

Bilag 1: Oppdragsgivers kravspesifikasjon

System description,

Functional requirement specification

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1. Background

This requirement specification has been made for the development of a new eBike Share system for Bysykkelen AS.

This requirement specification is also used for the tender for new bicycle hardware.

1.1. Purpose

The purpose of the document is to serve as a requirement specification. Where description of features exists, it is described as feature requirements. It shall not be interpreted as requirements to how the features should be implemented.

1.2. Definition of requirements in dialogue

The requirements specified must be understood as minimum requirements. That is, if better or cheaper solutions can be identified, then all project members have the right and duty to suggest reductions and / or enhancements.

1.3. Order of importance of appendices

Bysykkelen AS has to its best ability ensured that there should not be conflicting requirements in the documents. However, if it, at a later state, is recognized that there are conflicts, then the document hierarchy is as follows:

- Avtaledokument
- Standardbestemmelser for rammeavtale om varekj p
- Bilag 1: Oppdragsgivers kravspesifikasjon
 - Bilag 1 Vedlegg A1: Sykkel
 - Bilag 1 Vedlegg A2: BikePcb
 - Bilag 1 Vedlegg A3: Beskrivelse av IT-l sning
 - Bilag 1 Vedlegg A4: Open interface - Docking point with appendix
 - Bilag 1 Vedlegg A5: Beskrivelse av tegningsmaterialet
 - Bilag 1 Vedlegg A6: 2D tegninger / 3D tegninger
 - Bilag 1 Vedlegg A7: BOM liste
 - Bilag 1 Vedlegg A8: Garanti, reservedelsh ndtering og reservedeler
- Bilag 2: Leverand rens l sningsbeskrivelse
 - Bilag 2 Vedlegg B1: Compliance liste
- Bilag 3: Priser og administrative bestemmelser
 - Bilag 3 Vedlegg C1: Priser sykler, reservedeler og leveringstider
 - Bilag 3 Vedlegg C2: Prosjektplan
- Bilag 4: Endringer i standardbestemmelsene
- Bilag 5: Etske bestemmelser

1.4. Readers guide

This specification outlines the requirements for the entire project. In section 2, below, you will find the requirements for the prototype delivery. Section 3 outlines, how the prototype phase and delivery, will be validated and approved by Bysykkelen AS. Section 4 contains a short description of the appendices to the specification.

1.5. Definitions

The definitions may be used in the document and in the appendices (Vedlegg) to this document.

Assist level	The eBike has a number of assist levels. The higher assist level the higher power is provided to the motor.
Bikes available for rent	Bikes available for rent are bikes that are sufficiently charged and not currently being repaired. A bike might be available for rent also outside a docking area, provided the user has ended the trip (locked outside station).
BOM	Bill of Material aka part list.
Docking point	A docking point is the charging station for one bike
Docking Station	A docking station is a location with two or more docking points.
HJH	Acronym for HjemJobbHjem; a subscription service that provides the user access to public transport and e Bikes
Operation area	<u>The operation area is the area defined in user terms and conditions where the bike share service is offered and where the bikes may be used.</u>
Period length	<u>Used when the subscription is a period subscription. E.g. 1 day, 7 days, 1 Month, 3 months.</u>
User	The system has several user categories and user roles. When the term user is used it refers to the end-user. The customer in the bike share system.
Validity period	The time period a subscription is valid. E.g.: all days 8:00-18:00 Only Saturday and Sunday etc.

Walk assist	eBike function that turn the motor on as long as the walk assist button is pushed. The motor force is adjusted to run at max. 6 Km/h according to EN regulation.
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1.6. References

[1] Data Protection Directive [Directive \(EU\) 2016/680 of the European Parliament](#) implemented the [Regulation \(EU\) 2016/679](#) This regulation will enter into force on 24 May 2016, it shall apply from 25 May 2018. Also referred to as General Data Protection Regulation (GDPR) or Protection of personal data regulation.

[2] [EPAC UART COMMUNICATION PROTOCOL version 5.8](#) (Bafang Communication Protocol-V5.8-20161017.pdf).

[3] Open interface - Docking point: [Bilag 1 Vedlegg A4: Open interface - Docking point with appendix](#)

[4] Void

[5] [Axa lock documentation](#).pdf

1.7. Project wiki

The project has established a wiki (Media wiki). It is expected that all expert users, help desk and service staff will use and update this Wiki during the project life. Furthermore, it is expected that back office help pages are implemented using this wiki.

The project wiki is managed by Bysykkelen AS. However, it is expected that all suppliers maintain the wiki as the main documentation channel.

Service manuals and reparation guide, as well as contact info that allows technical personnel to get technical assistance, shall be maintained on this wiki.

2. Prototype

The prototype project has three purposes:

- To validate the bike design, and to make necessary adjustments to ensure full: Usability, maintainability and compliance to international standards. The requirements to the bicycle are found in [Bilag 1 Vedlegg A1: Sykkel](#)
- To validate the bike design compatibility with the BikePCB designed by iCsys, Stavanger. The requirements to the BikePCB is described in [Bilag 1 Vedlegg A2: BikePcb](#)
- To validate the bike design compatibility with the physical hardware interface to the existing docking point infrastructure. The Interface is described in [Bilag 1 Vedlegg A4: Open interface - Docking point with appendix](#)

2.1. Proto type production

Prior to the production of the electric bicycle, a prototype must be provided including approval of this in accordance with public procedures and guidelines (CE marking and EN test). It will also include completion of existing 2D drawings and elaboration 3D drawings for prototype production.

A 0 series / pre-production must be used. The series will include 6 bikes, all prototype bikes shall be delivered as part of the first order for Bysykkelen.

All costs associated with prototype work shall be included in the offered unit prices for bicycles and spare parts. The costs the supplier has for CE marking and EN shall be covered by the supplier, including but not limited to complete bike and bicycle parts required for testing and production preparation.

Risk of tooling is the responsibility of the supplier.

The tools and moulds developed in the prototype process become Bysykkelen AS's property. A license agreement may be entered into and allow further use of the tools and moulds i.e. delivery of bike to other cities.

2.2. Validate the bike design

Validation of the bike design is the responsibility of the bike supplier.

The bike supplier must execute and document appropriate tests to demonstrate that the bicycle is:

- Suitable for the purpose
- May be maintained and serviced in a proper way (maintainability).

- CE marking and compliant to EN 15194:2017 and other relevant standards.

Furthermore, the Supplier must:

- Produce necessary drawings and update all drawings whenever required.
- Update production BOM

Therefore, it is expected that the supplier, validate and correct the provided bike design prior to the prototype production in order to achieve the best possible design and solutions.

2.3. Validate the bike design compatibility with BikePCB

Validation of the compliance to the BikePCB shall be a joint effort between the bicycle provider and iCsys, the BikePCB provider. The two areas of compatibility include:

- Hardware compatibility: the bikePCB may be installed into the frame as demonstrated in the drawings.
- CE marking and EN testing (Electromagnetic compatibility)

2.4. Validate the bike design compatibility to existing docking point

Validation of the bike hardware design is the responsibility of the bicycle supplier.

This is to ensure that the bike fits into the docking point.

2.5. Validate the bikePCB design compatibility to docking point

This is to demonstrate that the eBike share functionality is in place.

This task is the responsibility of iCsys, hence outside the scope of the bicycle provider.

3. Evaluation, Testing and approval

All documentation, 3D CAD drawings (Full bike and parts drawings and drawings for moulds and tooling), BOM list etc. shall be delivered to Bysykkelen AS for approval.

The prototype bikes shall also be delivered to Bysykkelen AS for approval.

Bysykkelen AS has 15 working days to approve, comment or reject the documentation and the prototype bikes.

When the documentation and prototype has been approved then the series production can be started. The approval of the documentation and prototype bikes do not exempt the supplier of technical responsibility for the following production.

4. Appendices

- Bilag 1 Vedlegg A1: Sykkel

This is the main requirement document for the bicycle to be delivered.

- Bilag 1 Vedlegg A2: BikePcb

This is the requirement specification for the BikePCB. This document is enclosed as a reference only.

- Bilag 1 Vedlegg A3: Beskrivelse av IT-løsning

This is a short description of the software solution developed for the eBike share solution. The winner of the tender will get access to the full specification. This document is enclosed as a reference only.

- Bilag 1 Vedlegg A4: Open interface - Docking point with appendix

This document contains all required information to interface to the existing docking point infrastructure.

- Bilag 1 Vedlegg A5: Beskrivelse av tegningsmaterialet

This document describes the results of the design project and lists the drawings enclosed in Vedlegg A6 and the BOM list in Vedlegg A7

- Bilag 1 Vedlegg A6: 2D tegninger / 3D tegninger

- Bilag 1 Vedlegg A7: BOM liste

- Bilag 1 Vedlegg A8: Garanti, reservedelshåndtering og reservedeler

This document contains requirements to warranty and spare part management.

5. Document information

Version	Date	Issued by	Status	Purpose of update
1.0	11. Mar 18	PSA	Final	Based on NS-RS version 1.1
2.0	13. Mar 18	PSA	Final	Review comments from EF incorporated.
2.1	22 Mar 18	PSA	Final	Spelling errors corrected.
2.2	23 Mar 18	EF	Final	Spelling errors corrected.