**Technical specification for**

**Personalization Device for production of ID-3 travel documents**

# General Features

* Fully automated system for the complete personalisation of passports designed according to the ICAO Doc 9303
* Personalization and verification application of five (5) different passport´s layouts (travel, diplomatic, service, alliens, foreigner passport) – these 5 different layouts must be included in total price.
* Operating system MS Windows 10 (64-bit)
* Triple boot system (for three separate production domains)
* 4 SSD disc and 4 Network interface cards or some other possibility to connect four separated production systems (domains)
* The network switch for the TCP/IP connection offers the possibility to connect the system with a local network
* Data server
* Transparent production work flow (protocol of all process steps)
* Identification of operating staff (user protocol)
* Access security features available (log in due to smart card)
* Several access levels available (administrator, operator, service, etc.)
* All data must be logged and saved
* Reporting (production overview, log on/off, error, passports detail)
* Alert signal by visiual lights at the top of the machine
* Modular, upgradable and fully configurable system (Processing on modular level, Expandability – simple added or replace new module towards existing units)
* The system must be compliant with the CE regulations
* UPS for PC’s included (for the computer that shuts down the system in a controlled way in case of a power failure)
* Industrial design, suitable for 24h / 7day production
* Multi Job Production (machine can produce consecutive jobs)
* The passport that causes the problem can be easily removed by operator, unfinished passports can be processed in the machine immediately
* Maximum operating/maintenance area: 2500 mm height; 11000 mm lenght; 3500 mm depht
* Maximum dimensions of the modules for lift transport: width: 1600 mm, depth: 2000 mm, height: 1950 mm, load-bearing cepacity: 2,000 kg. Any other way is not possible.
* Maximum floor load capacity: 5,0 kN/m2 (500 kg/m2)
* Weight Distribution frame under the machine

### Technical Description

* **Production capacity more then 400 booklets/hour**
* Booklet specification:
  + - * Format ID-3 compliant with ISO/IEC 7810
      * ICAO compliant booklets
      * 16 to 64 pages
      * Polycarbonate data page
      * Chip is set in the cover or in the PC data page

# Input Stack

* Friction feeder, minimum capacity: 50 passports with 32 pages
* Permanent loading of booklets without stopping the machine
* Sensor system monitors the filling level of the stack and in case of a low filling level some signal informs the operator.
* A conveyor and pusher transport the stacked books to a separation system. After the

separation, each passport (one by one), is handed over in closed format to the main transport.

# Page Turning - Vision - Reject

* The booklet will be provided from the previous unit into the booklet opening/page turning as well vision unit.
* It is possible to open the cover of the booklet, standard front cover and turn the pages.
* The additional integrated vision unit checks if the correct page got opened.
* The prepared booklets can be forwarded to next processes in the machine system.
* In case the booklet is marked as “bad”, it is directly forwarded into an integrated reject box. After a programmable number of consecutive rejects the machine will stop for operator intervention.

# Chip Reading / Coding

* The chip can be read out additional to the visual check of minimum one optical characteristic, like pre-print inspection, personalized data.
* With this it is possible to test the proper function of the chip in the passport as minimum.
* Additional the chip data can be matched with the internal machine database.
* With this encoding unit, the machine must be able to handle RFID connection to the chip,

either for initialization or encoding. Requested encoding time is approximately 30 seconds / per passport.

## General features

* Initialization/Personalization
* The contactless chip encoding hardware (smartware), integrated and secured in the encoding module
* Multifunctional encoding system for contactless chip encoding for 13,56 MHz transponder
* Supplied transponder (protocols)
* According ISO 14443 type A and B
* According ISO15693, Mifare, Mifare+

# Personalization

* The polycarbonate data page of the passport is personalized with a greyscale laser engraving system. The optical personalization is fully compliant to the latest ICAO specifications. All tolerances for the different areas on an ID 3 page, like the area for the image (holder´s portrait in a photography in the resolution 500 dpi, size 35 mm x 45 mm), the alphanumerical information, Laser ablation personalization of Window Lock security feature patented by Gemalto (500 dpi dithered portrait in window), MLI security features and MRZ lines are personalized with minimum tolerances.

## Grayscale Laser

* 256 Gray scales
* Resolution 300 - 1.200 dpi
* Air cooled
* Cleaning unit ensures dustless engraving process
* Connection to exhaust systemSW for layout desing and process control
* High resolution engraving of pictures
* High quality engraving of vectorized logos, vectorized fonts, TTF fonts, Barcodes, Window Lock security feature (500dpi dithered portrait in window), MLI security features

## MLI Unit

* + MLI unit must be integrated in each laser process unit.

## Alignment

* For the positioning of the laser engraving on the data page each laser unit must be equipped for the alignment.
* According the ICAO requirements the MRZ is orientated to the edges of the Passport.
* The text and the picture is orientated on the preprint of the passport.
* The inspeciton system detects pre-printed information (pre-printed texts like name, surname, date of issue, marks, etc.) and window position to give the laser system a corresponding correction value in X, Y and φ position.
* The maximum accuracy for the alignment in X and Y position is +/- 0.35 mm and for the rotation φ it is +/- 0.15°.
* If the positions of the blank booklet are out of tolerance +/- 1.50 mm, the booklet is marked bad and guided to the next reject tray.
* According to the registration an X, Y and rotation offset factor is calculated.
* The personalization is done with this offset correction.
  1. **Exhaust System**
  + Exhaust system with active carbon filter is required.
  + System information´s (e.g. filter-change-recognition, system switched off) have been fully integrated into machine software.

# Color Inkjet

* Approximately daily performance of 50 booklets (textual information, barcodes etc.) to the observation page of the passport booklet, being page 3 of the passport.
* The paper page of the passport can be personalized with an inkjet printing system.
* The optical personalization must be fully compliant to the latest ICAO specifications.
* The data will be positioned according to the pre-printed text for optimal printing
* positioning
* Alphanumerical information are personalized with minimum tolerances.

### T**echnical Data**

* DoD inkjet printer with industrial piezo electric printing heads inks with UV lights
* UV curable inks
* The opened booklet passes under the printing heads

Resolution: 600 dpi

# Inspection System - Basic Verification and Reject

* The Vision Inspection Module must be integrated before and after the personalization processes for different inspections.
* Used as an input vision the verification system is able to detect wrong passports, passports which are not opened on the correct page or similar situations in the basic configuration.
* OCV and OCR SW for the quality assurance of the personalization data the verification unit offers the possibility for reading out of personalized optical data on page 2 of the booklet.
* In case the booklet is marked as “bad”, it is directly forwarded into an integrated reject box. After a programmable number of consecutive rejects the machine will stop for operator intervention.

## Technical details

* Number of rejected booklets in reject tray programmable
* Number of rejected booklets in row to stop machine programmable

## Inspection System - Chip Reading

* The chip can be read out additional to the visual check of minimum one optical

characteristic, like pre-print inspection, personalized data.

* With this it is possible to test the proper function of the chip in the passport as

minimum. Additional the chip data can be matched with the internal machine database.

# Passport Perforation Unit (NumberPerf)

* NumberPerf is a perforated number through the visa pages of the passport
* Can be defined if the passport is perforated with or without back cover
* Position of 10 digits or characters in various heights
* Conical holes, sharp edges
* Laser control software, the shape of the holes with different geometric shapes (triangle, star, rectangle, etc.) and the font can be defined by the operator
* Possible to apply digits of various heights
* The position of the perforation can be adjusted manuály
* Optical verification and quality inspection of the perforated passport number
* Laser cooling system
* Exhaustion of fume and dust extraction

## Technical details

* + CO2 laser
  + Power: 400W
* Integrated protective , no browning of pages is acceptable (protection against the burning of the area surrounding burned holes on page no. 3 must be provide)
* Integrated protection lens for easy cleaning
* Layout editor integrated
* Laser parameters can be adjusted in layout editor
* Usage conditions integrated in the conditions of the complete machine
* Lifetime 20.000 hours uptime

## Font details

* Maximum number of figures
* According to this dimension the number of figures can be configured.
* Figures dimensions :

A typical height is 6 mm by 4 mm in width. (pitch 5,50mm)

* Perforation diameter:

Entry typically 0,80 mm, Exit approx. 0,20 mm

* Available fonts:

Typical font 5 x 4, included font editor allows the development of other font types

* Typical accuracy:

Position +/- 1 mm (measured to booklet cover)

## Perforation Laser *-* Verification for perforated Number by reflected light

* With the verification the completeness of the perforation is checked with an OCV algorithm.
* For this a vision system captures a picture from the beam entry side of the perforation.
* The number can be compare with the expected number.
* Additional the position and the orientation of the text can be controlled.
* In case the booklet is marked as “bad” it is directly forwarded into an integrated reject box.
* After a programmable number of consecutive rejects, the machine will stop for operator intervention.

# Booklet Closing Unit

* Closes the opened passport following set guidelines.

# 10. Output Tray

* Each successfully processed passport booklet is forwarded to the output tray of the machine.
* The operator can take out the booklets without stopping the machine.
* The booklet can be oriented in groups. Upside down and split sideways.

# 11. Recycle bin

Rejected booklets are conveyed into the reject bin

* Number of rejected booklets in reject tray programmable
* Number of rejected booklets in row to stop machine programmable