Australian Government

Department of Education, Employment and Workplace Relations

ICPPR451C Set up for complex relief printing

Revision Number: 1

INDUSTRY SKILLS COUNCILS

Creating Australia's Future

ICPPR451C Set up for complex relief printing

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to set up for complex relief printing.

Application of the Unit

Application of the unit	This unit requires the individual to set up reel- or sheet-fed platen, cylinder or rotary printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm non-routine job specifications	1.1. Job requirements are read and interpreted from job documentation or production control system 1.2. Set up is planned and carried out correctly in minimum time with minimum wastage 1.3. Availability of all job related components is checked
2. Set up reel system (OR Element 3)	2.1. Unwind and rewind reels are is set up and adjusted according to job specifications 2.2. Webbing procedures are carried out and web-control system is set up and adjusted according to job specifications 2.3. Reels are spliced/joined according to job specifications 2.4. Printed web viewing devices are set up and adjusted according to job specifications 2.5. Folder and sheeters are set up and adjusted according to job specifications 2.6. Set off/marking prevention devices are set up and adjusted according to job specifications
3. Set up sheet system (OR Element 2)	3.1. Feeder and delivery sections are set up and adjusted according to job specifications 3.2. Sheet pick-up and transportation system is set up and adjusted according to job specifications 3.3. Transfer and control systems are set up and adjusted according to job specifications 3.4. ***Substrate*** is added to and removed from process according to job instructions 3.5. Set off/marking prevention devices are set up and adjusted according to job specifications
4. Select and prepare inks and additives	4.1. ***Inks***, dyes or additives are selected according to job specifications and end-user requirements 4.2. Quality and suitability of inks, dyes or additives are checked and appropriate action is taken 4.3. Inks, dyes and additives are prepared according to OHS requirements, and manufacturer's/supplier's instructions with suitable precautions to minimise waste 4.4. Correct colour and weight/volume of ink are mixed and prepared to match the requirements of the printing process and job specifications 4.5. Formulation of the ink, ***colour match*** and the

ELEMENT	PERFORMANCE CRITERIA
	approved colour are appropriately recorded 4.6. Inks, dyes and additives are appropriately labelled, handled and stored according to manufacturer's/supplier's instructions to prevent damage and hazards to personnel and prolong shelf life
5. Set up machine for complex relief printing	5.1. Appropriate relief plates are selected and secured to the ***machine*** 5.2. Relief polymer plates/forme are set up and adjusted according to job specifications (platen) 5.3. Relief polymer cylinders are set up and adjusted according to job specifications (platen) 5.4. Impression is set up and adjusted according to job specifications (platen and rotary) 5.5. Inking system is set up and adjusted according to the relief process and job specifications (platen and rotary) 5.6. Drying system is set up and adjusted according to job specifications
6. Conduct proof run	6.1. Material to be used for proof is organised correctly 6.2. Machine is operated according to manufacturer's and enterprise procedures to produce a specified proof 6.3. Proof is visually inspected and/or tested or laboratory testing organised according to enterprise procedures Production does not commence without client OK or authority where appropriate 6.4. Production does not commence without client OK or authority where appropriate 6.5. Results are interpreted and adjustment changes are carried out according to product and machine specifications

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- OHS in relation to operating machinery such as safely switching off machinery before cleaning is started
- communication of ideas and information by interpreting the job brief and providing advice to internal or external clients about options and limitations
- collecting, analysing and organising information by collecting and analysing data about printing process, machine specifications and performance to calculate appropriate adjustments for the job
- planning and organising activities by providing information about time and materials requirements for production scheduling
- teamwork when cooperating with other workers and coordinating the production unit to ensure efficient operation
- mathematical ideas and techniques by calculating substrate requirements, plate position and pressures
- problem-solving skills by recognising proofing faults and calculating adjustments necessary to meet job specifications
- use of technology by using monitoring equipment and computerised production records

Required knowledge

- job requirements
- production problems that could eventuate by not reading and understanding the job specifications
- with whom would you discuss any production problems
- relief plates
- why hardness of the printing plate is important
- faults that may be detected on new plates
- type of solvents that should be used on photopolymer plates
- V-block mounting
- purpose of binding plates after mounting
- checks that need to be performed prior to cylinder installation
- machine frames and unit slides to be kept cleaned
- OHS precaution must be observed when installing printing cylinders in the machine
- optimum print sequence
- visual aid on the plate that identifies the colour of ink to be used
- precautions to be taken to ensure that the plate/cylinders were not damaged during installation

REQUIRED SKILLS AND KNOWLEDGE

- reel transportation system on a web-fed machine
- OHS precaution that must be observed when webbing up the machine?
- determining the position of the reel
- implications if the brake tension is not set correctly
- function of the "Dancer" roller on a web machine
- function of nip rollers
- web is not spiced correctly
- sheet transportation system on a sheet-fed machine
- major OHS concerns when setting up the sheet transportation system
- what causes more than one sheet to pick up in the feeder
- accurate feeder set up is essential
- determining the position of the sheet prior to being transferred to the printing unit?
- determining which front lays to use
- types of substrate that require additional front lays to be engaged
- why additional front lays would be necessary when printing this type of substrate
- reel delivery system on a web-fed machine
- OHS precautions that must be observed when setting up the delivery
- web controlled in the rewind unit
- function of a slitter on a web machine
- problems that could be attributed to a blunt knife when sheeting
- remedial steps that can be taken if there is a possibility of the ink marking in the rewind
- sheet delivery system on a sheet-fed machine
- OHS precautions that must be observed when removing sheets from the delivery
- what causes sheets to be delivered incorrectly
- what adjustments are necessary if changing from lightweight to heavyweight stocks?
- determining the sheet release into the delivery
- problems resulting from the excessive use of anti set off spray powder
- what causes printed sheets to set off in the delivery
- how the possibility of set off in the delivery can be reduced
- how air blast assists sheet delivery
- inks and additives
- OHS concerns related to the preparation of inks and additives
- details are necessary to check inks suitability for the printing process
- special end-use requirements that may be necessary
- why it might be necessary to mix an additive into the ink
- how a spectrophotometer can be used to assess the colour of ink
- the formula for calculating the correct quantity of ink in relief printing
- print faults that will occur if excessive driers are mixed into the ink

REQUIRED SKILLS AND KNOWLEDGE

- precautions that are observed to minimise waste when preparing the ink
- shelf life of most ink
- conditions that are relevant to the storage of inks and additives
- conventions should be adhered to when labelling mixed inks
- machine set up
- what are the Major OHS concerns when setting up the machine
- packing required in the tympan
- determining the amount of printing pressure
- what is the ideal condition of the tympan
- how the correct top sheet tension is achieved when fitting a new tympan
- print faults can occur if the tympan is not tensioned correctly
- order in which eccentric or concentric roller adjustments be made
- when setting the rollers, the width of the contact stripe between two rollers
- determining the ink duct setting
- ideal ink duct sweep setting
- recommended degrees shore hardness for forme rollers
- main reason for blistering on a heat set machine
- types of ink drying/curing systems
- how the drying unit cures the ink
- in-line processes
- OHS precautions that must be observed when slitting on the machine
- operations that can be performed with in-line units
- what machine position should you engage in-line processing units
- precautions that are necessary when setting up in-line processing units
- reasons for a printed product to be top cut
- benefits of embossing in-line
- result of excessive pressure when top cutting
- result of excessive pressure when cutting and creasing
- effect differing tooth counts have on perforated products
- problem solving proofing and adjustment
- operation of the true inch function fitted to some machines
- problems that may cause the machine to keep stopping
- checks that are necessary prior to engaging the impression
- checks to be performed when running the machine
- effect the position of certain guards have on the operation of the machine
- steps involved in operating the machine communicated to other team members
- aids that are available for the testing of the machine proof
- tests that are necessary for this job
- where the testing should take place
- function of a polarisation filter in a densitometer

REQUIRED SKILLS AND KNOWLEDGE
• ideal conditions for inspecting the proof • why it is necessary to use visual aids on the printed substrate • causes of a halo effect on the image • methods that are available to check and adjust ink colour and consistency • adjustments that may have caused mis-register • adjustments that are made to position the image laterally • adjustments that are made to position the image circumferentially • how changing the colour sequence can effect the final colour cast • procedure to lengthen the print length on this type of press • procedure to shorten the print length on this type of press • difference between mechanical and optical dot gain • causes of excessive mechanical dot gain • who has the final say in the "OK" of the job?Information sources • machine manuals, safety and other documentation that are relevant to this task and where are they kept • information that is included in these documents • other sources of information that are available

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • set up reel- or sheet-fed platen, cylinder or rotary printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • set up a relief printing machine for complex printing on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to manufacturer's and job specifications, enterprise procedures and the Performance Criteria • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.
Context of and specific resources for assessment	Assessment must ensure: • assessment may take place on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment • reel- or sheet-fed platen, cylinder or rotary printing machine.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

EVIDENCE GUIDE	
	for example: • ICPPR352C Produce complex relief printed product.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Substrate handling may include:	• wide and narrow reel, and large and small sheet handling systems.
Inks*/*coatings may include:	• range of inks commonly used in 3 or more colour printing, including standard and special colours.
Colour matching systems may include:	• use of densitometers and spectrophotometry.
Machines may include:	• range of platen, cylinder and rotary machines with manual, semi-automated, fully automated or computerised process control.
Design may include:	• 3 or more colours, complex graphics and text. Critical "tight" registration, fit and position, registration should be at least that required for four-colour process work.
In-line processes may include:	• minor processes that are integral to this competency can include basic in-line operations such as perforating, numbering, date coding, slitting that do not in themselves constitute another defined unit of competency. Where a major in-line process is defined as a separate competency (eg flat-bed cutting, folding) it should be assessed as such.
Substrate types may include:	• range of substrates within the major categories of paper, pressure sensitive material, board, plastics and related films, or metal.
Non-routine may include:	• non-routine within this context relates to the set up and production of print runs. The set up of equipment and production involves a significant amount of deviation from using standard equipment settings. It also involves significant problem solving and the development of new criteria and procedures for performing current practices. It does not refer to a job that an individual does only

RANGE STATEMENT	
	occasionally.

Unit Sector(s)

Unit sector	

Competency field

Competency field	Printing

Co-requisite units

Co-requisite units		