

Minnesota Dual-Training Pipeline

Competency Model for Advanced Manufacturing

Occupation: Flexo Technician

Employer-Specific Requirements	Occupation-Specific Competencies*
	Ink formulation/Proofing Plate Mounting/Mounting Tape Machine Maintenance General Press Operations Kiss Impressions Press Webbing/Tension Control Registration Die Cutting Conveyer, Sheeter, Stacker, Roll to Roll
	Set-up/Clean-up Turn Bar Relam/De-lam Lamination Paperwork/ Quality Control Turret Applications

Industry-Sector Technical Competencies*			
Press Components	Flexographic Print Components	Printing Math & Measurement	
Color Theory	Color Measurement	Press Configurations	Safety, Environmental Concerns
Die Cutting	Paperwork/Quality Control	Spec Reading/Print Reading	Print Terminology
Equipment Maintenance/Lubrication	Troubleshooting/Problem Solving		

Industry-Wide Technical Competencies							
Manuf. Process Design & Development	Production	Maintenance, Installation and Repair	Supply Chain Logistics	Quality Assurance, Continuous Improvement	Sustainable and Green Manuf.	Safety, Health Security and Environment	Root Cause Analysis

Workplace Competencies								
Business Basics	Teamwork	Adaptability and Flexibility	Technical Work Instructions	Planning and Organizing	Problem Solving, Decision Making	Working With Tools, Technology	Checking, Examining and Recording	Sustainable Practices

Academic Competencies						
Science	Basic Computer Skills	Mathematics	Reading and Writing	Communication: Listening & Speaking	Critical & Analytic Thinking	Information Literacy

Personal Effectiveness Competencies					
Interpersonal Skills	Integrity	Professionalism	Initiative	Dependability and Reliability	Lifelong Learning

Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010.

* Pipeline recommends the Industry-Sector Technical Competencies as formal training opportunities (provided through related instruction) and the Occupation-Specific Competencies as on-the-job training opportunities.



Competency Model for Advanced Manufacturing

Flexo Technician

A Flexographic Press Operator (technician) is a skilled position responsible for the printing of flexographic materials. Set up, adjust, operate and maintain narrow web flexographic labels or films which include large solids, screen tints, line and halftones with critical color values and registration requirements ranging from standard to critical. Review job specifications to determine the press setup according to the approved customer proof. Perform all make-ready tasks associated flexographic presses such as mounting plates, installing print cylinders, installing/adjusting dies, monitoring and adjusting inks, adjusting tension and register etc. Makes necessary color corrections and/or press adjustments prior to production run to meet and maintain the quality specifications of the work to match proofs for both color and content. Responsible to complete all paperwork and quality checks. Clean, lubricate, and maintain the press, making minor repairs and replacing worn or broken parts as required. Performs periodic maintenance recommended by the manufacturer. Following all safety rules and regulations and maintaining work area in neat and orderly condition are also a must.

Industry-Sector Technical Competencies

- Press components – (Doctor Blades, anilox rolls, gears and tooling, Dies) – Understand the purpose importance and proper maintenance and safety print components.
- Flexographic Print Components (inks, substrates) – Understand the various ink systems and proper maintenance for Water, UV/LED and Solvent based ink as well as the substrate they are printed on.
- Color Theory – understand basic color theory and its impact on the perception of color.
- Color Measurement – understand density, dot gain, Lab color space and the proper use of a spectrodensotometer for measuring them.
- Die Cutting – Understand the fundamentals of precision die cutting, including how they cut, tooling specifications, maintenance and safety.
- Printing Math and measurement – Training in basic math including linear measurement and print related math, including converting counts to feet, calculating total footage based on repeats and quantity requires.
- Press Configurations – Learn the different flexographic press configurations, component arrangements and the markets that they serve.
- Print Terminology – Understand common print terminology and how it related to the flexographic printing industry.
- Safety and Environmental Concerns – Knowledge in proper safety for equipment and manufacturing facilities and environmental concerns for the flexographic industry.

- Paperwork /Quality Control – Know the proper methods and instruments used to effectively inspect final printed products.
- Troubleshooting and problem solving – Training on common problems and solutions as well as training on trouble shooting guidelines and processes.
- Equipment maintenance and lubrication – Practice industry approved procedures for preventative maintenance and lubrication on machines and tools
- Spec reading/print reading – Knowledge in reading and understanding print specs.

Occupation Specific Competencies

- Ink Formulation and Proofing – Demonstrate Basic ink formulation to match drawdowns to sample with a Delta E of 2.5 or less. Training in proper procedures, formulation math, color measurement ink adjustment and proper use of the drawdown tool.
- Plate Mounting and Mounting tape – Demonstrate accurate flexographic plate mounting for a specific unwind direction and understand the fundamentals of the various mounting tapes and the type of print they would be used for.
- Machine Maintenance – Demonstrate basic press maintenance, with basic cleaning and maintenance procedures for the printing machine.
- General Press Operations – Demonstrate proper press operations to productively set up and run simple Line work, complex Line Work, 4 Color process, 2 Over 4, front and back, 8 color work, and multiple die sets.
- Press Webbing and Tension Control – Demonstrate proper web handling and tension techniques including the proper use of the unwind tension, infeed nip, pacing tension and outfeed pacing tension as well as other various tension application for inline converting.
- Kiss Impressions – Able to perform the ability to properly and productively set kiss impressions on a narrow web press.
- Registration – Demonstrate the ability to register multiple colors to each other as well as dies.
- Die cutting – Demonstrate proper installation maintenance and safety of a rotary or magnetic die and exhibit a clear understanding of how a die cuts and the importance of a die stain test.
- Set up and clean up – Demonstrate safe, proper and productive procedures for repeatable setting up and clean up of a flexographic press.
- Conveyer, Sheeter, Stacker, Roll to roll – Demonstrate the ability to install set up and properly stack product using a conveyer, sheeter or stacker. Finish products can also be roll to roll.
- Turn bar – Demonstrate the ability to install web register and print on both sides of the web.

- Relam/De-lam – Demonstrate the ability to properly set up, register print, and maintain tension, while de-laminating then re-laminating a substrate.
- Lamination – Demonstrate the ability to properly install web and set tensions using laminate
- Paperwork /Quality Control – demonstrate and understand quality control as it relates to the manufacturing environment.
- Turret applications – Demonstrate the proper procedures for setting up, webbing and running a turret rewinder.

Flexo Technician Occupational Competency

<i>Related Instruction means an organized and systematic form of instruction designed to provide the apprentice with the knowledge of the theoretical and technical subjects related to the apprentice's trade of occupation, or industrial courses or, when of equivalent value, by correspondence, electronic media, or other forms or self-study approved by the commissioner.</i>				
	Course	Course Description	Credit/Non-Credit	Hours Spent on Competency
	Press Components			
	Flexographic Print Components			
	Printing Math & Measurement			
	Color Theory			
	Color Measurement			
	Press Configurations			
	Safety, Environmental Concerns			
	Die Cutting			
	Paperwork/Quality Control			
	Spec Reading/Print Reading			
	Print Terminology			
	Equipment Maintenance/Lubrication			

Troubleshooting/Problem Solving				
<i>On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.</i>				
	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency	
Ink Formulation/Proofing				
Plate Mounting/Mounting Tape				
Maintenance				
General Press Ops				
Kiss Impressions				
Press Webbing/Tension Control				
Registration				
Die Cutting				
Set-Up/Clean-Up				
Turn Bar				
Relam/De-lam				
Lamination				
Paperwork/Quality Control				
Turret Applications				
Conveyer, Sheeter, Stacker, Roll to Roll				