



# Careers in manufacturing: engineering fabrication

## Casting, forging and finishing

**Metal casting, forging and finishing workers fabricate patterns and form sand moulds and cores for the production of metal castings; heat and hammer metal into shape; and make, repair, coat and polish metal parts and articles.**

Tasks include:

- selecting metal stock for job requirements
- heating metal in forges and furnaces and hammering, punching and cutting metal using hand tools and machine presses
- tempering and hardening finished articles by quenching in oil or water baths or by cooling gradually in air
- preparing electrolytic and silver solutions for electroforming, and applying solution to the objects to be coated
- setting and adjusting controls to regulate electric current and depositing of coating on objects
- cutting, trimming, shaping and smoothing stock to form mould patterns
- filling boxes with sand and setting patterns in place, and pouring molten metal into moulds
- applying refractory paint and positioning cores in moulds
- finishing metal and articles by polishing and buffing and applying shellac, lacquer, paint and other finishes.

Trade-level occupations in the casting, forging and finishing sector include:

- Blacksmith
- Electroplater
- Moulder/coremaker
- Metal polisher
- Engineering patternmaker.

### Blacksmith

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Blacksmiths shape bars, rods and blocks of metal by heating and hammering to produce or repair metal articles such as agricultural equipment, mining and quarrying machinery, or ornamental steelwork such as gates and fences.

Blacksmiths may go on to specialise in:

- forge-smithing
- hammer-smithing
- tool-smithing.

### **Relevant qualification:**

- Certificate III in Engineering (Fabrication Trade)

## Electroplater

An electroplater coats metal parts and other articles with a layer of decorative or protective metal, such as copper, silver, nickel or chromium. They work for electroplating firms, anodisers, metal polishers and printed circuit board manufacturers. Electroplaters may specialise in one of the electroplating operations, such as anodising, barrel plating, metal preparation or powder coating.

- footwear production machines
- hide and skin processing machines
- knitting machines
- textile dyeing and finishing machines
- weaving looms
- yarn carding and spinning machines
- embroidery machines.

### **Relevant qualification:**

- Certificate III in Engineering (Fabrication Trade)

## Moulder/coremaker

A moulder/coremaker makes sand moulds from which many kinds of metal objects are cast. They may make moulds for goods ranging from truck wheels, crankshafts and bulldozer blades, to door handles and water taps, or for the structural frames of equipment used in mining, quarrying and forestry. The moulding process is commonly automated or semi-automated.

### **Relevant qualification:**

- Certificate III in Engineering (Fabrication Trade)

## Metal polisher

A metal polisher polishes metals to impart smooth, reflective and other finishes.

### **Relevant qualifications:**

- Certificate II in Engineering
- Certificate III in Engineering (Fabrication Trade)

## Engineering patternmaker

Patternmakers construct full-size engineering models (called patterns) out of timber. In manufacturing these are used to produce metal castings, copy models, tooling for the automotive, aircraft and fibreglass industry, and vacuum form tooling.

Patternmakers also produce experimental models, visual models and models for the manufacturing of developmental products. Patternmakers manufacture patterns from a range of materials including wood, cast and fibreglass reinforced epoxy resins and rigid foam. Metal casting patternmakers generally work closely with other tradespeople and apprentices.

### **Relevant qualification:**

- Certificate III in Engineering (Fabrication Trade)

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