

TRADE ROLES

All Trade roles require an AQF Certificate III or higher qualification (essentially successful completion of a trade apprenticeship within the Australian Qualifications Framework – www.aqf.edu.au). In most instances, relevant experience is required in addition to the formal qualification. Most, if not all, employers will request to sight original copies of Trade Papers prior to employment. All positions will require some level of familiarity with workshop protocols and a computerised maintenance system, in addition to reasonable computer literacy.

ELECTRICIANS

Electricians install and maintain electrical systems. In the minerals and energy industry they are responsible for establishing and ensuring ongoing supplies of power from generators to plant and accommodation units. They may perform the following tasks:

- Repair and maintain all electrical equipment and process control;
- Maintain lighting, switches and electrical equipment in safe working order;
- Install wiring and circuits for extensions and additions to work sites;
- Carry out electrical fitting, high voltage switching and electronics;
- Maintain communications and telecommunications systems;
- Read wiring diagrams to plan layout of wiring systems;
- Install insulated cables and connect switches, outlets and other fittings;
- Provide enough wiring systems for electrical plant;
- Connect cables to circuit breakers, transformers, motors, heaters etc;
- Test circuits;
- Connect systems to power supplies;
- Complete electrical calculations;
- Test equipment using meters, and
- Undertake high voltage switching

Typically required:

- Experience with electrical fixed or mobile plant in an industrial environment.

Money

Electrician - Maintenance: \$70,000 - \$120,000+

Auto Electrician, Mobile plant – Surface: \$70,000 - \$135,000+

Auto Electrician, Mobile plant – Underground: \$80,000 - \$140,000+

Leading Hand: \$85,000 - \$135,000+

ELECTRICAL/INSTRUMENTATION TECHNICIAN

Electrician/Instrumentation Technicians specialise in the complexities of the electrical workings of specific instrumentation used in the industry. They may perform the following tasks:

- Repair and maintain all electrical equipment and process control;

- Provide preventative and corrective maintenance on instrument/electrical equipment such as gas turbines, automated control systems, HV switching, compressors, fire and gas systems, power generation and Digital Control Systems (DCS);
- Ensure safe work practices near electrical outlets;
- Read wiring diagrams to plan layout of wiring systems;
- Test circuits;
- Connect systems to power supplies;
- Complete electrical calculations;
- Test equipment using meters, and
- Undertake high voltage switching

Typically required:

- Current A Grade Electrician License
- Instrumentation Qualifications
- Possession of a High Voltage Switching ticket
- Experience with electrical fixed or mobile plant in an industrial environment.

Money:

Instrumentation Technician: \$80,000 – \$120,000+

FITTING AND MACHINING / FITTER AND TURNER

Fitters are responsible for the maintenance, repair and manufacture of metal products and machinery. Fitters in the minerals industry can specialise in the following areas:

- Diesel and heavy earthmoving equipment fitters - Diagnose problems, repair, overhaul, tune, maintain and test heavy duty mobile equipment used on site;
- Instrument fitters - Assemble, calibrate, install and commission precision instruments that measure, indicate, transmit, record and control;
- Mechanical Fitters - Service and repair brakes, engines, transmissions and suspension components;
- Fixed plant fitter - Overhaul pumps, install pumps, repair ball and rod mills, repair crushers, install plant and equipment;
- Electrical Fitter - Making, fitting or repairing electrical machines and instruments;

As a fitter you must be able to:

- Mark the shape and dimensions of a part to be machined by studying blueprints and using measuring instruments;
- Assemble and fit machined parts using drill holes and tap threads, if necessary, for bolting parts together;
- Check tightness of joints and operation of moving parts, and file or chisel parts to make final adjustments if the fit is not perfect;
- Cut, thread, bend and install hydraulic and pneumatic pipes and lines;
- Manufacture, repair and maintain equipment, and
- Identify faulty equipment

Money

\$70,000 – \$140,000+

HEAVY DUTY FITTER

Conducts preventative and reactive maintenance and repairs on major mobile mining and mechanical equipment, including light vehicles, trucks, bobcats, conveyors and crushers.

Typically required:

- Previous experience with crushers and conveyors.
- Experienced in operating forklifts, bobcats and light vehicles.
- Experience in maintenance systems.
- First Aid Certificate
- Driver's License, Forklift operator certificate.

Money:

\$60,000 - \$130,000+

MECHANICS (Diesel, Heavy & Light Plant)

Mechanics in the minerals industry can choose to train and work in the following areas:

Diesel Fitters/Mechanics

Heavy vehicle motor mechanics repair, maintain and test heavy vehicles, other engines and related mechanical components and may perform the following tasks:

- diagnose, overhaul, repair, tune, maintain and test diesel and petrol/gas-powered vehicles, including trucks, buses, bulldozers and other earthmoving equipment, tractors, stationary engines (eg generators, pumps, compressors and drilling rigs);
- detect mechanical and electrical faults by using instruments that check charging and starting circuitry, batteries, ignition and ignition timing, fuel injection systems and speed control, cylinder compression, engine condition, braking efficiency, and wheel balance and alignment;
- repair and maintain the hydraulic components of diesel and petrol/gas engines that are used to power attachments such as hoists, booms, scrapers, buckets and augers, and
- use oxy, electric, TIG and MIG welding, hand fitting or machining processes to replace or repair faulty parts.

Lift Mechanics

Lift mechanics assemble, install, adjust, maintain and repair electrical and hydraulic lifts and escalators and perform the following tasks:

- study drawings and lay out the position of steelwork, guide rails, motors, pumps and cylinders;
- install lift guide rails;
- install cables, counterweights etc;
- connect electrical wiring to control panels;
- test and adjust assemblies, and
- carry out regular maintenance programs.

Plant Mechanics

Plant mechanics ensure the machinery and equipment operates efficiently and safely and perform the following tasks:

- Maintain and repair all onsite fixed and mobile machinery;
- Regular servicing of vehicles;
- Performance testing of machinery and vehicles to manufacturers specifications;

- Determine the need to replace components or equipment rather than repair, and
- Work on transmissions and hydraulic systems of heavy equipment.

Money

Mechanical Fitter: \$70,000 – \$100,000+

Service Crew, Mobile Plant – Underground: \$65,000 - \$130,000

Heavy Duty Fitter/Diesel Mechanic: \$70,000 – \$130,000

METAL FABRICATION

A fabrication engineering tradesperson may perform the following tasks:

- examine detailed drawings or specifications to find out job, material and equipment requirements;
- cut, roll, shape, bend, mould, spin, heat or hammer metal products to fabricate parts or sub-assemblies;
- heat treat metal parts and components;
- set up and/or operate hand and machine tools, welding equipment or computer numerically controlled (CNC) machines;
- assemble parts and structures by lining up and joining them by welding, bolting or riveting, and
- finish products by cleaning, polishing, filing or bathing them in acid solutions, or by applying protective or decorative coatings.

Welder

Welders construct or repair metal products by joining parts using one of several welding processes. There are first, second and third class welders. First class welders in the minerals and energy industry may perform the following tasks:

- study blueprints or specifications and decide which welding methods to use;
- clean and prepare metal surfaces for welding, cutting, gouging, bevelling, grinding or filing;
- cut metal shapes using flame cutting torches;
- pre-heat thick metals to required temperatures;
- fit attachments, connect hoses to gas tanks etc;
- adjust welding machine variables;
- inspect and check welds;
- clean and smooth welds, and
- Second and third class welders perform less complex tasks related to welding.

Boilermaker (Heavy Fabrication)

Boilermakers mark out, cut, shape, assemble and fix metal to produce or repair storage tanks and other high pressure storage vessels. Boilermakers in the minerals and energy industry may perform the following tasks:

- determine the requirements and steps needed to do the job by interpreting scale drawings;
- draw accurate guidelines on the metal showing where to cut, drill and bend;
- cut marked sections using hand tools or cutting torches;
- shape and bend sections and pipes using a variety of tools and processes;
- assemble parts and structures after aligning by welding, bolting or rivetting, and
- make full-size patterns.

Sheetmetal Worker (Light Fabrication)

A sheetmetal worker (light fabrication) manufactures a variety of products and components using thin sheetmetal materials. A sheetmetal worker uses hand tools, power tools and other machines to mark out, cut, shape and join a variety of sheetmetal materials, which can include galvanised steel, mild steel, stainless steel, aluminium, copper and brass.

Sheetmetal workers shape and form the cut material into products by operating sheetmetal shaping and forming machines such as brake presses, folding, bending and rolling machines. Parts are joined by riveting, bolting, welding, brazing or soldering, or by drilling holes in products and in surfaces on which items are to be mounted.

Money

Boilermaker/Welder: \$60,000 – \$130,000+

MOBILE SPECIALIST TECHNICIAN

Conducts preventative and breakdown maintenance for Caterpillar, Toro, Tamrock, Atlas Copco, Jacon, Normet and miscellaneous support equipment for open cut or underground mining operations. Other responsibilities may include:

- ◆ Troubleshooting mechanical / hydraulic systems.
- ◆ Read and interpret hydraulic flow diagrams.

Typically required:

- ◆ Heavy Duty Diesel or Automotive Mechanic trade.
- ◆ Heavy Duty Drivers license
- ◆ Overhead Crane license
- ◆ Rigging qualification
- ◆ Elevated Work Platform Ticket
- ◆ Electronic diagnostic tool training/certificate

Money

\$70,000 – \$140,000+

MOBILE TYRE TECHNICIAN

A Mobile Tyre Technician provides preventative and breakdown maintenance on rims and tyres of Caterpillar, Toro, Tamrock, Atlas Copco, Jacon, Normet and miscellaneous support equipment. They also manage tyre and equipment stock levels and maintain tyre records.

Typically required:

- ◆ Heavy Duty Tyre Fitting trade
- ◆ Overhead Crane license
- ◆ Rigging qualification
- ◆ Forklift license
- ◆ Elevated Work Platform Ticket
- ◆ Electronic diagnostic tool training/certificate
- ◆ Senior First Aid Certificate

Money

\$60,000 – \$100,000+