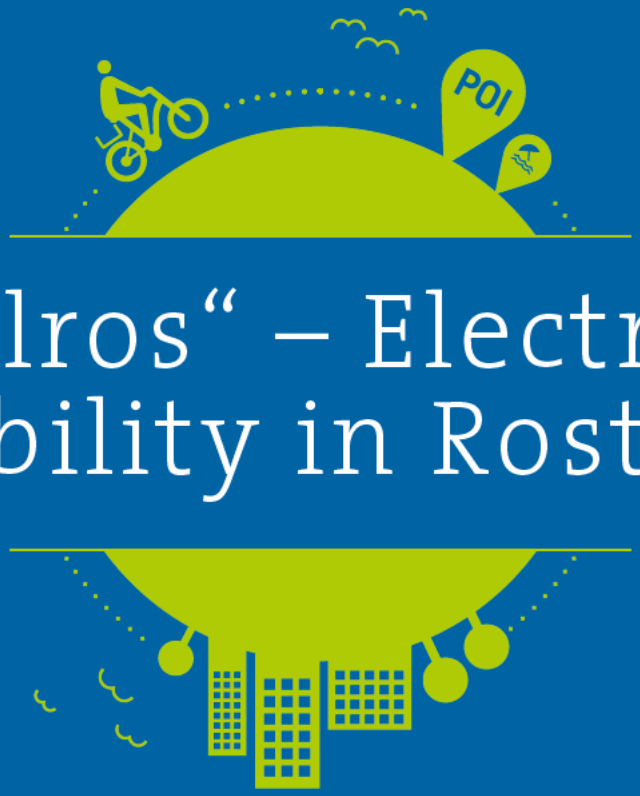


„elros“ – Electric Mobility in Rostock

Recommendations drawn from the Pilot Project of the Rostocker Straßenbahn AG

Part-financed by the European Union
(European Regional Development Fund)

South Baltic PROGRAMME

elmos
electric mobility in smaller cities

HANSESTADT ROSTOCK

RSAG
Zuhause unterwegs.

Preface

Dear Reader,

This handbook summarises all information on the RSAG's pedelec rental system, from the idea to its practical realisation. Our rental pedelecs are a contemporary, important complement to our conventional public transport offers. The aim of this handbook is to prompt you to think how rental pedelecs could play a part in public transport in your town or region. Our pilot project „elros" was funded by the European Union and its INTERREG IV A Programme „Southern Baltic" (2007–2013).

On the project's webseite **www.elmos-project.eu** you find all important studies available to download. The best place to evaluate our rental system is on site of course – why don't you come and visit us in Rostock? You can register on our website **www.elros-leihen.de** from the comfort of your home and you will receive your access card by post. With the card you can hire and test your favourite pedelec at any time.

Yours sincerely,
Rostocker Straßenbahn AG

Project Brief

Pedelecs in public transport:

- innovative
- flexible
- sustainable

Project aims:

- intermodal transport
- city and urban hinterland transport
- noise and climate protection

Target groups:

- commuters
- everyday cyclists
- recreational cyclists

elros: Electric mobility in public transport

In the Hanseatic City of Rostock new e-mobility services are being tested since 2014. Two pedelec rental stations in the outer conurbation area are connected with two rental stations at urban hubs. A fifth rental station will be set up in the autumn of 2014. The rental is effected at automatic rental stations. The bikes can be reserved online. From the EU-project ELMOS the pilot project „elros - Electric mobility in Rostock“ was developed in the course of the realisation in Rostock. The innovative mobility project is regarded throughout Europe as the pioneer for a non-proprietary infrastructure on the basis of the EnergyBus standard.

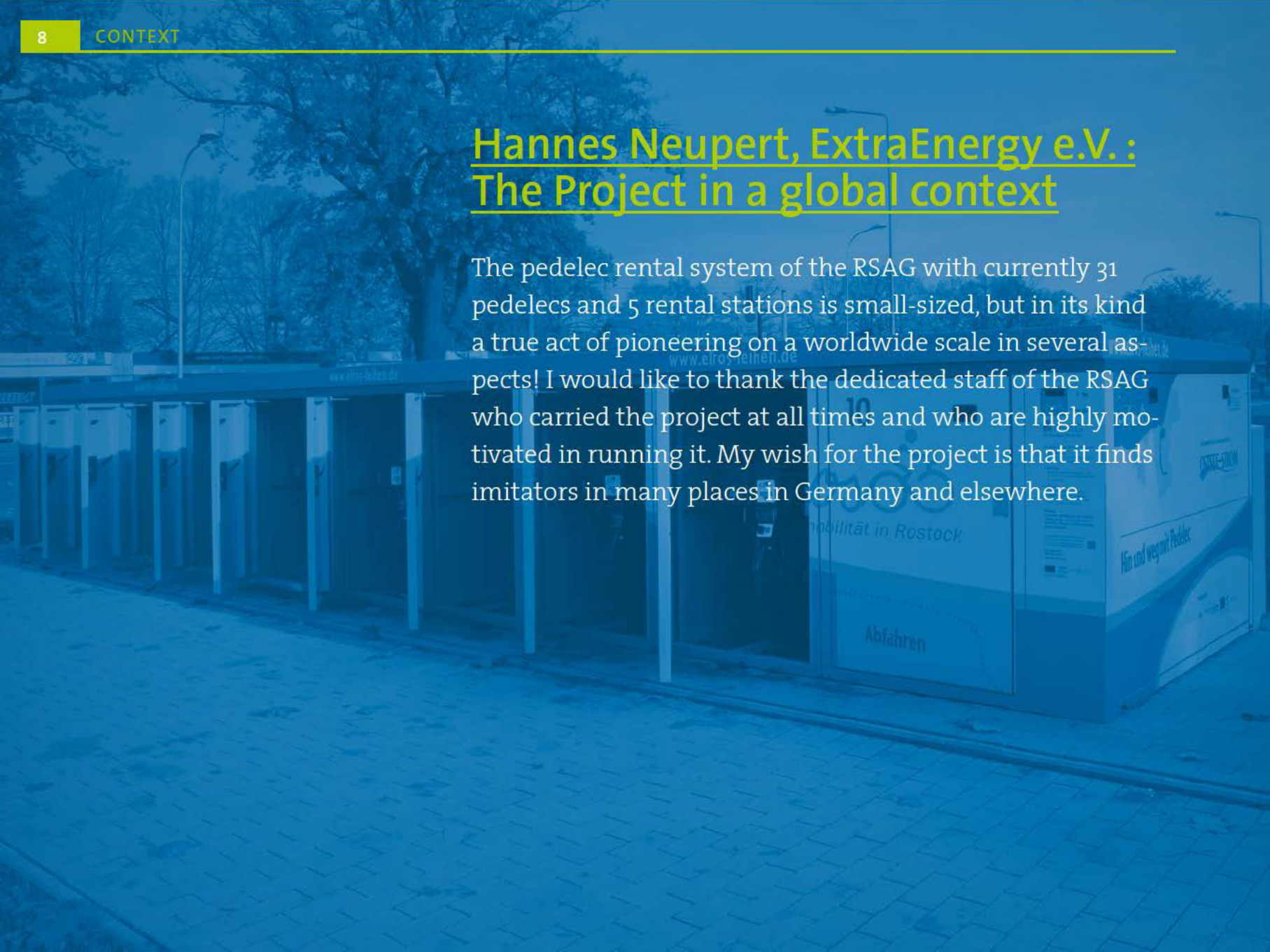
elros
Elektromobilität in Rostock

PART 1

Context

Reflection and placing the project in a global context
on the basis of the following studies commissioned by the RSAG:

- → ELMOS Best Practice Study / Part 1
- → Market Research Study, FORSA Institute
- → Location Study, PTVGroup



Hannes Neupert, ExtraEnergy e.V. : The Project in a global context

The pedelec rental system of the RSAG with currently 31 pedelecs and 5 rental stations is small-sized, but in its kind a true act of pioneering on a worldwide scale in several aspects! I would like to thank the dedicated staff of the RSAG who carried the project at all times and who are highly motivated in running it. My wish for the project is that it finds imitators in many places in Germany and elsewhere.

What makes the pedelec rental system of the RSAG so special?

1

It is the first system in the world using a fully neutral infrastructure. That means the infrastructure complies with the international standard for the LEV industry that is currently due for approval, so that it works for diverse pedelec types and brands. The RSAG pedelec rental system is therefore the first commercial application worldwide to use the LEV infrastructure standard IEC/ISO/TC69/JPT61851-3. The RSAG has thus greatly helped to prove that this standard is realisable in practice.

2

Within the framework of the Working Committee of the International Energy Agency on Charging and Parking Innfrastructure for Light Electric Vehicles, towns are looking for solutions on how a **universal parking infrastructure can be created that is identically or very similarly applicable for all two-wheel vehicles and compacts**. It shall facilitate public authorities and private operators to offer parking that works for all two-wheel vehicle types and different operator models. This infrastructure should also be administrable remote controlled and without great cost. Via the web interface of each station it is possible to make a software update of the pedelecs or to read the guarantee status of components, thus optimising the service.

3

The **europe-wide call for bids by the RSAG** for the pedelec rental system in the two lots infrastructure and vehicles is currently used **as the basis of a recommendation guideline for pedelec infrastructure and rental-pedelec systems** of the Hybrid and Electric Vehicle Implementing Agreement of the International Energy Agency.

„The public pedelec is a one-person bus“

In 2012 Professor Onnen-Weber from the University of Applied Sciences in Wismar said a sentence at the LEV conference in Cologne that was crucial for me: „The public pedelec is a one-person bus“. If this view can be established, public transport would be financially feasible and available throughout the country in future. The public rental pedelec is the perfect complement to buses and trains. A further element of public transport will be robot cars, which will eliminate private cars further and thus free our cities from the evil of stationary traffic. Towns like Kopenhagen that annually withdraw 2% of public car parking without substitution and turn them either into green spaces, playgrounds or bicycle infrastructure, set the trend. I still remember vividly my father‘s work in the 1980s as a town planner, when he established pedestrian zones in numerous towns in Baden-Würtemberg. This partly faced protest from tradespeople and restaurant owners who thought it would mean the end of their business when customers could not drive up in their cars anymore. Yet the opposite was the case: The streets prospered and the businesses experienced a new flourishing.

Pioneering role for the RSAG

At the same conference Professor Andreas Knie from the Innovationszentrum für Mobilität und gesellschaftlichen Wandel (innoZ / Deutsche Bahn) said: „If someone here in this room knows someone who can deliver a pedelec for public rental together with an infrastructure – please get in contact with me urgently.“

This was also the problem faced by the RSAG: There was nothing available for purchase which met the requirements. The solution used by the RSAG now would have been unique in the world only two years ago.

Outlook

Fortunately the world keeps turning and the available solutions are getting better and better. Today Kopenhagen, for example, has a pedelec rental system which developed the preparations in the booking software from the Rostock model even further and has managed to operate the first pedelec rental system profitably already in the first six months. This is terrific news – a public transport system that is very comfortable for the user and that is making money – this is a model that will become established worldwide! And the RSAG is one of the pioneers of this development.

I encourage you to advocate for an extension of public transport by pedelecs also in your region. But please read this handbook carefully and do not believe that it is easy to introduce a pedelec rental system. The pioneering years are not over yet. It is neverheless worthwhile to start rethinking today, because as you will be aware, a modification of infrastructure is always an arduous process.

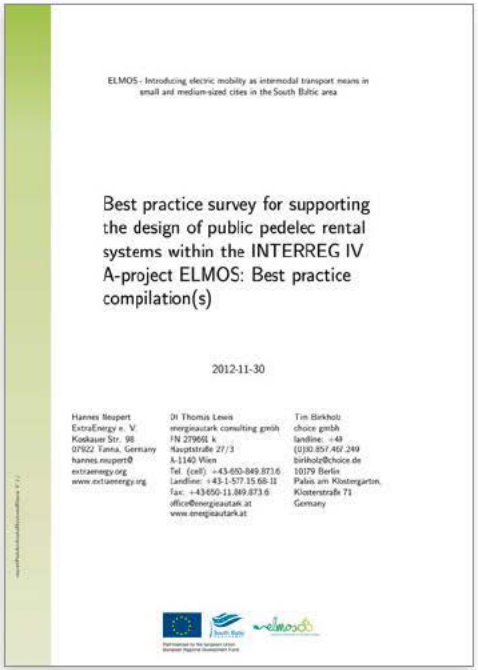
Moreover this is not purely about technical questions, but also about a civil society process which requires everyone to engage in the option pedelec. The successful introduction of such a technology also requires the conviction of important opinion leaders from various camps. Hence wait and see is not a good strategy. We all have to start the process now and begin the change in mobility away from the private car to an intermodal transport culture that is flexible depending on the application. The pedelec and in particular the publicly shared pedelec is the key for it. ■

THE AUTHOR

Hannes Neupert

- Active in the field of light electric mobility since 1982
- Chairman ExtraEnergy e.V.
- Director EnergyBus GmbH
- Chairman Standardisation Board of the International Electrotechnical Commission Charging Infrastructure for Light Electric Vehicles (Deutsches Spiegelgremium DKE/GAK 353.0.9 des IEC/ISO/TC69/JPT61851-3)
- Initiator and Head of the Expert Panel of the International Energy Agency on the subject charging and parking infrastructure for light electric vehicles (IEA HEV IA Task 23)

Best Practice Study



ELMOS - Introducing electric mobility as intermodal transport means in small and medium-sized cities in the South Baltic area

Best practice survey for supporting the design of public pedelec rental systems within the INTERREG IV A-project ELMOS: Best practice compilation(s)

2012-11-30

Hannes Neupert
ExtraEnergy e. V.
Koskauer Str. 98
07922 Tanna, Germany
hannes.neupert@extraenergy.org
www.extraenergy.org

DI Thomas Lewis
energieautark consulting gmbh
FN 279661 k
Hauptstraße 27/3
A-1140 Wien
Tel. (cell): +43-650-849.873.6
Landline: +43-1-577.15.68-11
fax: +43-650-11.849.873.6
office@energieautark.at
www.energieautark.at

Tim Birkholz
choice gmbh
landline: +49 (0)30.857.462.249
birkholz@choice.de
10179 Berlin
Palais am Klostergarten
Klosterstraße 71
Germany

A study commissioned by the ELMOS project partners examined ten European bicycle /pedelec rental systems in the autumn of 2012. The results of the study served to support the design of public pedelec rental stations in the ELMOS pioneering cities. An important insight gained was that there is no off the peg solution that meets all requirements.

On the basis of the systems examined four components were assessed that are decisive for setting up a pedelec rental system:

1. Suitable pedelecs for use in public rental systems

- Basic requirements of the pedelec components: gear unit, brakes, handlebar, saddle, lights, rack etc.
- Basic features of rental pedelecs: robust frame, distinctive design, secure lock and space for advertising.
- Out of more than 2000 models available on the market ten pedelecs are presented that seem particularly suitable for use in public rental.

MORE INFORMATION ON THE STUDY

The full version of the study is available in English as a download on the Internet:
http://www.elmos-project.eu/fileadmin/content/documents/Download_Service/reportPedelecRentalSystemsElmos20121213V1x4.pdf

2. Booking and ticketing systems for pubic pedelec rental systems

- Modern automatic rental systems need a software to handle the processes necessary for the customer (front end) and the operator (back end).
- The technical developments on the pedelec market progress at great speed. Therefore a software should be used that runs independent of the specific locking and / or charging of the station technology.
- The software should at least allow for both the integration of different technologies and different vehicle types.

3. Location & design of charging / rental stations for public rental systems

- The location should be choosen with the main target group in mind.
  - Commuters need stations at public transport stops and a high availability.
  - Tourists need stations near places of interest.
  - Inhabitants need connections between residential areas and the town centre or between surrounding communities and metropolis.
- A criteria location selection is also public visibility. The station can be found more easily by the user and the likeliness of vandalism becomes smaller.
- When choosing the location the possibility of expanding a station should also be considered.

4. Operator and maintenance models for public rental systems

- System operation under one's own control:
  The operator has strong control of the system, can react quickly to incidents and offer additional consulting services.
- System operation externalised:
  - Operating and maintenance are delivered by a specialised firm. A high usage rate will only be achieved when the operator has a financial motivation, i.e. has a share in the revenue.
  - Only the system operation is transferred to a third party, maintenance and service are provided by oneself. The system can be operated at lower cost, provided that trained staff are available.

FORSA Market Research Study

The study commissioned by the RSAG investigated the subject of electric mobility / mobility in Rostock in the run-up to the project in order to obtain information on the potential of electric mobility at this location.

The following summarises the relevant findings for an envisaged e-bike rental.

Reasons for using or not using a pedelec / a conventional bike

- to gain time
- strong emotional and rational barriers to usage (the advantages of the car as well as the preferences of its oweners are manifold)

Requirements for the use of pedelecs

Locations

- ideally: pedelecs available at all stations
- desired main locations: terminal stops, followed by hubs in the city centre

Protection and Safety

- Protection from the elements, vandalism and access by unauthorised individuals should be guaranteed
- Renting and returning the pedelec should nevertheless be quick and straightforward

Availability

- Pedelecs should be available in generous quantities and at all times

Appraisal of the idea of the RSAG to rent out pedelecs

- Two thirds of the respondents assess the idea as positive

Desired way of renting a pedelec

- Half of the respondents would find renting the bikes at the service stations or online ideal
- Only a minority would like an exclusive reservation via the Internet

Preferred location for the pedelecs

- The city centre is named more often than the suburban area
- Over a third thinks that pedelecs should be available both in the city centra and suburban areas

Making use of the pedelec would ...

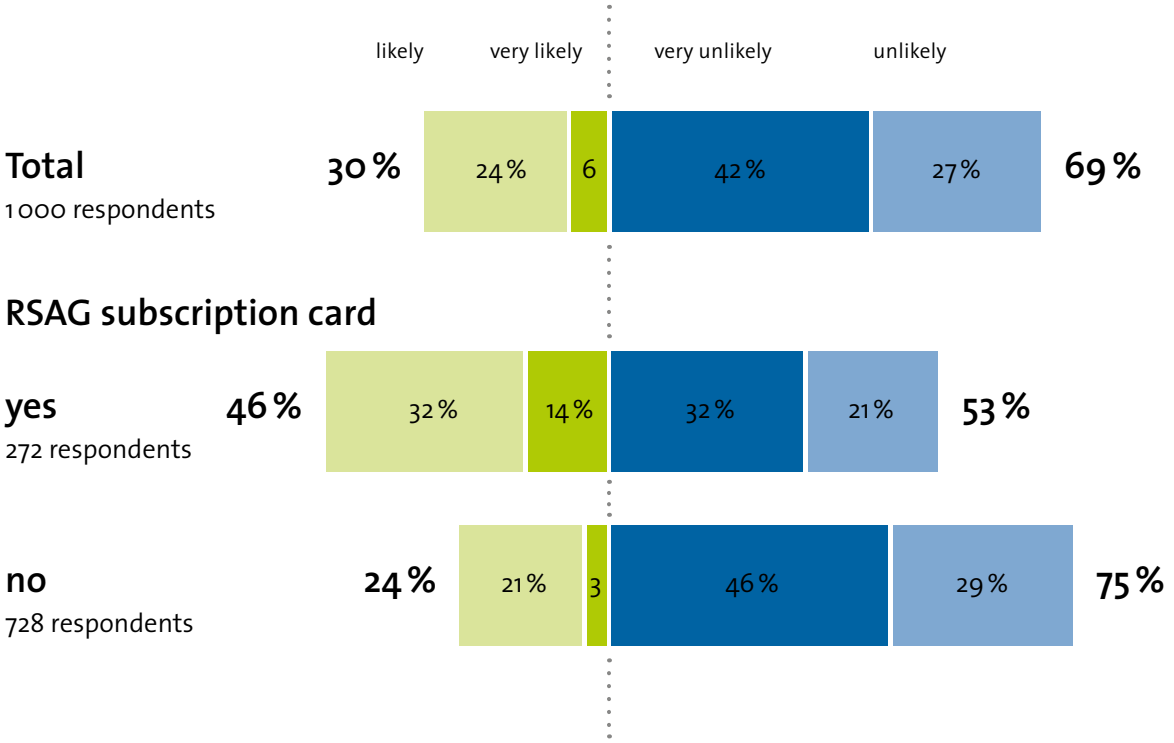


Chart taken from: Forsa Rostock, 29 August 2012 (Aug 12 Q2454/26919 Kl/Wi), p. 40

INFORMATION

Scientific Study, Forsa Rostock, 29 August 2012 (Aug 12 Q2454/26919 Kl/Wi)

The study commissioned by the RSAG investigated the subject electric mobility/ mobility in Rostock in the light of:

- target group and methodology
- means of transport, comparison of characteristics and usage
- sources of information
- possible inclusion of the smartphone
- payment scheme and handling
- reaktion to possible new offers
- e-bike sharing as module of public transport
- car sharing as module of public transport

PTV Group Location Study

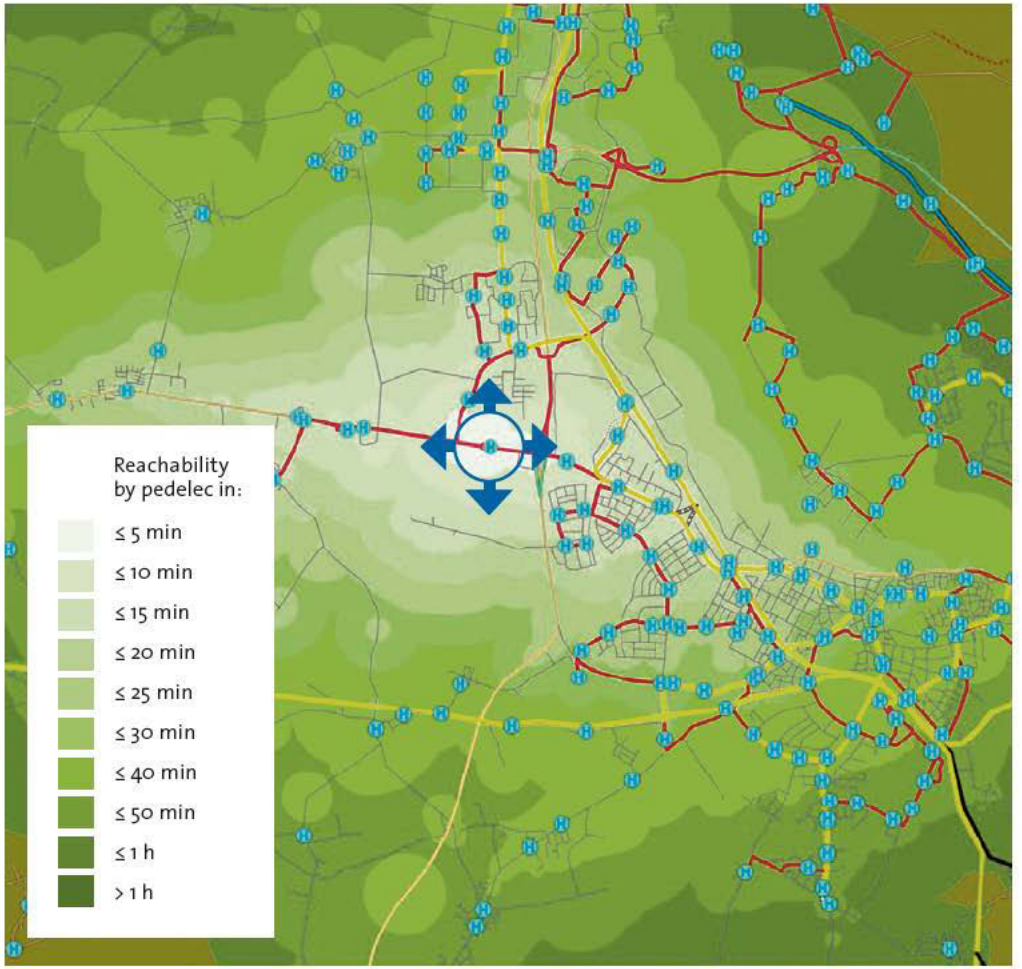
PTV Group Location Study for setting up a public pedelec rental system

- description of potential locations
- definition of target groups and their dissemination
- evaluation of potentials

Chart on the right: Subject of examination was the range of a pedelec from an exemplary station and the transit stations available within the range.

In contrast to conventional bikes pedelecs can cover much longer distances. Using a pedelec also means that topographical influences are evened out, so that the distance radiuses remain circular (hills or mountains are no obstacle for covering longer distances if you have motor support).

Chart taken from: PTV Group: Location analysis for settung up a public pedelec rental system, Berlin, 21 December 2012, p. 13



In total the potentials were examined for seven possible rental locations in suburban areas. The following criteria were considered:

- user potentials – inhabitants, work-force, cyclists
- public transport offers – number of departures at the stops of the rental stations
- public transport offers – number of departures at stops in the places of residence of potential users
- possible obstacles – conditions of cycle paths, frequency of accidents in bike traffice, frequency of congestion in access to the stations

For each possible location a profile was compiled according to the following criteria:

1. Quality of the location

- accessibility
- cramped surroundings
- visibility of the station for user
- lighting

2. State of traffic network in access

- frequency of accidence
- frequency of congestion

3. State of traffic network in direct surroundings

- cycle paths
- roads / streets
- roadside dangers

4. Electrical connection available?

5. Site owners

- Who owns the site
- characteristics

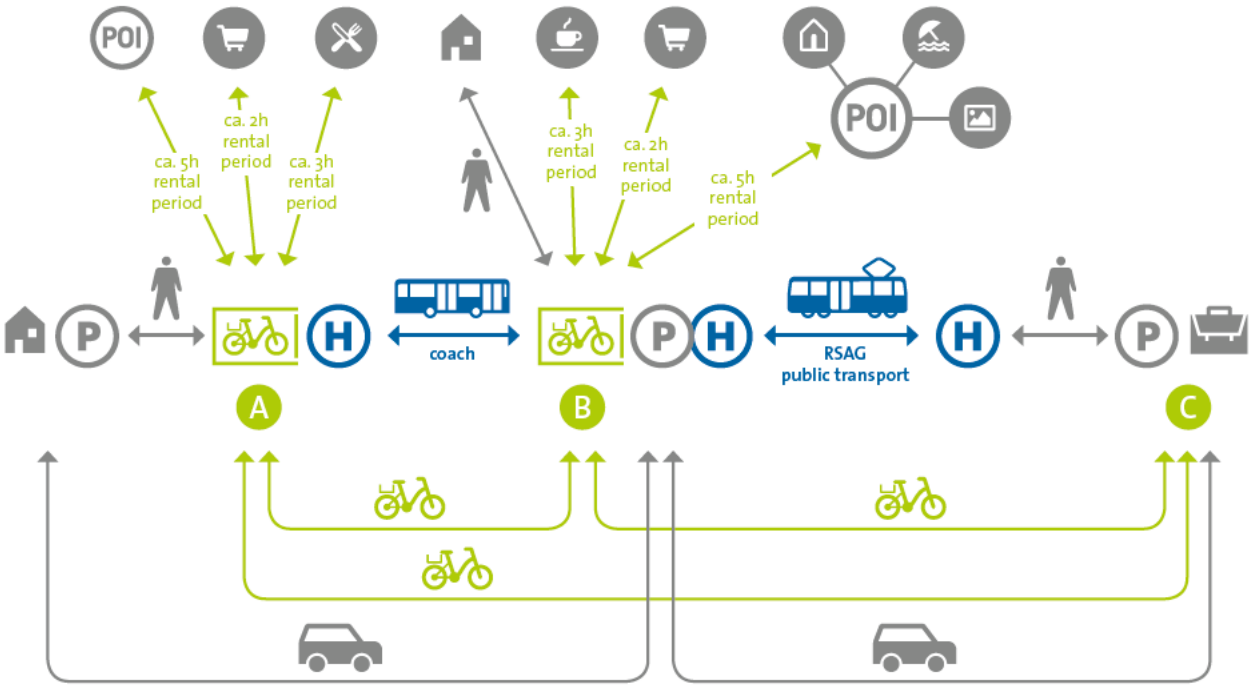
Profile of the station Lütten Klein Centre

PART 2

Pilot Project

Summary of the essential parts of the concept
as recommendation and guideline

Scheme of Possible Trip Chains for Users



Private transport

Destination private transport

Public transport (RSAG)

Stop public transport

Trips with elros rental pedelec

elros charging / parking station

In order to analyse as many diverse patterns of use (commuters, recreational riders and everyday riders) a high availability of pedelecs must be realised. For this purpose a usage with a high immobilisation time should be avoided (e.g. leaving the pedelecs overnight in the private household of the user). This can be positively influenced by a suitable location choice and an optimised tariff structure.

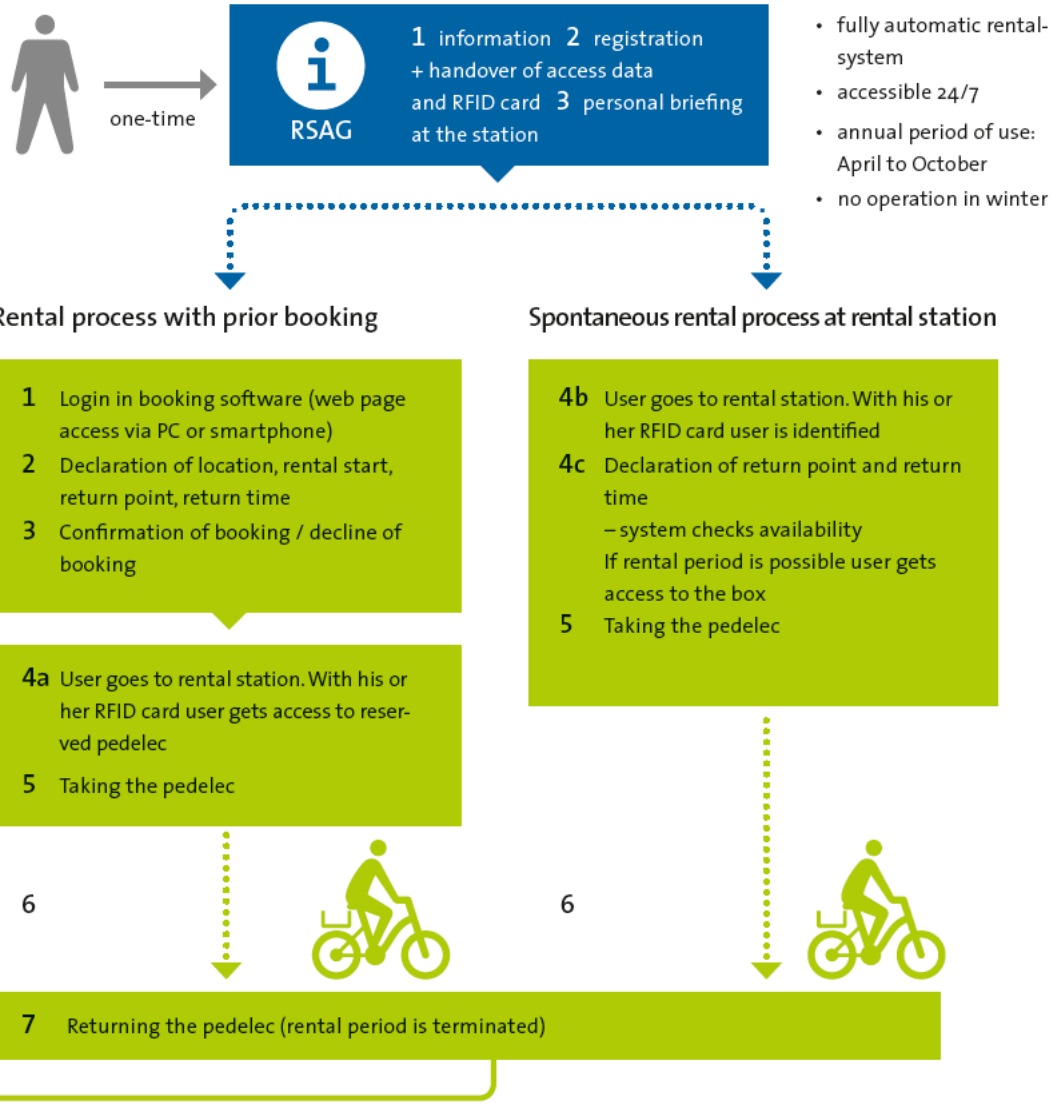
Pilot concept for the RSAG Pedelec Rental System, 30.01.2013, chart Atelier Papenfuss

Pilot concept

The 70-page strong pilot concept was compiled in collaboration with the association ExtraEnergy / Tanna and Papenfuss | Atelier für Gestaltung / Weimar. Key aspects of the concept are:

- goal for the RSAG Pedelec Rental System as a pilot project
- description of target groups and rental locations
- suggestion for operating the pedelec rental system
- basic requirements technology
  - rental pedelec
  - rental stationes
  - software
- rough plan for the pilot project
- communications concept

Pilot concept for the RSAG Pedelec Rental System, 30.01.2013, chart Atelier Papenfuss



Special features

Three special features distinguish our pedelec rental stations. They can be implemented in any system:

- They can be operated by remote maintenance and do not require staff on site.
- Thanks to the EnergyBus standard they are specifically desiged for the requirements of operation in the public space.
- They are conceived as a „learning infrastructure“ and can be adapted to changing conditions.

Automatically operated e-bike rental stations

- Efficiency: station and pedelecs are administered, controlled and provided with updates online
- Safety: system informs operator about battery status, driving data and defects – safety routines based on communication of components avoid defects resulting from incorrect use
- Comfort: reservation and booking via the Internet or directly at the station

EnergyBus: Non-proprietary charging infrastructure*

- Sustainability: upward and downward compatibility of all components among each other and to the system
- Planning reliability: A non-proprietary system creates the same conditions across all brands and independent of manufacturers. This means different vehicle types (pedelec, e-bike, scooter) by different manufacturers are applicable or flexibly exchangeable depending on the application (city, transport of goods, delivery services, ...).

* independent of a manufacturer – precondition for a public infrastructure

Learning infrastructure

- Modular system: the stations can easily be extended by box storage slots or reduced and can be adapted to needs at short notice.
- Flexibility: their location can be changed since they are only screwed on to a foundation slab
- Mixed strategies in the rental concept are thus possible and remain adaptable as required

Approach

Project aim

Pedelecs as interconnected mobility means shall connect suburban areas to existing public transport in an eco-friendly way.

Project development

In advance

- analysis of existing rental systems (bike / pedelec)
- market analysis and location analysis

Conceptual phase

- collection of results, conclusion as basis for formulation of concept:
  - concrete project aim (internal, external)
  - strategy
  - mobility concept
  - communications concept
  - development potential / sustainability
- define work packages with responsibilities and cooperation partners
- timeline, cost budget

Realisation

The success of the project is strongly dependant of a good collaboration and involvement of all partners and stakeholders.

Strategy and business model

Strategy fields with high potential are electric mobility services and mobility consulting, e.g.:

- profiling as service provider for sustainable mobility
- Master plan 100% climate protection: Stepping-up acceptancy for environmentally friendly mobility in everyday life through intermodal involvement of the pedelec
- tapping new business segments and customer groups that could not be retained / permanently retained so far

Mobility concept and target group

Core aim of any mobility strategy is to take customers quickly, safely and comfortably from A to B. Individual mobility exigencies (commuters, everyday and recreational riders) need to be considered here – in particular also with regard to newly emerging residential areas and their integration, e.g.:

- setting-up an intermodal transport system – pedelecs as interconnected mobility means to public transport
- connecting of suburban areas / surrounding communities with existing public transport
- extending inner-city individual radiuses of action

Communications concept

The aim of communications and campaigns will be to enhance the operator's image and extend it by the added societal value that arises from the new business segments.

Conveyal should be differentiated via target-group oriented contents:

- external communications (image, attracting, informing)
- internal communications (training, briefing, operating guidelines, planning)
- marketing, PR
- direct advertising at rental system (pedelecs, stations)

Target Group and Mobility Concept

With the rental pedelecs the RSAG wants to persuade car commuters from the outer conurbation area to switch to the pedelec and to facilitate more comfort and mobility for everyday and recreational riders.

Bike Box

Automatic station – parking boxes for pedelecs with charging function and RFID access system

Administration, maintenance and service

Central reservation and administration software for all stations. Remote maintenance: driving data are readable and defects identifiable online

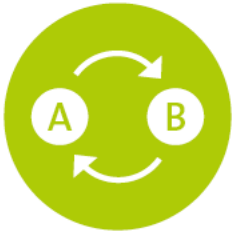
Public transport

Rental stations with direct connection to public transport stops

Points of Interest

Pedelec route

Exemplary pedelec route



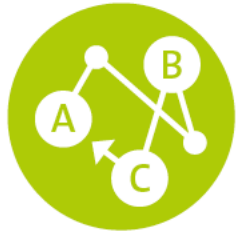
Commuters by car or other

Defined A ⟷ B ⟷ A routes

Commuters cover routes on a daily basis mostly between their home and work. Routes are therefore relatively static.

With rental pedelecs one can

- connect rural regions to the urban public transport network
- cover the so-called **Last Mile**
- avoid rush-hour congestion (**Park & Ride**) and thus optimise inner-city everyday traffic as well as
- flexibly compensate awkward frequencies of suburban buses



Everyday cyclists

Short A ⟷ A routes, many destinations

Everyday cyclists mostly have **several destinations** (supermarket, bakery, café, ...); they show a so-called **butterfly behaviour**.
The routes ensue from the different destinations and vary strongly.
Pedelec **rental stations in residential areas** make sense for this target group.

With rental pedelecs one can

- transport shopping to one's home
- run errands in town centres that become more and more pedestrianised

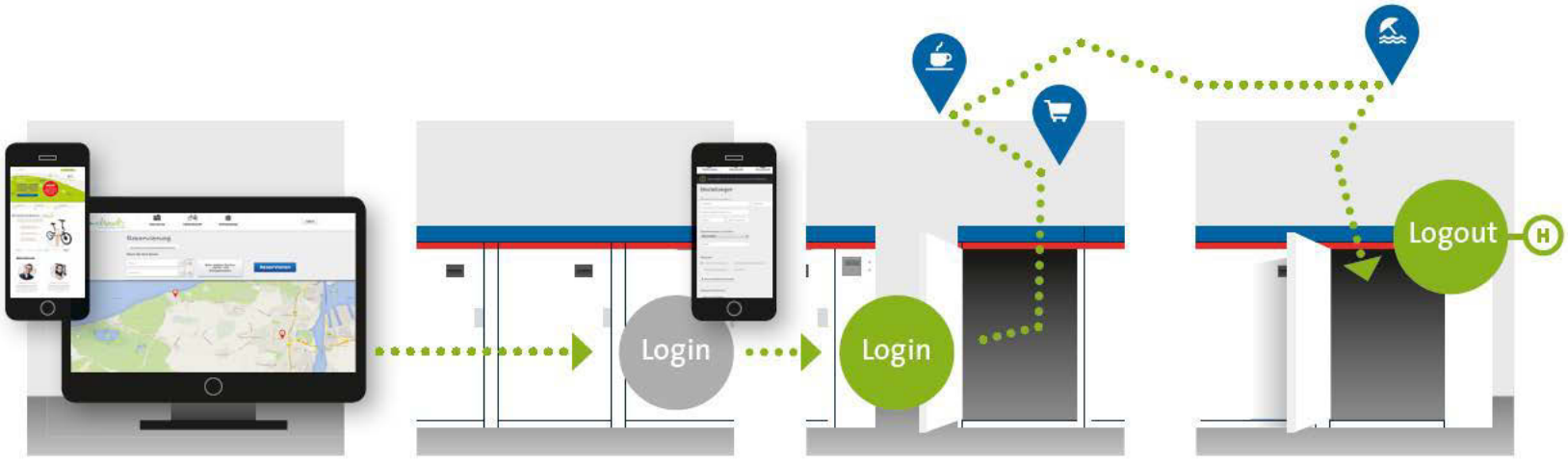
Recreational cyclists

Long A ⟷ A routes, few destinations

Destinations and times of use strongly differ depending on the kind of recreational activity. Riding the pedelec as such can already be the activity (e.g. group outing).

A pedelec rental system offers

- a good complement for recreational activities
- appeals to national / international tourists



ONLINE

Register

- **Registration online** or in a customer center
- Customer receives access card (possibly with initial credit)

ONLINE + STATION

Reserve

- **Login** online with user data
- Choose and **book** point of departure and return with time of return

STATION + SMS / SMARTPHONE

Rent and you‘re off!

- **Identify** yourself at rental station with access card
- **Box opens**
- **Release charging connector** and take out pedelec
- **Close door** and ride off

STATION + SMS / SMARTPHONE

Place back and charge

- Ride to any of the operator‘s rental station
- **Identify** yourself at the terminal with access card
- Place pedelec back in the box and **connect with charging cable**
- Close door and **sign off** at the terminal with access card


www.elros-leihen.de
elros
RSAG
Wir bewegen Menschen
ja
nein

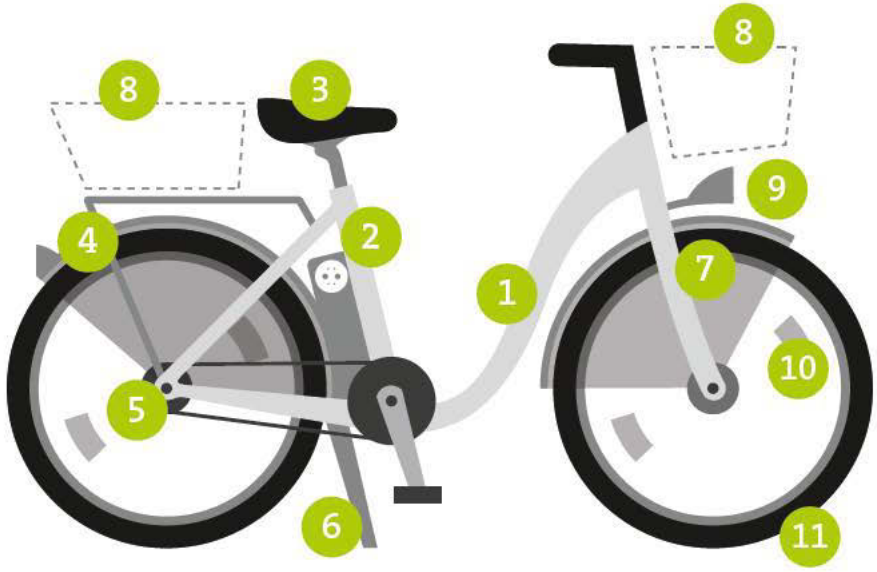
The Pedelec – Basic Requirements

Apart from the station the pedelec is the key to the perception of the rental system – and a significant cost factor: easy maintenance and care are prerequisites for a smoothly functioning fleet system.

1 Robust cargo bike architecture (facilitates payload, no transport of people apart from rider) comfortable low-step through, integrate all components if possible

2 EnergyBus dock = charging interface

3 simple height-adjustable (quick release) and theft-proof saddle (non-detachable) marks on seat post for adjustment of seat height



8 open luggage basket front: easier to see (theft protection) back: prevents people from sitting on it

9 automatic lights

10 reflectors

11 robust tyres wheel diameter rather smaller than 26" (no less than 20" because of potholes)

4 mudguards (with advertising panels on the side) and chain guard

5 as few gears as possible or continuous gears

6 bicycle stand

7 safe, easy-care breaks

+ eye-catching frame colour

+ integrated components

+ GS mark

+ theft protection for when on the road (e.g. frame lock)

The RSAG Pedelec – Realisation

GOBAX GET2PRO

- robust, resiliant aluminium frame with comforable low step-through and 160 kg payload
- low-maintenance, safe, hydraulic Magura brake system
- robust, large-volume Continental tyres with puncture protection
- continuous NuVinci gears with large ratio change
- solid double stand
- comfortable saddle with height-adjustable, theft-proof seat post
- reinforced chain with Chain-Runner chain guard
- bright LED lighting system with automatic parking light
- Acron mid motor
- long-lasting gobaX battery with high capacity and Energy-Bus interface
- support selectable from 10 % to 200 %
- CE marking

Realisation of Requirements at the RSAG Model

The use of pedelecs in the public space has specific demands.

- Protection from vandalism and theft
- Robustness, no easily lost small parts
- easy maintenance and integrated, minimally troublesome components

At the time of the project start there was no suitable model available on the market which fulfilled all criteria for the public space and rental. The model chosen in 2013 has the principal characteristics of a public rental bike.

INFRASTRUCTURE CONNECTION

Systematically charging and administering

- EnergyBus system for administration of the pedelecs (reading out driving data and vehicle IDs, software updates, fault analysis), system recognition via charging cable in the station
- The neutral (non-proprietary) infrastructure of the RSAG system facilitates the problem-free gradual replacement of bikes as soon as better models are available

PUBLIC SPACE

Robust, theft and vandalism proof

- robust, eye-catching **frame**
- few individual parts and easily lost components
- nuts and screws can only be opened with special tools
- extra robust 24" tyres, payload up to 160 kg possible (heavy persons with luggage)

SUITABILITY FOR DAILY USE

Comfortable and practical

- **Unisize frame** for getting on the bike comfortably and an upright seated position
- **wire basket on racket** (prevents overloading and taking passengers)
- **non-tilting bicycle stand**
- **automatic lights**

Basic Requirements Station

Charging station

Variant Bike box-SMALL

EnergyBus charging connector

Example strip foundation

Example paved area with +/-0 OK coating

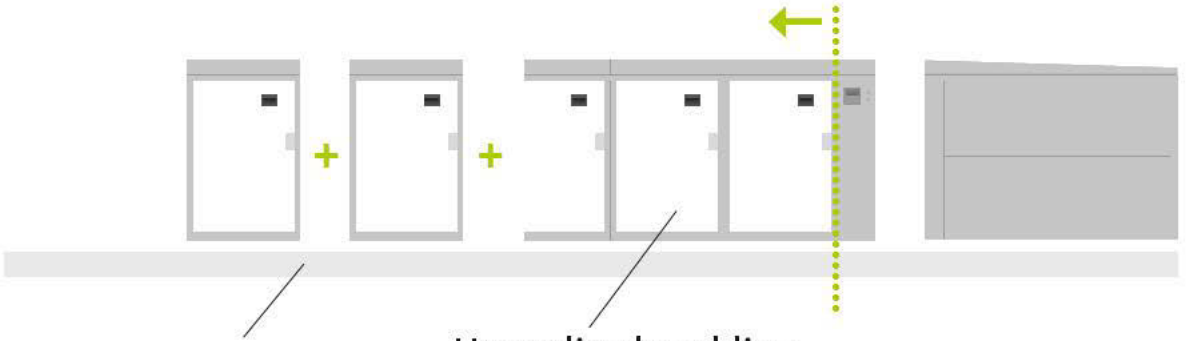
Interface

Access interface (RFID)

Telephone for emergencies

Modularity

Thanks to its modularity the station can be adapted to the demands of operator and location. This way it stays flexible: through exchange, enlargement and even the possibility of a location change – it remains "able to learn".



Adaptation of measurements

The measurements of the box are modifiable for specific applications (e.g. cargo bikes)

Foundation plate as regards construction

- per screw assembly on a foundation plate, alternatively on an even paced area (dowelled on +/-0 OK coating)
- no excavation work necessary, only power must be available

Upgrading by adding modules for one pedelec only

- with parking assistant and battery interface
- up to 20 boxes pairable

Technical module / base unit

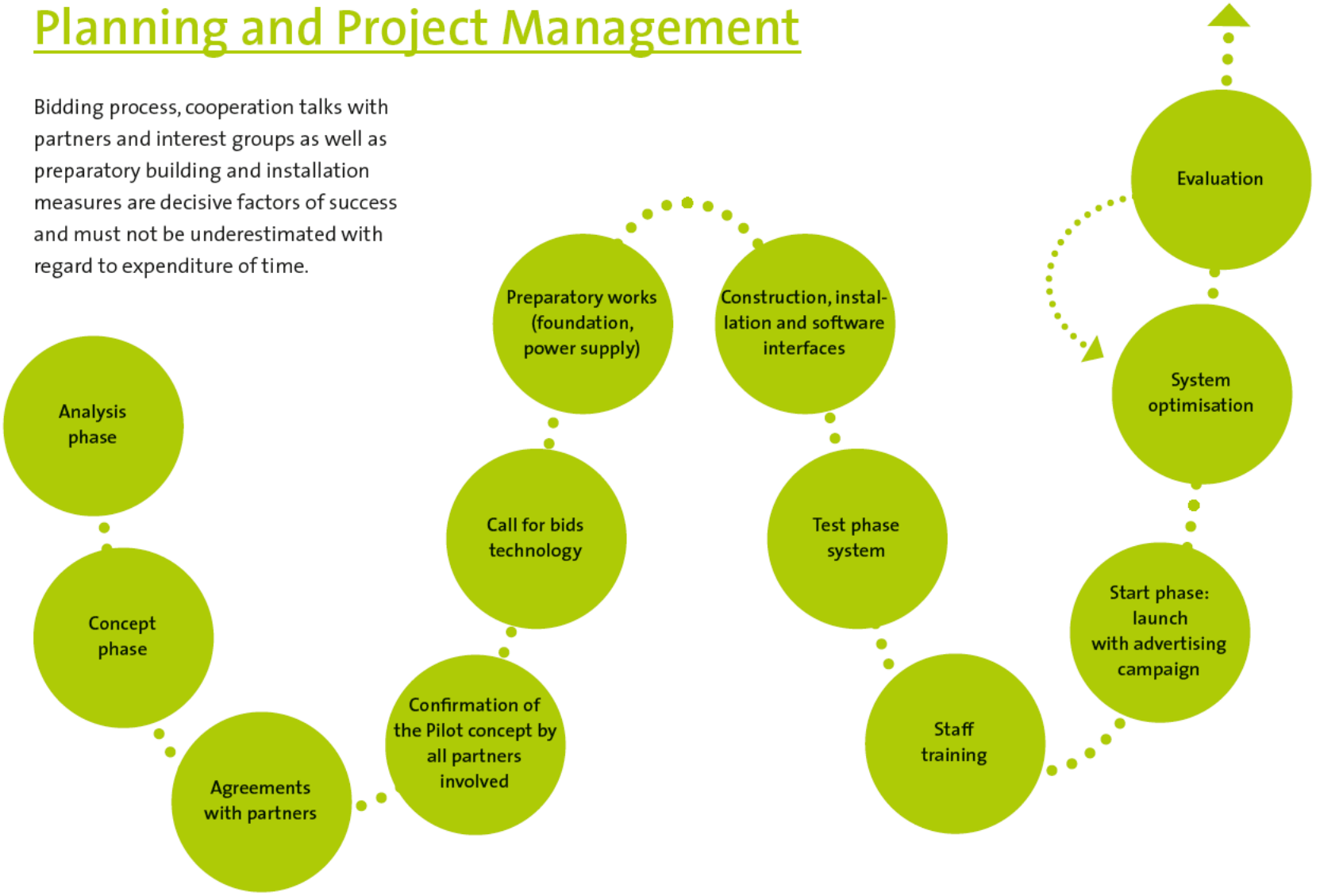
- base unit with control system for the whole station
- regulates power supply and data exchange for individual parking boxes (via EnergyBus)

PART 3

Experiences

Planning and Project Management

Bidding process, cooperation talks with partners and interest groups as well as preparatory building and installation measures are decisive factors of success and must not be underestimated with regard to expenditure of time.



Europe-wide bidding

A critical point is the timeline: For drawing up the service specifications, sending the notice to the Office of Official Publications of the European Communities and negotiations and placing the order at least 4 months need to be allowed for.

In the open procedure, the time limit for the receipt of tenders (deadline) shall be at least 52 days (counting all days including bank holidays, Saturdays and Sundays).

Preparatory building and installation works for setting up fully automatic pedelec rental stations

- choosing locations
- entering into contracts of use with site owners
- building of foundation to the specification of the metal worker
- applying for grid connection with local supplier, extra expenses
- connecting meter connection pillar; extra expenses

Involvement of regional partners

An important basis for a successful implementation is to involve partners and opinion makers from the start in order to be able to identify possible conflicting goals right at the beginning:

- Stadtwerke Rostock (local power supply company):
  → free power supply for pedelecs and stations
- Civil and Port Engineering Authority
  → construction of foundations and signposting to rental stations
- Partners in the surrounding are (Commune Baltic Resort Nienhagen, City of Bad Doberan)
  → licence contracts for free usage of traffic space for setting up and operating public pedelec rental stations


www.elros-leihen.de
www.elros-leihen.de
9
10
elros
Elektromobilität in Rostock
Abfahren
RSAG
elros
Hin und weg mit Pedelec

Launch and Trial Period

Launch including trial period of the first fully automatic pedelec rental stations

A test phase with function tests is strictly necessary in order to test the pedelecs, mechanical and electronical components in the stations as well as the booking software in practice and in order to correct weak spots to halt any damage to reputation before it arises.

- RSAG trial period: 2 months with approx. 50 riders
- several minor weak spots and especially possibilities for optimisation (in particular with regard to software) were identified
- the trial period was evaluated by means of a survey

Launch of the pedelec rental system of the RSAG with 4 locations on 6 June 2014:

- Rostock-Reutershagen (10 boxes, 8 elros pedelecs)
- Rostock-Lütten Klein (10 boxes, 8 elros pedelecs)
- Bad Doberan (5 boxes, 4 elros pedelecs)
- Baltic Resort Nienhagen (5 boxes, 4 elros pedelecs)

Launch of the 5th pedelec rental station on location in Rostock-Warnemünde in autumn Herbst 2014:

- 4 boxes (2 of these with 230 V loading unit), 3 elros pedelecs, 6 luggage-storage boxes


Infobus
Infobus
Hin und weg
mit Pedelec

Operations and Conception of Customer Dialogue

Whilst the station functions fully automatically, advice and customer care play an important part in the acceptancy of the system.

- a 24/7 hotline for unforeseen events is strictly necessary (breakdown station, breakdown pedelec, accidents with or without injury to personens, theft, vandalism to the pedelecs etc.)
- less tech-savvy customers need personal advice before registering online and prior to the first renting process at the station
- complaints or comments need to be reacted to swiftly and if possible on the same day
- in order to attract the attention of non-local interested parties to the offer, the 4 RSAG customer centers were not sufficient

Having additional external distributors for the advertisement of the offer and for handing out the elros customer cards is important. For this the following preconditions need to be created:

- adaptation of the general terms and conditions and the data privacy policy is necessary
- commission scheme is necessary
- contract conclusion with elros partner agency
- access to back-end software is necessary, i. e. external distribution staff need to be able to create customer profile in user administration


RSAG
KUNDENZENTRUM
RSAG
Wir bewegen Rostock
FAHRAUSWEISE
FAHRAUSWEISE
Physiotherapie Rhea

Integration in the Distribution Process of the RSAG including Training of Staff Involved

The fleet management software **book-e-bike** is control software, access control, user administration and billing system rolled into one. It can be integrated into one's own system via interfaces. The smooth process of the rental operation is strongly dependent on the proper functioning of the software tools.

- The connection to existing distribution & billing systems created extra expenses (ticketing and billing system PATRIS and thus to SAP)

The following staff groups were trained in handling the technology (pedelec, station and booking software) as well as dealing with client enquiries including the handling of so-called „incidents":

- staff elros project team
- staff internal distribution/accounting
- staff control centre
- staff RSAG service hotline (Hotline Mon to Fri.: 6 am to 8 pm, during other hours and on weekends forwarding to RSAG control centre)
- staff RSAG customer centres
- staff Technical Department (elros maintenance staff)

Preparation of training material:

- User handbook on software book-e-bike
- elros handbook for staff of control centre / service hotline
- short instructions on elros registration for staff of customer centres


1 Rügener Str.
Lütten Klein
601
601

Advertising & Promotion

Beach flag

Information leaflet

Car graphics

Advertising & Promotion for the fully automatic pedelec rental system, including specific activities to reach foreign tourists:

Branding/brand protection

- Finding of brand name „elros – electric mobility in Rostock“
- Finding of domain name www.elros-leihen.de
- brand and claim research by a patent attorney:
  - design-mark research „elros“
  - research on entries in commercial registers
  - domain research www.elros-leihen.de
- registration of the design mark at the German Patent and Trademark Office

Elements of the elros advertising campaign

- landing page www.elros-leihen.de with link to www.rsag-online.de
- advertising flyer „Hin und weg mit Pedelec – Jetzt Elektrofahrräder bequem online buchen“
- insert for advertising flyer „Tarif elros-Pedelec-Vermietung“
- CityCard for promotion events/free test rides
- poster „Hin und weg mit Pedelec“ for display in trams, customer centres etc.
- sticker for advertising on pedelecs
- advertising foil for use at rental stations
- giveaways for promotion events (saddle covers, slap wrap reflectors)
- stickers for elros maintenance car
- elros customer card
- elros beach flag for promotion events
- elros newsletter

Preparation of information material:

- general terms and conditions of business of the RSAG for use of the elros pedelecs
- data privacy statement – general privacy policy for the use of www.elros-leihen.de
- covering letter for sending out the elros customer card
- preprint: registration for the elros pedelec rental system of the RSAG
- preprint: registration for the elros pedelec rental system of the RSAG for minors from the age of 16 including parents' consent
- info sheet „Brief instruction elros pedelec and rental station"
- info sheet „Frequently asked questions about the elros pedelecs"

Promotion and events for free test rides with the elros pedelecs

- announcement of the elros Pedelec Roadshow in different media/ channels: Twitter, Screen ticket booths, DFI (dynamic passenger information at stops), monitors (RIT) with high level of public access (central railway station)

Activities to reach foreign tourists

- flyer in English
- subpage on the landing page www.elros-leihen.de
- bilingual information at the station in Warnemünde
- if required bilingual sign-posting from the cruise terminal to the pedelec rental station

Brief Survey of elros Users

On the booking website **www.elros-leihen.de** every user who wanted to book an elros pedelec online for the first time was asked seven brief questions. Participation was optional, the Die Teilnahme war freiwillig, the evaluation of the data was anonymised.

Age structure and origin of elros users

- More than half of the users is max. 34 years old, almost three quarters of all elros users are men.
- The predominant number of users comes from Rostock and its surrounds (93,5 %). The share of users from the Hanseatic City of Rostock with approx. 76 % is the largest relating to the total number of users .

Previous experiences with pedelecs and approach to the station

- Less than a third of the elros users has previous experiences of riding a pedelec.
- Around half of the elros users reaches the pedelec rental station by bus or tram, 30% arrive by foot, 10% use the car, the remainder other means of transport.

Destinations and plans for use

- Around 60 % use the elros pedelec for rides within Rostock, arund 40% for rides outside of the urban area.
- About three quarters of respondents use an elros Pedelec in their spare time, less than 10 % for the daily commute to work and less than 10 % for daily errands / shopping.

Satisfaction with payment options

- A third of users is satisfied with the payment options offered (cash payment or debit card payment in customer centre or credit card and giropay on the Internet). 60 % however would like to have PayPal as an additional option for charging the credit account.

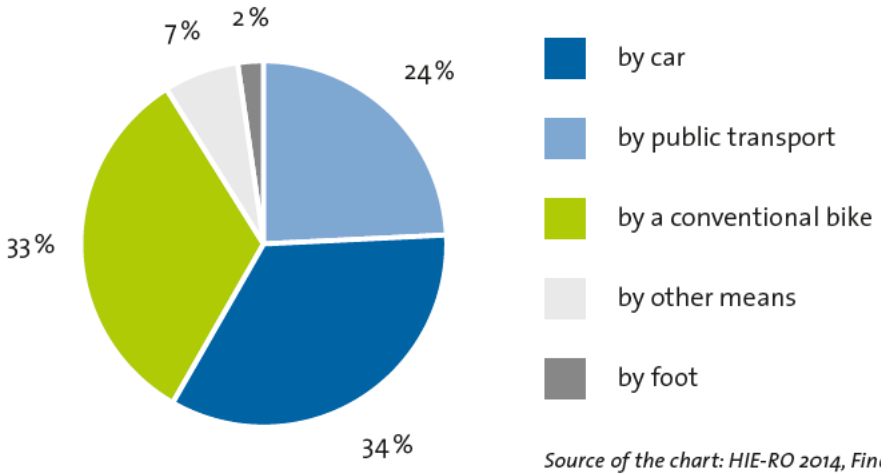
Channels of perception

- Almost 60 % of customers noticed elros via communication measures such as the website, flyer or newspaper articles, around 20 % saw a rental station by chance, around 10% used elros thanks to a recommendation.

Supplemental to the evaluation of this brief online survey the RSAG has made its own evaluations by means of statistics:

- Around three quarters of users register on the Internet, around one quarter register in person in one of the RSAG's customer centres.
- The share of subscribers amongst the elros users is relatively low with around 15 %. The offer elros has so far mainly appealed to new customers.
- The overwhelming number of rides terminates at the station where the ride also started.

How would you have reached your destination without the rental pedelec?



Source of the chart: HIE-RO 2014, Final Report on the User Survey in the Pilot Project „elros – Elektromobilität in Rostock"

MORE INFORMATION ON THE STUDY

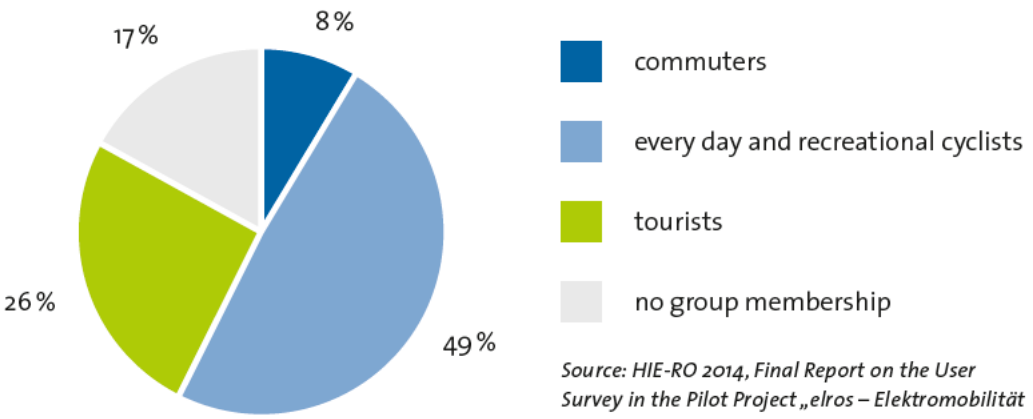
See p. 52.

User acceptancy

Results of the user satisfaction analysis

- Nearly 90% of respondents feel adequately informed about elros.
- Around 80% of respondents confirm that the online-booking platform is „absolutely“ or „rather“ simple to use.
- The group with regular user experiences assesses the costs to be appropriate.
- Nearly half of respondents state to reach public transport connections „absolutely easy“ oder „rather easy“ by using the elros system.
- Around three quarters of respondents state to use the elros pedelecs preferably in good weather.
- The willingness to use the elros pedelecs also in future is altogether high. This is particularly pronounced in the group with regular user experiences.

Target groups



Source: HIE-RO 2014, Final Report on the User Survey in the Pilot Project „elros – Elektromobilität in Rostock“

MORE INFORMATION ON THE STUDY

HIE-RO 2014, Final Report on the User Survey in the Pilot Project „elros – Elektromobilität in Rostock“

- Online survey conducted by HIE-RO – Hanseatic Institute for Entrepreneurship and Regional Development at Rostock University
- Survey period: middle to end of August 2014
- Of 180 respondents 47 users filled in the multiple page questionnaire (28 items) fully; 9 discontinued answering.

Which mobility types does the elros rental system appeal to?

Three clusters were formed that were given the following complex designations based on their characteristics with regard to their habitualised mobility behaviour:

1.

The **alternative-intermodal group** sees their main means of transport not in public and motorised individual transport. This group holds at the same time a decidedly multimodal and intermodal orientation, i.e. it integrates the change and the combination of means of transport into its own mobility behaviour. The high percentage of season-ticket holders shows that this group does not forgo public transport. Central values when choosing their means of transport are fun and eco friendliness. The ability to engage with new, alternative means of transport is very strongly pronounced.

2.

The **flexible group with an affinity to the car** sees their main means of transport in motorised individual transport. The members of this group do not own a season ticket, but 100% have their own car. Nevertheless they are relatively open-minded about multimodal and intermodal mobility options. Central values when choosing their means of transport are dependency and fun, which means their orientation toward the motorised individual transport is ambivalently structured. Alternatives to the car need to prove themselves with regard to efficiency and advantages. At the same time this group is experienced in trying out alternatives.

3.

The **alternative-monomodal group** sees their main means of transport in public transport, not owning a season ticket throughout. The members of this group are often exercising a monomodal mobility; their interest in intermodal options is similarly to the second group only moderate. The majority does not have their own car. Central values when choosing their means of transport are dependency and eco friendliness, i.e. an ambivalent ecological orientation. This group faces the difficulty to substitute established monomodal mobility strategies.

Expansion Options with Synergetic Effect

Parallel projects (e.g. E-car sharing) should not interfere with one another. If they are incorporated additionally they add value to the own portfolio.

Existing mobility services can support the use of private bicycles and pedelecs as interconnected means of transport to public transport with suitable extra offers:

- co-operation with housing corporations, local employers, bicycle businesses, car-park operators etc.
- offer of safe parking facilities (storage facilities, lockers etc. at transport hubs and hotspots), hireable e.g. by annual subscription

Integration of the Pilot Project in the longterm strategy of the Hanseatic City of Rostock

The Hanseatic City of Rostock wants to support the dissemination and acceptance of electric mobility at the local and regional level. For that purpose an electric mobility strategy 2030 will be compiled until the end of 2014 as well as an action plan. The municipality has set itself the goal of using new forms of electric mobility to promote intermodal and multimodal transport in the Regiopolregion Rostock.

The electric mobility strategy is incorporated into the updating of the integrated comprehensive transport concept, the „Mobility Plan Future".

1. Analysis of framework conditions

- online survey on the subject of electric mobility in Rostock with decision makers from politics, administration and industry
- interviews with experts

2. Basic analysis: Identification of target groups and potentials

- 1. E-Mobility Forum in summer 2014: interactive compilation of a SWOT profile
  Workshop of ideas on electric mobility in Rostock
- formulation of guidelines and goals
- compilation of measures in 5 fields of operation
- 2. E-Mobility Forum in autumn 2014: presentation and discussion of goals, fields of operation and action plan
- compilation of mood shots prioritisation according to short and long-term feasibility of the measures

3. Draft E-Mobility Strategie and Action Plan

- adoption by the city assembly of the Hanseatic City of Rostock
- follow-up of the Action Plan

Conclusion from the point of view of the RSAG

Final recommendations for small and medium-sized cities of the South Baltic area that want to integrate new forms of electric mobility in public transport:

- The two most important things are to choose suitable locations and to gain their acceptancy.
- A visibility (advertising) for electric mobility needs to be established at the rental location.
- Local and where necessary also regional partners need to be involved already in the planning stages of the project.
- Choose reliable partners for technology and service.
- Win partners: for cooperation and participation in project costs, advertising, promotion etc.
- Build up and retain a good dialogue with pedelec users.
- Place the topic of electric mobility and the specific offer of electric mobility permanently in the media and the public.

elros – Pilot Project for a Cleaner Future

Pedelecs are part of the mobility concept of the future. If buses and trains are linked with public pedelecs we talk about intermodal offers. This has also convinced the European Union. From 2011 to 2014 it funded the project „elros“ as part of the transboundary co-operation project „ELMOS – Electric mobility as an integral part of urban transport concepts in small and medium-sized cities of the South Baltic area“.

Acknowledgement

At this point we would like to thank everyone who helped us to get the pilot project „elros – Electric Mobility in Rostock“ off the ground.

Our special thanks go to our partner: the Civil and Port Engineering Authority Rostock, the Public Services Rostock, the town of Bad Doberan and the commune Baltic resort Nienhagen. With „elros“ they jointly advocate for less CO_2 and more quality of life in the city and the region.

We thank the EU INTERREG Programme „South Baltic“ for the financial support of the project and the programme secretariat in Gdansk, especially Igor Kaniecki, for the judicious and pragmatic assistance in the implementation.

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elros

Elektromobilität in Rostock

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