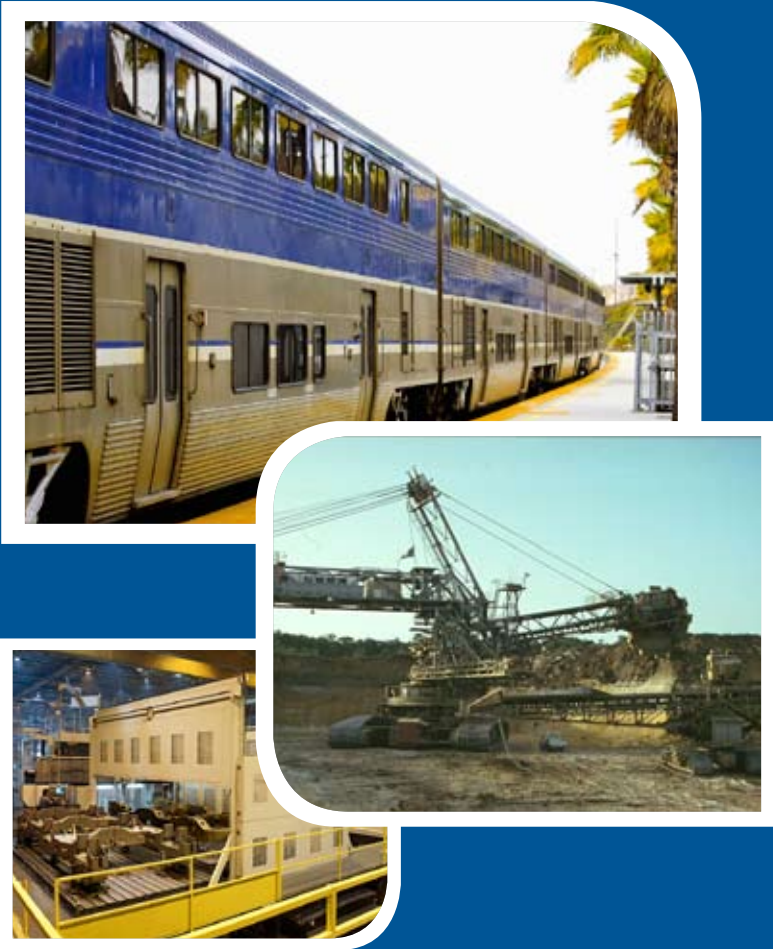
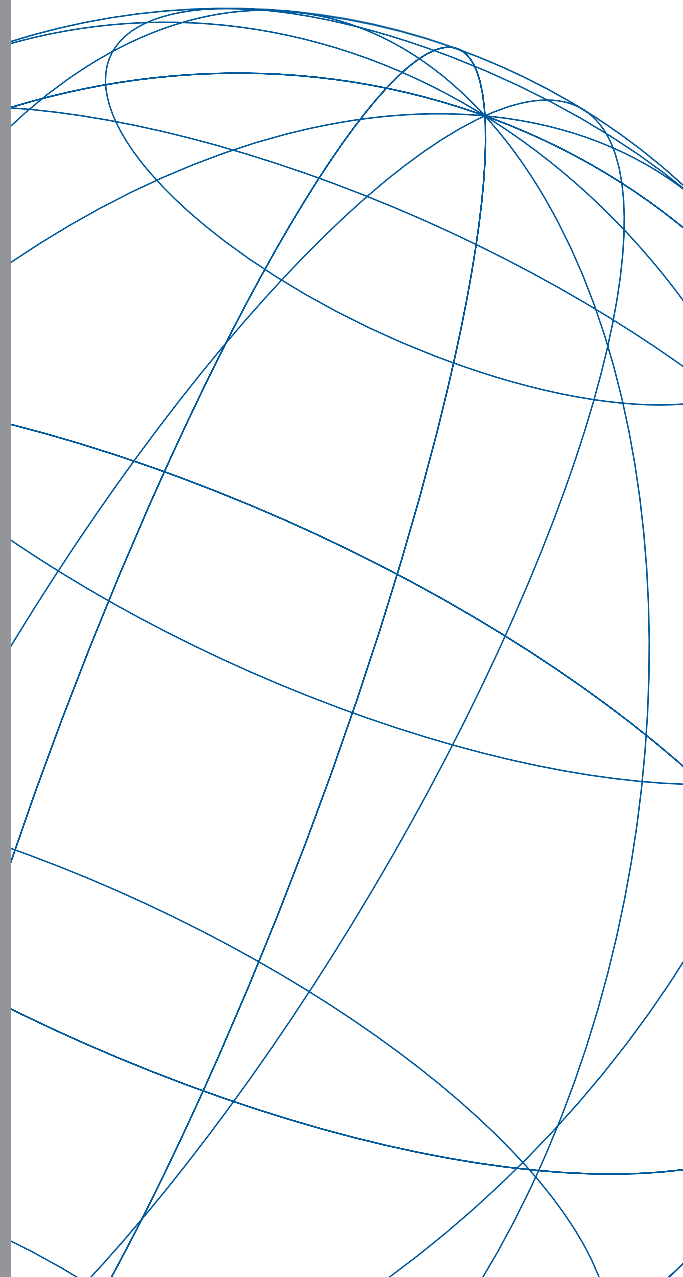
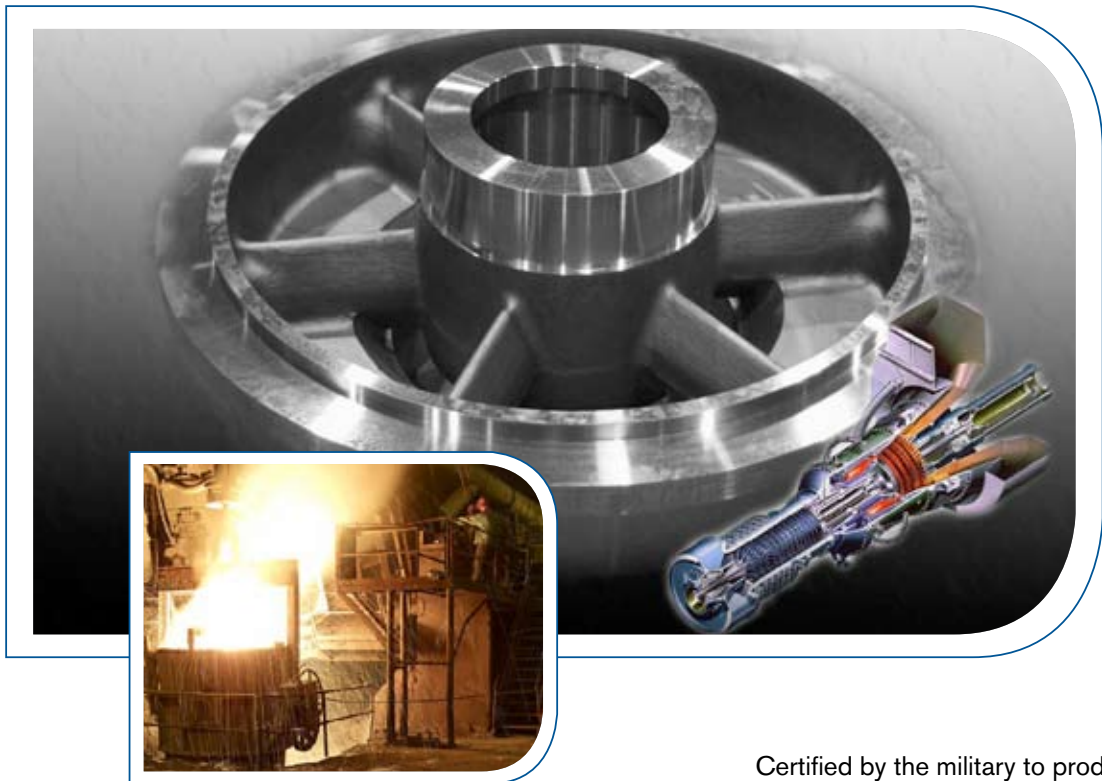


Industrial Products



Our Innovation. Your Advantage.





Bradken's Engineered Products Division is a full service iron and steel foundry and machining organization. We cover a wide range of materials and configurations including the production of carbon, low alloy, stainless steel and specialty alloy castings weighing up to 55,000 lbs/25,000 kg.

From engineered concept to finished product, Bradken provides value to its customers by making high quality, complex, engineered castings. In order to support that claim, Bradken Engineered Products employs leading edge technology, coupled with extensive industry experience and value added offerings including:

- Assisted engineering (converting expensive fabrications to cast products; improving castability)
- Patterns and tooling
- Carbon/stainless and specialty steel castings
- Linatron x-ray capabilities for wall thicknesses beyond 6.5"
- Nuclear certified
- Machining and value added services such as sub-assembly
- Global sourcing

Certified by the military to produce specially qualified steel castings, the Engineered Products Division has special qualifications for military and naval applications. Our organization is certified by US/Canadian government agencies and maintains a wide variety of specialty customer certifications.

Bradken is a true global supplier. Our value added casting, machining, fabrication, and assembly capabilities provide "turn-key" supply and domestic content opportunities in many of our supply solutions.



Our Innovation. Your Advantage.

Industrial Products services the Rail and Transit, Mining and Construction, Military (Army) and General industrial markets. Bradken also has a long and successful history working closely with Original Equipment Manufacturers.

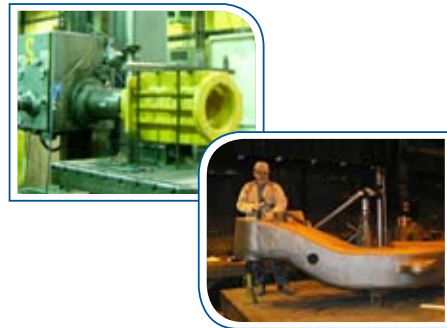
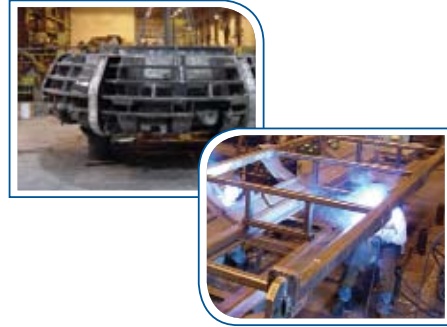
For reliable delivery of high quality, mission critical large steel, stainless steel and value added castings... come to Bradken.

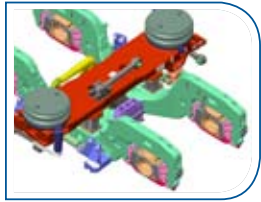
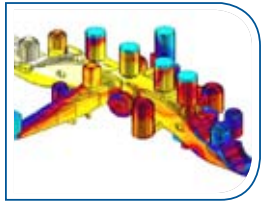
Industrial Products is a true differentiated supplier offering:

- Large steel, high alloy, low alloy and stainless steel castings up to 55,000 lbs/25,000 kg.
- AOD refining for metallurgy requiring additional processing.
- Jobbing castings up to 55,000 lbs/25,000 kg and semi-production runs for castings from 20 to 1,500 lbs/9 to 680 kg.
- Assisted engineering for fabrication to casting conversions
- Solidification modeling and castings simulation software
- Full scope supply: patterns, castings, machining, subassembly
- In-house Level III certified inspectors offering visual inspection, liquid penetrant examination (LPE), magnetic particle examination (MPE), ultrasonic examination (UE) and radiography
- Value added painting and testing services
- Over 135 years of casting and machining experience
- Industry and customer related certifications ensuring qualified supply

Bradken uses leading edge technological tools which allow us to collaborate with a wide variety of solid models, drawings and print files. We are able to work with these files and use powerful solidification modeling to prove our castability and guidance for the first article processes. In addition, these solid models and CAD files can be used to produce precise CNC machined patterns and tooling ensuring accuracy during the translation of data from one process to another.

The Industrial Products business provides value for customers by making high quality, complex, engineered castings to our own, or customer supplied specifications.





Rail and Transit

Our Rail and Transit manufacturing facilities provide product augmentation and cost saving opportunities. Bradken utilizes continuous improvement techniques not only with its in-house team, but as an essential feature of our customer relationship, ensuring the design and manufacture meet all customer requirements.

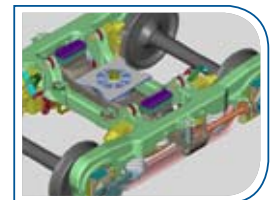
Industrial Products possess manufacturing and design engineering support for the locomotive and transit markets, providing product improvement and cost saving opportunities. Our size and infrastructure provides responsive engineering when you need it, and teams supporting field service, should the need arise. We are knowledgeable and capable of responding to the unique requirements of the Rail and Transit markets.

Bradken offers service proven proprietary designs in Rail and Transit markets. Bradken maintains AAR certification.

From engineered concept to finished product, our value added machining and assembly capabilities provide "turn-key" supply.

Products supplied, but not limited to, include:

Locomotive castings and machined components, transit undercarriages and sub-assemblies. Truck assemblies / bogie assemblies, traction pins, bolster assemblies, journal bearing housings, axle bearing housings, traction motor ends, primary suspension components, secondary suspension components (castings and finished components).



Mining & Construction

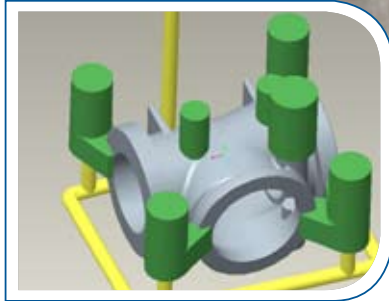
In the Mining and Construction markets Bradken creates a team environment with its customers to produce high quality products with reduced total costs and improved first article processes. Using leading edge technology and a global vision, our innovation is your advantage.

Bradken embraces the presence of the global economy and its sensitivity to the Mining and Construction markets: We can provide low cost country sourcing with offices and inspection facilities in Xuzhou, China and Tacoma, WA. Utilizing our domestic experience and resources ensures quality products are delivered to customer specifications.

Bradken is the supplier of choice for the Mining and Construction markets.

Products supplied, but not limited to, include: Mining truck suspension components, differentials, gear cases and sub-assemblies, heavy construction equipment. All components can be supplied rough and finish machined (castings and finished components).





General Industrial Products

Covering a diverse range of industries in the General Industrial market, Industrial Products can be supplied as castings, machining, fabrications and finished components. Bradken's General Industrial market products are certified by US/ Canadian government military and naval applications and maintain a wide variety of specialty and military certifications.

Critical path castings are manufactured, supported and delivered for reduced cycle times. Bradken has an extensive infrastructure and secure backing to support competitive delivery schedules and ensure customer requirements are met.

Products supplied, but not limited to, include:

Mining truck suspension components, differentials, gear cases and sub-assemblies, heavy construction equipment. All components can be supplied rough and finish machined (castings and finished components).



Industrial Products Capabilities Summary

Personnel

- Experienced journeymen pattern makers
- Foundry process engineers and solidification modelling experts
- Experienced and skilled Metallurgical Engineers, foundry technicians, skilled finishers/welders and qualified, highly skilled mold/melt crews

Technology

- Solidification modelling and casting simulation software
- CAD/CAM capable, CNC pattern cutting
- Visual, Radiography, Ultrasonic, Liquid penetrant, Magnetic particle
- Linatron radiography
- Metallurgical and Sand testing

Castings - Metals Cast

Cast Steels

- Austenitic-Ferritic Duplex to 55,000 lbs/25,000 kg
- Carbon Steels to 55,000 lbs/25,000 kg
- Corrosion Resistant Steels to 55,000 lbs/25,000 kg
- Heat Resistant Steels to 45,000 lbs/20,500 kg
- Low Alloy Steels to 55,000 lbs/25,000 kg

Other Alloy Offerings

- Nickel-Base to 45,000 lbs/20,500 kg
- NiHard, NiResist and ductile iron from 20 lbs/10 kg to 10,000 lbs/4,500 kg

Mold Process

- Flask-less and Flashed
- Air set/No Bake

Equipment and Furnaces

- AOD Refining
- Large Arc Furnaces

- Coreless induction melting furnaces
- Heat treatment – Normalizing, stress relieving, stabilization, heat soak, annealing, quench and temper

Patterns/Tooling – Engineered Castings – Fully Machined Components

Milling – Horizontal (CNC)

- Maximum Length 244"/6,198 mm
- Maximum Width 100"/2,540 mm
- Maximum Height 140"/3,556 mm
- Maximum Part Weight 70,000 lbs/31,751 kg

Manual

- Maximum Length 240"/6,096 mm
- Maximum Width 100"/2,540 mm
- Maximum Height 144"/3,658 mm
- Maximum Part Weight 70,000 lbs/31,751 kg

Welding Capabilities

- FCAW
- GMAW SAW
- GTAW SMAW
- Fabrications to 80,000 lbs/36,287 kg
- Capabilities include robotic production welding, large jobbing work, and mechanical assembly. Rig up, assembly, hydrostatic testing and paint capabilities
- Welders certified ASME, Sec IX, AWS D1.1, FCAW, GMAW, SAW, GTAW, SMAW
- Willing to accept responsibility for materials and provide turn-key parts

Specialty

- Complex highly engineered castings
- Linatron Radiography for section thickness beyond 6.5"/165 mm

- Value added supply (Patterns, casting and machining)
- Alloy selection and AOD refining

Machining/Fabrication Personnel

- Experienced, skilled machinists, fabricators, programmers and operators

Technology

- CNC Programming and tooling
- CMM Layout
- Faro Arm and Laser layout

Equipment

- Maximum Lifting Capacity 65 Ton crane capacity (59,000 kg)

Turning – Vertical (CNC)

- Minimum OD 24"/610 mm
- Maximum OD 168"/4,267mm
- Maximum Length 83"/2,108 mm

Manual

- Minimum OD 24"/610 mm
- Maximum OD 132"/3,353 mm
- Maximum Length 69"/1,753 mm

Turning – Horizontal (CNC)

- Minimum OD 8"/203 mm
- Maximum OD 29"/737 mm
- Maximum Length 29"/737 mm

Milling – Vertical (CNC)

- Maximum Length 265"/6,73 mm
- Maximum Width 118"/2,997 mm
- Maximum Height 65"/1,651 mm
- Maximum Part Weight 70,000 lbs/31,751 kg



North American Facilities

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F +1 816 279 8246

Amite

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F +1 985 748 7396

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F +1 253 471 7029

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