

# 1348 - Rotary Printing Ink Tester

## 1 Introduction

CPI requires a rotary printing unit for testing developmental materials, to be used by our Formulation team. At this stage this is mainly aimed at screen printing inks, however this is likely to be extended to additional print methods in the future. This machine will be used to determine whether an ink is likely to work on a rotary printing system to reduce the risk when a material is trialled on a large scale R2R printing system.

## 2 Background Information

This system will be purchased for our Formulation capability though it is likely to be of interest to our Electronics capability. The kit will be setup in Discovery 2 to add capability to the current coatings capability. The main reason for purchasing this equipment is the LEE-BED H2020 project which focuses on fast-turnaround of ink formulation for printed electronic applications. The equipment will also be relevant for several other projects based around screen ink formulation for printed electronic and battery applications. Please note this tender also will cover the ongoing supply of associated consumables, maintenance, software and add-ons for the existing equipment.

## 3 Technical Scope

A small-scale rotary printing unit is required for testing of small volumes of inks for R&D purposes. This will initially include screen printing and flexographic printing, with the option of increasing capability to other printing methods in future e.g. slot die, gravure.

Suppliers bidding for this tender will need to meet the following requirements:

- Printing unit:
  - **Mandatory** - Must be capable of printing in a rotary manner to mimic R2R printing
  - **Mandatory** - Must be able to print via screen printing methods
  - **Desirable** - Should be able to print via flexographic printing methods
  - **Optional** - Quotes should include options for additional printing/coating methods e.g. slot die, gravure
  - **Mandatory** - Must have the ability to be upgraded at a later date
- Substrate handling:
  - **Mandatory** - Must be able to handle flexible substrates
  - **Desirable** - Should be able to handle ridged substrate
  - **Optional** - Substrates can be processed in a sheet-fed or rotary manner
- Process conditions:
  - **Mandatory** - Must be able to print at least 100 mm diameter
  - **Mandatory** - Must be able to print at least 10 m/min
  - **Desirable** – Should be able to achieve at least 400 um resolution
  - **Desirable** – Should be able to achieve repeatable prints i.e. comparable thickness and thin-line resolution, +/- 10%
- Materials Handling:

- **Mandatory** - Must be able to print with low volumes e.g. 20 ml or less
- Consumables:
  - **Optional** - Options to be provided for buying screens on an ongoing basis
  - **Optional** – Options for buying screens for aqueous and organic solvent-based inks
  - **Optional** - Options to be provided for buying additional consumables and printer attachments e.g. flexo plates

Please see the **1348 – URS** for the full list of requirements.

## 4 Additional Requirements (Equipment Only)

### 4.1 Height/Access Restrictions

The Tenderer is required to submit weights and footprint dimensions of all packaged equipment prior to shipment.

### 4.2 Design Requirements

All equipment is to be designed and manufactured to current European and UK legislation and directives as applicable and comply with the applicable EC directives in accordance with The Supply Of Machinery (Safety) Regulations 1992 (As Amended), including the CE mark, together with the supply of the required Certificate of Conformity

Equipment must be CE marked including all control panels and systems

Design and manufacture of equipment not covered by any specific design code shall conform to 'good engineering practice', and be suitable for its intended life expectancy of 10 years.

The vendor shall ensure that all necessary safety precautions are taken for the safe operation of the equipment

Noise from the system and any individual part shall be neither a hazard nor a nuisance to plant operators or local residents. Noise shall be below 78 dBA when measured at 1m from its source.

All information necessary for a safe installation design and safe operation of the equipment must be provided in the scope of supply and all machine, control panel and operator-machine interfaces labelling provided must be in English language.

The vendor as part of this contract shall supply any special tools required for installing, commissioning or maintaining the supplied equipment

### 4.3 Utilities

The Tenderer shall submit detailed requirements for electrical power, air, water and drainage as part of their offer.

CPI will provide electrical power, air, water, drainage and other utilities identified by the Tenderer, and will provide resources to connect the equipment to these services.

### 4.4 Guarantees

All equipment supplied by the Tenderer shall include a minimum warranty period of 18 months, as detailed in CPIs Terms and Conditions for the supply of Goods and On-site Services attached to this document, from commissioning. Options to extend the warranty period to 3 years should be included in the response to tender.

Supply of labour and materials for any rectification work are at the Tenderer cost during the warranty period.

Schedule of Faults Reported During the Warranty Period

Event	Time	Response
E1		CPI will report the error by telephone, in person or by e-mail
E2	E1 + 48 Hours	Technical assistance will be provided by telephone, in person or via e-mail. If issue is not resolved within 48 hours, CPI will inform the tenderer if the issue is causing an operational issue or if the system is Hard Down. Operational issues will mean that the equipment is capable of being used by CPI or their customers although there may be some loss of capability. A Hard Down issue means that the machine (or a major functionality thereof) is not capable of being operated by CPI or its customers.
E3	E2 + 120 Hours	Hard down issues will be rectified within 120 hours of the issue been reported. The Tenderer will provide a resolution plan for operational issues within 120 hours of the issue being reported.

Issues not resolved within 168 hours:

A warranty extension of 1 week will be granted if the Hard down issue is not resolved with 168 hours of being reported (E1), with a further 1-month extension for every additional week down. Time will include normal CPI working week, although clock will stop for bank holidays or CPI shutdowns. Operational Issues will normally be expected to be resolved within two weeks of being reported. Failure to resolve an operation issue within 1 month will incur a 1-month warranty extension.

Accrued warranty extensions will be able to be reduced by enhanced reliability performance – reduction of warranty extension by 1 month for each month with no Hard Down issues logged and all operational issues resolved.

#### 4.5 Documentation

Documentation to be provided with the equipment shall include a general arrangement of the whole package including service connections, as well as individual arrangements and parts drawings adequate to support installation and maintenance of the equipment.

#### 4.6 Operating and Maintenance Manuals

Prior to delivery to site the Tenderer must submit 2 copies of the operation and maintenance manuals to CPI, one printed on paper. One copy is required on CD/USB. The manuals shall be in English language and include:

- Adequate information for the safe installation of the equipment.
- Adequate information for the safe operation of the equipment.
- Guidance for safe maintenance.
- Full Bill of materials
- A recommended parts list with costs and tenderers' details.
- Schematics (Where applicable)

#### **4.7 Inspection and Testing**

Following assembly of the equipment, a testing program shall be undertaken in the CPI's works, to ensure that the unit operates in accordance with the manufacturer's specifications. The CPI may, if appropriate, send a representative to observe this process.

#### **4.8 Installation, Commissioning and Training**

The Tenderer will be responsible for supply, delivery, provision of suitable personnel for technical supervision of the positioning and connection of the equipment, commissioning and training of users. However, as part of the response to tender, the tenderer should also supply a cost for providing the option of offloading the tool and positioning it in the required room. The Hook Up Contractor will be appointed by CPI to provide resources to connect the equipment, and will also supply a service for off-loading the tool and positing it in the room.

Prior to the delivery to site, the tenderer will carry out a test programme at their facility to demonstrate major function operation, the Factory Acceptance Test, FAT, is to be defined in the tender offer and is to be carried out with the attendance of a nominated representative(s) of CPI, with analysis to be carried out on any samples made.

The Tenderer shall demonstrate to the satisfaction of the CPI's representative that the equipment is safe, fit for purpose, and meets any agreed performance parameters.

Performance of the machine would be expected to be demonstrated during FAT and Site Acceptance Test (SAT) before full acceptance. Following assembly of the equipment, a testing programme shall be undertaken in the CPI facility to ensure that the unit operates in accordance with the required specifications.

A suitably experienced and qualified engineer will be provided for the supervision of the installation, commissioning and training of users for this equipment.

Training on the equipment must be provided to users to ensure efficient and safe operation and routine maintenance can be carried out

A short induction and introduction to the CPI NETPark site may be required for any engineers or technicians attending before Lab access can be allowed. This will last for a maximum of half a day.

#### **4.9 Maintenance**

The tenderer shall supply details of an ongoing maintenance contract to cover 2 years maintenance. Please provide a fixed fee for this. Optional extension for yr 4 and 5 coverage should be detailed within your response where available.

#### **4.10 Delivery**

The Tenderer shall deliver the equipment to the CPI, NETPark, Sedgefield, Co. Durham, UK.

Delivery period should be provided in the response to tender and provide expected timescales from receipt of order and the duration of the installation and commissioning activities.

All items are to be marked with CPI's Purchase Order number when delivered.

#### **4.11 Milestones**

Payment milestones will be stipulated upon Purchase Order dependant on CPI's project requirements.