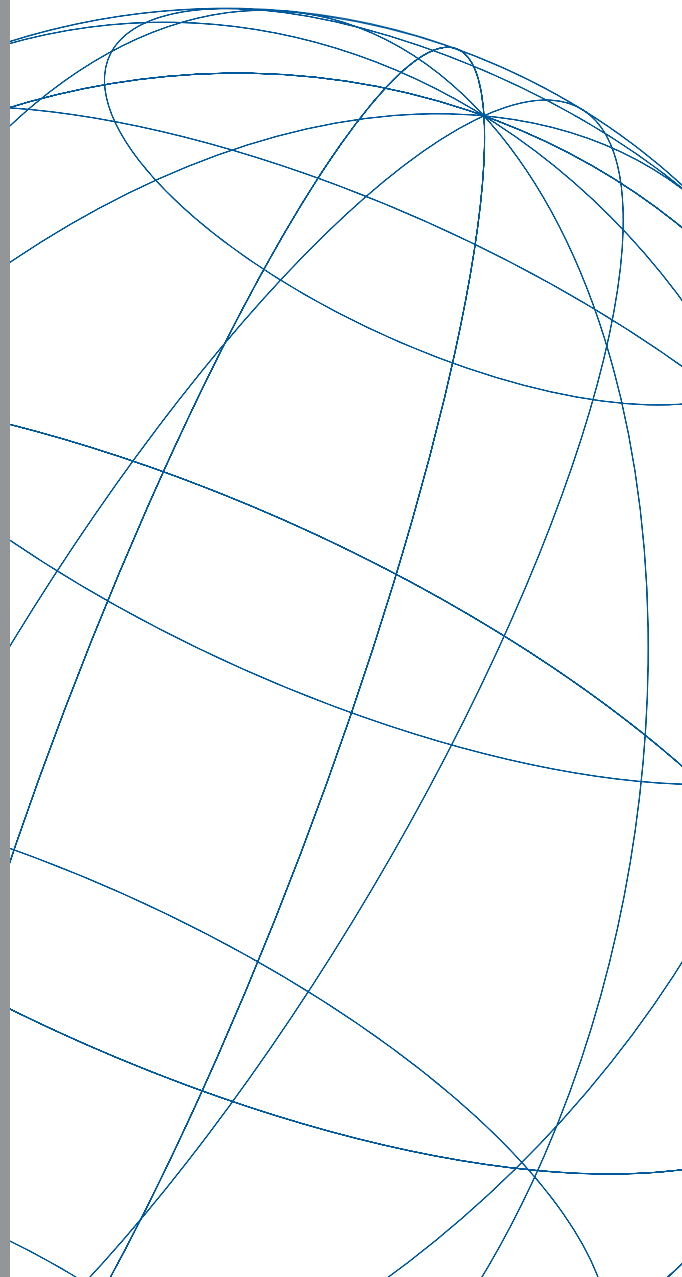


Nuclear



Our Innovation. Your Advantage.



Bradken - Atlas is one of only a few foundries in North America that is qualified to make castings for nuclear applications (ASME certified since 1974).

Bradken Engineered Products Division is committed to the use of science, technology, and craftsmanship to satisfy our customer's needs. Today, as a supplier of nuclear submarine components and municipal nuclear power castings, Bradken utilizes advanced computer technology to optimize casting design.

Our sophisticated manufacturing process, experience and focus on customer satisfaction; combine to create solutions for today's most rigorous casting and machining requirements.



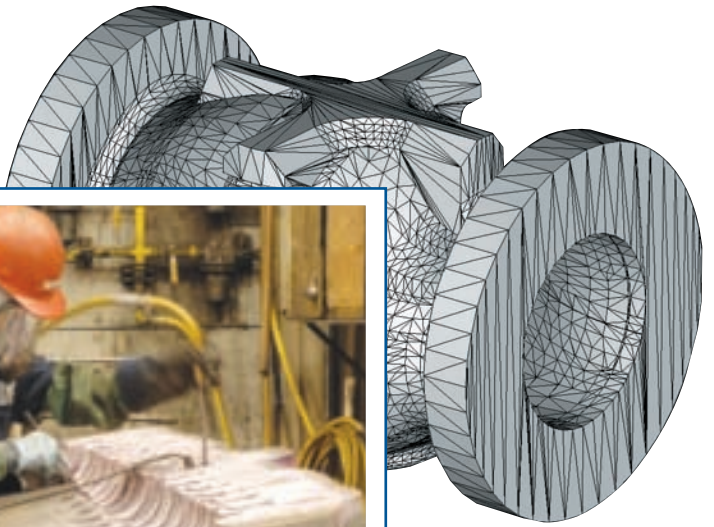
END MARKET	MARKET SEGMENT	PRODUCTS
Power Generation	Municipal power plants (fossil)	<ul style="list-style-type: none"> • Steam turbine cases, steam chests • Stop & control valves - steam • Steam boiler, dryer & piping components • Pumps • Gas turbine cases, blade rings, inlet housings
	Nuclear power plants	<ul style="list-style-type: none"> • High pressure steam turbine cases, steam chests • Control valves - steam • Control valves • Pumps, cooling and pressure
	Plant power & apparatus	<ul style="list-style-type: none"> • Steam turbines (small)
Military - Navy	Ship propulsion	<ul style="list-style-type: none"> • Steam turbine components • Pump casings and impellers, nuclear • Valves, nuclear • Heat exchangers • Couplers & rotors
	Ship generators	<ul style="list-style-type: none"> • Steam turbine components



Certifications & Quality:

- Welders certified ASME, Sec IX, AWS D1.1, FCAW, GMAW, SAW, GTAW, SMAW
- ISO 9001, API 610, 8C and 2SC, ABS marine steel castings, MMPS No. 5165, ASME QSC-204, ASTM, NACE, MR0103, MR0175, DNV

Bradken is a differentiated supplier:



Supply scope: assisted engineering, pattern/tooling construction, complex casting, machining, cast/fabrication and testing

Extensive non-destructive testing including Linatron radiography for section thicknesses up to 17"/432mm

Superior AOD refined and induction materials: Bradken casts a variety of stainless steels and duplex stainless steels to meet industry specifications

People:

- Skilled foundry process engineers understand critical to quality casting requirements.
- Quality personnel/metallurgists review specifications to create manufacturing plans.
- Experienced molders, melt crews and finishers process the components to controlled standards using electronic workflow travelers throughout the plant.
- Skilled non-destructive testing, ASNT certified inspectors ensure the components comply with your defined specifications.
- Certified ASME Section IX welders further assure that upgrading is performed to exacting standards.



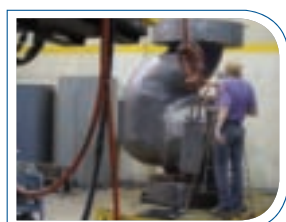
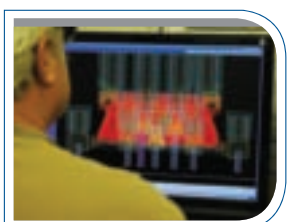


Nuclear energy is globally critical today and will be significant in the future. As a supplier of high quality complex engineered castings; Bradken is at the forefront of supply for nuclear applications

Bradken's Engineered Products Division is a full service steel foundry and machining organization; producing carbon, low alloy, stainless steel and specialty alloy castings weighing as much as 55,000 lbs/25,000 kg.

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

- Assisted engineering (Fabrication to casting conversions, improving castability)
- Patterns & tooling
- Carbon/stainless & specialty steel castings
- Linatron x-ray capabilities for wall thicknesses up to 17"
- Certified ASME nuclear material manufacturer
- Machining & value added services



Patterns/Tooling – Engineered Castings – Fully Machined Components

Patterns/Tooling

Personnel

- Experienced journeymen pattern makers
- Foundry process engineers and solidification modelling specialists
- 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
- Sand testing
- Metallurgical and sand testing

Castings - Metals Cast

Cast steels

- Carbon steels to 55,000 lbs/25,000 kg
- Corrosion resistant steels to 45,000 lbs/20,500 kg
- Austenitic-ferritic duplex to 45,000 lbs/20,500 kg
- Heat resistant steels to 45,000 lbs/20,500 kg
- Low alloy steels to 55,000 lbs/25,000 kg

Other Nonferrous Alloys

- Nickel-base to 45,000 lbs/20,500 kg
- Bradken – Atlas alloy 864 and 865 (for specialized off-shore oil applications not requiring post weld head treatment)
- Bradken – Atlas alloys 804 and 806 (for specialized off-shore oil applications)

Mold Process

- Flask-less and flaked
- 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

Specialty

- Complex highly engineered castings
- Linatron radiography for section thickness up to 17"
- 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

Equipment

- Maximum lifting capacity 150,000 lbs/68,000 kg

Turning – Vertical

- up to 254"/6,452 mm swing
- 118"/2,997 mm Table
- 102"/2,591 mm Height

Turning – Horizontal

- Boring 240"/6,096 mm HT
- Milling 80"/2,032 mm VT

Horizontal

- CNC machining centre maximum length 100"/2,540 mm horizontal travel
- Maximum width 30"/762 mm reach
- Maximum height 60"/1,524 mm vertical travel
- Maximum part weight 40,000 lbs/18,144 kg (centered wt.)

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

Specialty

- Casting/fabrication assemblies
- Large CNC
- Large fabrications
- Complex engineered components
- Turnkey, single source supply
- Hydrostatic testing
- Painting and finishing operations

Quality Assurance Program

- ISO 9001:2008
- API 610, 8C and 2SC
- ABS marine steel castings
- MMPS No. 5165
- ASME QSC-204
- ASTM
- NACE
- MR0103, MR0175
- DNV

Other

- NAVSEA qualification for HY-80 and HY-100 materials
- Lloyds register certificate



Additional Bradken North American Facilities

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Chehalis (Foundry)

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Tacoma (Fabrication and Machining)

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Industrial Products

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F +1 913 367 2130

Amite (Foundry)

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F +1 985 748 7396

St. Joseph (Machine Shop)

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F +1 816 279 8246

Tacoma (Global Services)

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London Products

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