

System Requirement Specification

## [Customer Name]

## [system name]

author

version A (draft)

|  |  |  |
| --- | --- | --- |
| Name | Function | Sign |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Abstract

The purpose of this document is to specify the requirements for the [system name]. An insight is given for the overall design of the [system name]. The objective is to give a clear insight into the machine’s requirements and the considerations that led to these requirements. This will allow, when changes or extensions to the requirements are considered in the future, to understand the impact of such changes.

## Reference document and ohter input

|  |  |  |
| --- | --- | --- |
| # | Document / Input | Rev. / date |
| R1.0 |  |  |
| R2.0 |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Open Issues

|  |  |
| --- | --- |
| # | Open issue |
| I1.0 |  |
| I2.0 |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

## Definitions and abbreviations

|  |  |
| --- | --- |
| Term | Definition |
|  |  |
|  |  |

|  |  |
| --- | --- |
| Abbreviation | Complete term |
|  |  |
|  |  |

# Introduction

## Customer introduction

Sort introduction of business of the customer, the customer goal for this system and the relation with KMWE.

## Role of KMWE in this sytem development

# System Overview

Overview of desired system with picture.

Define XYZ orientation with in the picture

## System function

Brief description of main system function(s) [at the sub systems the function per sub-system is also described]

* Bullet list of system functions
* ..

## System-Process Flow

Brief description of the process flow

|  |  |  |
| --- | --- | --- |
| Step | Action | Active modules |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |

# Technical system scope

## System scope

Brief description of what KMWE will develop and what the design responsibilities are of KMWE. And what the customer will develop and what the responsibilities are of customer

|  |  |
| --- | --- |
| Customer | KMWE |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

If required an written in and out of scope text

**In Scope :**

**Out of scope:**

## FAT-SAT stratagy

Define the FAT-SAT strategy for the customer acceptance of the system that has to be defined. (for example it is a functional test or only measurement reports). [In concept and detail design phase the TPS will be made with IQ-OQ-PQ plans]

# System Brakedown structure

The [system name] is subdivided in multiple subsystems. . A breakdown structure of the full system describes how the sub systems are arranged.

# System Requirements

List the overall system requirements (at the sub systems requirements are listed)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Requirement | Value | Unit | Must/ Wish | Verification method (Review/Analyses/Test) |
| A1 | [Overall system requirements, takt time] |  |  |  |  |
| A2 |  |  |  |  |  |
| A3 |  |  |  |  |  |
| A4 |  |  |  |  |  |
| A5 |  |  |  |  |  |
| A6 | Serie system cost price (KMWE scope) | <10K | € |  |  |
| A7 | System Required air supply | 6 | bar | Must | Review |
| A8 | System will be powered by 230/400 V and 16A | - | - | Must | Review |
| A9 | CE Certificate |  |  |  |  |
| A10 | Operating Temperature | 20 +/- 5 | °C | Must | Review |
| A11 | Outer dimensions Z (Height) |  | mm |  |  |
| A12 | Outer dimensions X (With) |  | mm |  |  |
| A13 | Outer dimensions Y (Depth) |  | mm |  |  |
| A14 | System Mass |  | Kg |  |  |
| A15 | Cleanliness |  |  |  |  |

## System Interfaces

[describe the high level system interfaces to the “outside world” of the system]

**Mechanical**

* …

**Electrical / Digital**

* 10mm hose connection for Air supply
* …

**Software**

* …

# [name SubSystem B] Requirements

Overview of desired system with picture.

Define XYZ orientation with in the picture(s)

## Subsystem Functions

Brief description of subsystem function

**Overview:**

* …
* …

## Subsystem Requierments

Example of requirements for an Y-axis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Requirement | Value | Unit | Must/ Wish | Verification method (Review/Analyses/Test) |
| B1 | Y Max velocity | 1500 | mm/s | Must | Test |
| B2 | Y Max acceleration | 5000 | mm/s2 | Must | Test |
| B3 | Y Nominal acceleration | 3500 | mm/s2 | Must | Test |
| B4 | Y printing velocity | 500 | mm/s | Must | Test |
| B5 | Y Encoder resolution (analog output) | 5 | nm | Must | Review |
| B6 | Operating temperature | 60-70 | °C | Must | Test |
| B7 | Straightness in Z and X | 10 | µm | Must | Test |
| B8 | Straightness in Z and X per 200mm | 6 | µm | Must | Test |
| B9 |  |  |  |  |  |
| B10 |  |  |  |  |  |

## SubSystem Interfaces

* List the customer interfaces
* List the subsystem(s) interfaces (on subsystem name level)

# [name SubSystem C] Requirements

Overview of desired system with picture.

Define XYZ orientation with in the picture(s)

## Subsystem Functions

Brief description of subsystem function

**Overview:**

* …
* …

## Subsystem Requierments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Requirement | Value | Unit | Must/ Wish | Verification method (Review/Analyses/Test) |
| C1 |  |  |  |  |  |
| C2 |  |  |  |  |  |
| C3 |  |  |  |  |  |
| C4 |  |  |  |  |  |
| C5 |  |  |  |  |  |
| C6 |  |  |  |  |  |
| C7 |  |  |  |  |  |
| C8 |  |  |  |  |  |
| C9 |  |  |  |  |  |
| C10 |  |  |  |  |  |

## SubSystem Interfaces

* List the customer interfaces
* List the subsystem(s) interfaces (on subsystem name level)

# [name SubSystem D] Control Requirements

Overview of desired system with picture.

Define XYZ orientation with in the picture(s)

Show location in system layout of control panels

## Subsystem Functions

Brief description of subsystem function

**Overview:**

* …
* …

## Subsystem Requierments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Requirement | Value | Unit | Must/ Wish | Verification method (Review/Analyses/Test) |
| D1 |  |  |  |  |  |
| D2 |  |  |  |  |  |
| D3 |  |  |  |  |  |
| D4 |  |  |  |  |  |
| D5 |  |  |  |  |  |
| D6 |  |  |  |  |  |
| D7 |  |  |  |  |  |
| D8 |  |  |  |  |  |
| D9 |  |  |  |  |  |
| D10 |  |  |  |  |  |

## Schematic system architecture

Beckhoff Controller



Hot&Cold Hanlder

Etch res ink supply



Chuck 1

JIM purge & Blotter



Direct connection

EtherCAT (Beckhoff)

Network

Pre-Heat



Chuck 2

## HMI requierments

Brief description of HMI principal

**HMI Controls**

* …
* …

**HMI Indicators**

* …
* …

## Software Interface

Description of software interface method