



Nuclear Capabilities and Facility Presentation

Delivering a more sustainable world

Nuclear and Fabrication





We believe in a future powered by nuclear energy

Nuclear power offers reliable baseload power without emitting carbon into the atmosphere.

We have a proud history of supporting the entire Canadian nuclear industry. By leveraging our extensive nuclear experience, we help develop new nuclear opportunities in North America and around the world.

We have been fortunate to work with many SMR & AR technology companies, nuclear generation stations, and material vendors across the country to prepare the supply chain for the energy transition.

Our contributions, collaborative spirits, and nuclear expertise have been the cornerstone of our accomplishment in the Canadian Nuclear Industry.

HEAT TRANSFER SPECIALIST | ENGINEERING DESIGN | FABRICATION | GLOBAL PROCUREMENT & SOURCING |

Worley Chemetics is a nuclear-certified fabricator with a modern, expending facility in Pickering. We specialize in custom-made heat exchangers, pressure vessels, and proprietary equipment. We offer a synergistic combination of expert thermal, mechanical, welding, and material engineering, along with best-in-class manufacturing capabilities, to provide an extensive selection of heat exchangers products and solutions. For more than 40 years Worley Chemetics (Pickering shop), formerly Fromson Heat Transfer Ltd., has been a premier choice for heat exchanger supply and fabrication in the nuclear market. We hold nuclear authorization to CSA N285.0, CSA N299.1, and ASME 'N' mark.



WORLEY CHEMETICS SERVICES



ESTABLISHED 1958

Nuclear fabricator since 1975



PICKERING, ON

Nuclear facility location



VANCOUVER, BC

Technology Centre



EMPLOYEES

150 employees in Pickering, ON
(300 in total, Worley Chemetics)

Nuclear History

CUSTOMER: Bruce Power
SERVICE: Shutdown Cooling
Heat Exchanger



CUSTOMER: OPG Pickering
SERVICE: Primary Irradiated Fuel Bay HEX

OUR HEAT EXCHANGERS AND VESSELS FABRICATED AND SUPPLIED INCLUDE:

- Primary Spent / Irradiated Fuel Bay Heat Exchangers
- Secondary Spent / Irradiated Fuel Bay Heat Exchangers
- Shutdown Cooling Heat Exchangers
- Maintenance Cooling Heat Exchangers
- Bleed Condenser Tube Bundles

SITES

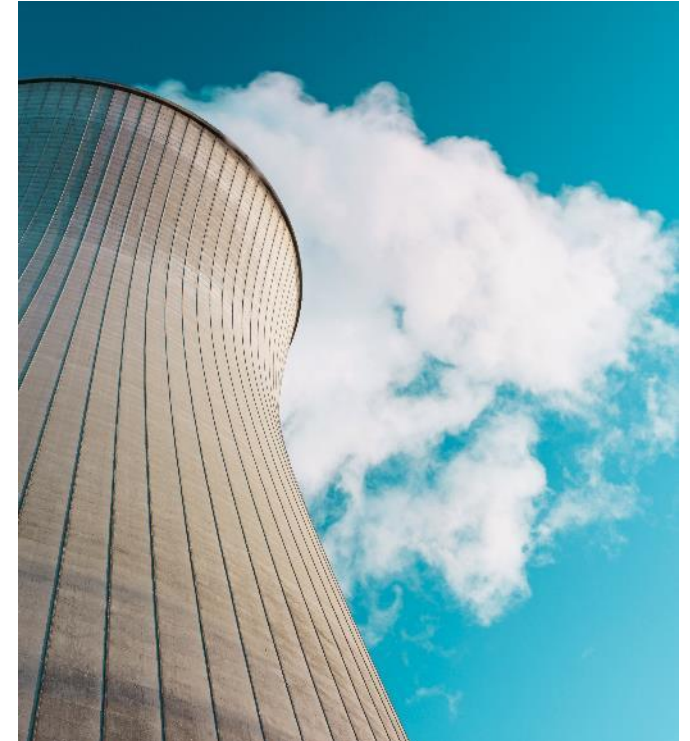
- Kincardine NGS (Ontario Hydro / Bruce Power)
- Pickering NGS (Ontario Hydro / OPG)
- Darlington NGS (Ontario Hydro / OPG)
- Chalk River (AECL / CNL)



Chemetics (Pickering shop), formerly Fromson Heat Transfer Ltd., has been a trusted designer and fabricator of nuclear exchangers and vessels since 1975.

Worley Chemetics Overall Capabilities

- **Lump Sum projects** are 99% of our business
- Specialty Process **Equipment Manufacturer**
- **Engineering** (Thermal, Hydraulic, Vibration, Mechanical, FEA & CFA, Transient Analysis, Metallurgical, Corrosion and Welding)
- **Subject Matter Experts (SMEs)** in every required type of engineering and fabrication
- Start to finish Project Management
- **Global** Procurement / Logistic & Nuclear Material Organization
- **MOC supply** – High Nickel alloy, Stainless steel, Duplex, Titanium, Carbon steel
- In-house **QC/QA** and complete Line of NDE
- High-speed, Large-scale CNC Machining, HBM, Plate Rollers, PAW machines, Laser Cutting equipment, 1000+ Certified Welding procedures
- **R&D** and Corrosion Lab
- 100% owned by **Worley**



Worley Chemetics Shop Metrics

Office Space	17,400 sq. ft ($\approx$ 1,620 sq. m)
Machine Shop Space	17,000 sq. ft ($\approx$ 1,580 sq. m)
Current Bay Space	Two bays at 27,300 sq. ft ($\approx$ 2,540 sq. m) each
NEW Bay Space opened in May, 2024	One bay at 34,000 sq. ft ($\approx$ 3,160 sq. m), Size: 85 ft x 400 ft with 24 ft wide doors



Bay 1 & 2 – Weld, Assembly, and Fabrication



Worley Chemetics Shop Capacity & Capabilities



Shop Footprint and Capacity	90,000 sq. ft / 130,000 yearly work-hours + 34,000 sq. ft of additional assembly space
Weight	200,000 lbs (Overhead Lift) handling capacity with hydraulic jacks
Width x Length	16 ft (192 in) x 100 ft long & 24 ft (288 in) x 400 ft
Max. Welding Thickness	3 in
Max. Tubesheet OD	144 in (12 ft)
Differentiators	Large HBM, 2 x PAW Machines, 5-axis Laser cutting, SMEs, Welding Specialist and Metallurgist on staff

Shop Expansion and Ribbon Cutting Ceremony Celebration

- New 3rd Main Assembly Bay
- Opened in May 2024
- 34,000 sq. ft of additional assembly space
- Larger than the 2 existing bays at 85 ft x 400 ft with 24 ft wide doors



May 29th, 2024 – Pickering, ON

Heat Exchanger and Pressure Vessel Equipment

POWER GENERATION / NUCLEAR INDUSTRY

- Alloy and Reactive Metal Heat Exchangers
- Isolation Condenser System for SMRs
- Tanks and Containment Devices

LOW-CARBON HYDROGEN / CHEMICAL / REFINING / OIL & GAS

- Custom-made Shell and Tube Heat Exchangers and Pressure Vessels
- Reboilers, Evaporators, Condensers, Coolers
- LP & HP Feedwater Heaters, Surface Condensers
- Reaction Furnaces, Burners, and Waste Heat Boilers
- Proprietary Reactors, Reformers

SULPHURIC ACID INDUSTRY

- Gas-to-Gas Exchangers
- Acid Coolers, Distributors, Converters

SPECIAL EQUIPMENT

- Helixchanger®
- Speciality equipment fabrication



Heat Exchanger and Pressure Vessel Equipment



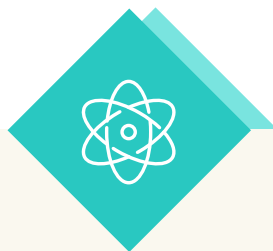
Overall Worley Nuclear Power Capabilities



**DESIGN
ENGINEERING
SERVICES**



**OPERATIONS &
MAINTENANCE**



**SAFETY ANALYSIS
AND LICENSING
SERVICES**



**TRAINING
SERVICES**

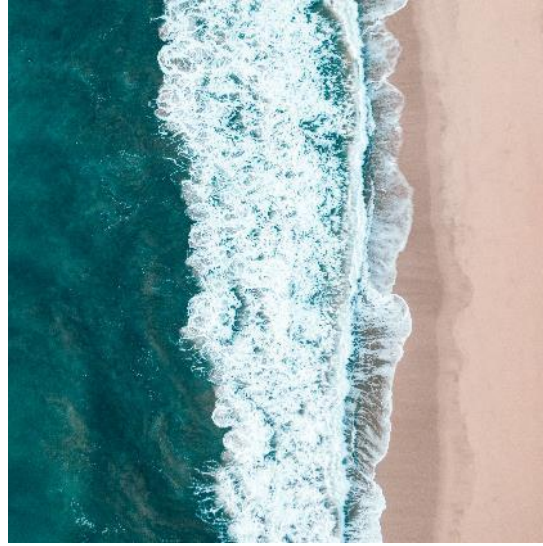


**PROJECT
MANAGEMENT
SERVICES**



**FABRICATION
(WORLEY
CHEMETICS)**

**Offering a comprehensive suite of customized
nuclear services for all phases and fabrication of
custom-made nuclear equipment**



Worley Chemetics Nuclear Certification and **Quality** Program

We hold nuclear certification to CSA N285.0, CSA 299.1, and ASME Sec. III Division 1 and Division 5.

Our Nuclear Quality Assurance Program is compliant to the requirements of CSA N299.1 and the program is audited and accepted by CANPAC (CANDU Owners Group) for OPG and Bruce Power.

Our Nuclear Quality Assurance Program is compliant to the requirements of ASME Section III, Division I and Division 5 and is qualified by the TSSA with CSA N285.0 certification.

Our Advantages in the Nuclear Industry

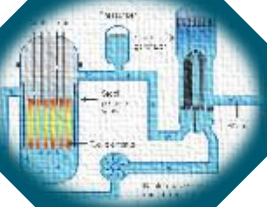
Our focus is on MMR/SMR and Advanced Reactor supply. We support technology development, conceptual and detailed design, manufacturability and fabrication of MMR Systems, SMR and AR equipment.

- Worley Chemetics is a preferred North American, Canadian and local nuclear-certified fabricator for current & potential future MMRs, SMRs and Advanced Reactors.
- OEM of Nuclear HEXs/PVs. Worley Chemetics is a reliable fabricator of nuclear heat exchangers for OPG Pickering and Darlington, Bruce Power, Chalk River (CNL). It is well-positioned for the upcoming OPG DNNP and OPG Pickering refurbishment projects, as well as the Bruce Power Refurbishment and New Build Station 'C'.
- Proximity to customer reduces travel costs and the risk of delays. Our facility is located less than 35 km from NGS OPG Darlington, 2 km from OPG Pickering, and approximately 260 km from Bruce Power.
- Local supply/ Project supports local industry: About 80% of the scope of a typical MMR/SMR plant can be procured and manufactured in Ontario.
- All fabrication is done in-house with very high quality.
- Overland freight for delivery of equipment and majority of materials reduces schedule risk for technology providers and NGSSs.



Our Role in the Nuclear Market

Nuclear Technology neutral – Independent of any SMR and AR technology, we are uniquely qualified to provide unbiased and comprehensive engineering services and fabrication support to NGS, operators, prime contractors, and partners.

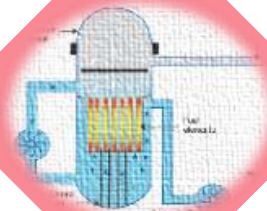


PRESSURIZED WATER REACTORS

- Westinghouse
- EDF
- Mitsubishi Heavy Industries
- KEPCO
- CNNC

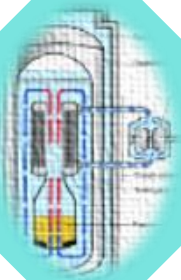
BOILING WATER REACTORS

- GE Vernova – GE Hitachi



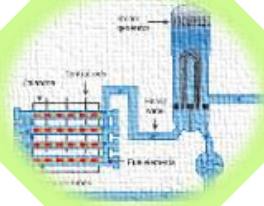
SMALL MODULAR REACTORS (SMR)

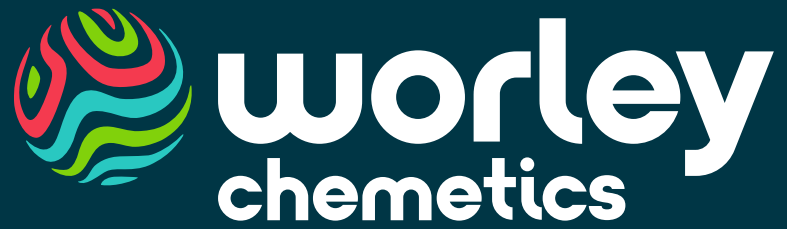
- GE Hitachi
- Westinghouse
- USNC (MMR)
- ARC
- Moltex
- X-Energy
- NuScale
- Terrestrial Energy



PRESSURIZED HEAVY WATER REACTORS (CANDU)

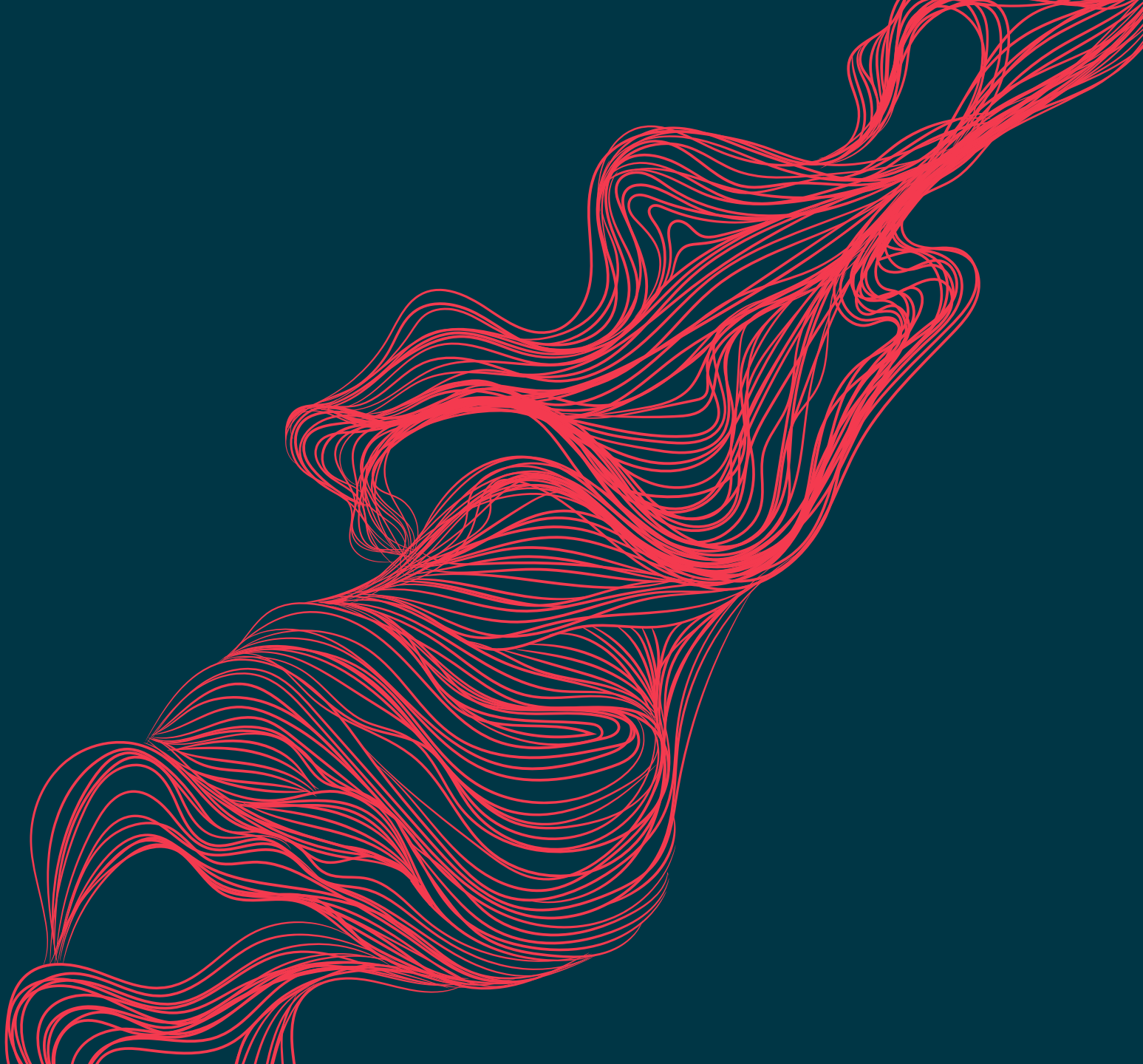
- CANDU Energy





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