

# MECHANICAL INSULATION TO INCREASE BUILDING EFFICIENCY

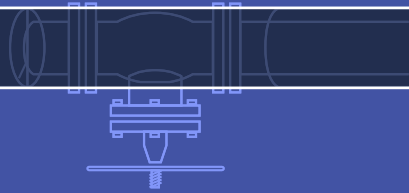


# Saving money, energy and the planet.





# CONTENTS



- 4 delivering sustainability
- 5 saving energy and money
- 6 protecting health and saving lives
  - air quality 7
  - fire-stopping 7
- 8 not the pink stuff
- 9 skilled specialists
- 10 trained and certified
- 11 wrapping it all up
- 12 doing things wrong
- 13 doing things right
- 14 a greener world



- **Creating a greener world.** There is no better way to save energy, reduce greenhouse gases and leave a light carbon footprint in your building developments than by using **mechanical insulation**.

It's **clean, efficient and safe**. Low upfront costs deliver large and ongoing savings in money and energy.

British Columbias' mechanical insulators are **energy conservation specialists** and skilled tradespeople. We ensure that the products we work with are installed to the highest standard. We use the right material for the right application.





## MECHANICAL INSULATION

# delivering sustainability



Quality craftsmanship ensures energy savings into the future.



**Reducing our carbon footprint, lowering greenhouse gas emissions and using less energy are at the core of the mechanical insulation trade and have been from the beginning.**

Properly installed mechanical insulation can cut energy usage and significantly reduce carbon dioxide into the atmosphere.

Mechanical insulators have the training, expertise and commitment to meet the exacting standards now being set by various government, public, and private agencies.



Buildings are now mandated to reduce their carbon footprint.

## ● REDUCING COSTS

# ← saving energy and money →



Savings from a properly engineered and installed mechanical insulation system is unparalleled.

- Heating and cooling rates are increasing. Reducing consumption also means reducing costs. Mechanical insulation of hot and cold water pipes and ventilation units should be a priority.

Proper installed mechanical insulation starts saving money as soon as the switch is turned on. It can pay for itself in a short period of time .

Lost energy costs consumers and taxpayers billions of dollars across the country. Of course, the cost to future generations will be even higher. Using less energy means generating less carbon dioxide, greenhouse gases and a better future for our planet.



Protective covering directly increases the life expectancy of the mechanical insulation system.





## PUBLIC SAFETY AND HEALTH

# protecting health and saving lives



Today's green jobs demand green-trade-qualified professionals who understand where health problems — such as mould — can develop.

- The Leaky Condo Crisis that first arose in BC in the 1980s educated everyone about the dangers of mould. Condensation on improperly insulated pipes and ducts provides the moist environment where mould grows. Professional insulation mechanics prevent the problem from developing.

Every modern building is designed as a series of fireproof and smoke seal compartments. However, when walls are refitted for pipes, ducts or cables, insulation mechanics must install firestop and smoke seal systems that comply with national flame and temperature ratings to prevent smoke and fire from spreading through a building while providing better indoor air quality as required in the latest Green Building Standards.

Qualified insulation mechanics are trained to install firestop systems.





Without proper moisture control mould and mildew can form in a short period of time.



When installed correctly, firestopping saves lives and property.

### air quality

**Mechanical Insulation products contribute to a safe and healthy indoor environment and block the introduction, development and/or spread of indoor contaminants within the building.**

The key to sustained avoidance of mould growth in building components is to prevent condensation from developing on surfaces and control dew point. Moisture provides nutrient availability to support fungal growth. Water therefore remains the controllable element in the prevention of mould growth. This control and prevention in the condensation process is simply stated: keep it dry.

### fire-stopping

**Lethal smoke and gases released during a fire move at great speed through any structural spaces left open during a building's construction.**

This can include spaces left around pipes and cables passing through walls and floors. Insulators completely seal these gaps with fire-tested and certified materials that are designed to stop heat, smoke and gases.





## MECHANICAL INSULATION

# not the pink stuff



Mineral fiber insulation is the perfect material for high temperature applications.



The word *insulation* comes from the Latin word *insula* meaning island — a body of land completely surrounded by water. The water acts as a two-way barrier, making it equally difficult to enter or leave the island. It is insulated.

Insulation materials and the methods associated with mechanical installation should not be confused with fibreglass batting used in wall and ceiling insulation.

Insulators apply insulation systems made from various material on ventilation units; pipes carrying liquid gas, steam and refrigerants; domestic hot and cold water pipes; sanitary lines; and soundproofing systems. These sophisticated coverings can keep mechanical systems at constant temperatures ranging from absolute zero ( $-273^{\circ}\text{C}$ ) to  $2760^{\circ}\text{C}$ .



Aluminium jacketing provides protection from the elements.





## BC'S INSULATORS

# skilled specialists



British Columbia Institute Of Technology puts on four classes a year producing British Columbia's only qualified insulation mechanics.

Mechanical insulators are energy conservation specialists and skilled tradespeople. They fabricate, manufacture and apply insulation materials to plumbing, heating, cooling and refrigeration systems, piping equipment and pressure vessels to reduce the passage of heat, cold, sound, smoke or fire.

Mechanical insulation increases energy efficiency, allows comfort control and ensures protective barriers against fire, water damage, corrosion, mould and mildew.

Insulators are employed at industrial, institutional commercial and large residential construction sites. They work alone or in small crews and are often called upon to solve problems as they come up. As a result, they must be well-trained and experienced.

Apprentices spend 720 hours in the classroom and over 6000 hours in the field to become Red Seal insulation mechanics.





ON THE JOB

# trained and certified



Insulating 45 linear feet of 8-in. high-pressure steam line equates to about \$13,600 per year in energy savings, equivalent to removing 13 cars per year from the highways. Assuming the facility exists for 20 more years, the total energy savings from that one workday would be \$272,000.

**Insulation work is physical and requires well-trained and highly skilled technicians. BC Insulator apprentices attend a four-year program at the BC Institute of Technology.**

The training for Red Seal certified journeyman insulators includes at least 6,000 hours of on-the-job training and 720 hours of theory and classroom time at BCIT to pass all 4 levels.

Applicants to the training program at BCIT must be proficient with math and science. Apprentices acquire a thorough understanding of mechanical drawing and building standards.

Apprentice insulators spend many months working on models and test pieces of every shape and kind. They learn the properties and uses of all insulating materials used in the trade. Every joint and junction must be drawn before it is made and insulators must be able to read plans and understand detailed and specific drawings when necessary.

Insulation Installed professionally will put us on the right track for saving the environment.







## STANDARDS

# wrapping it all up



Technical skill and ability is required to ensure systems are functioning at their optimum level.

**Energy conservation** – prevents heat loss or gain from mechanical systems

**Condensation control** – prevents water damage from condensation and corrosion on cold pipes

**Fire safety** – protects mechanical systems from fire and slows the spread of smoke and fire in buildings

**Freeze protection** – protects liquid in pipes from freezing.

**Personnel protection** – controls surface temperature of mechanical equipment to avoid contact burns

**Process control** – minimizes temperature change along mechanical systems (especially important when close control is needed)

**Noise control** – reduces the noise from ducts, pipe and equipment

Installing removable covers adds to savings.







## DOING THINGS WRONG



Incorrectly installed insulation systems will lead to unforeseen problems and tens of thousands of dollars in lost energy wastage.



Condensation can damage concrete, ceiling tiles, drywall and wooden elements. It will also increase heat transfer rates due to the latent heat of vaporization.



Using insufficient or the wrong type of insulation will result in excessive heat transfer and wasted energy.

In the case of heating systems, the energy will be lost to the surrounding environment, and in the case of cooling systems there may be heat gain which will reduce the overall efficiency of the system.



The two photos above show one set of pipes. The beautifully insulated work at the top is rendered ineffective because the insulation stops on the side of the wall not visible to the public, shown in the bottom photo.



Pipe and duct corrosion is common when systems are not protected from condensation. This shortens the life of the equipment.





## DOING THINGS RIGHT

Quality Standards  
for  
Mechanical Insulation  
(Commercial and Institutional Buildings)



With the right training, qualified insulation mechanics will ensure consumers receive value for their commitment to building energy efficiencies into their projects.





# aiming for higher standards



Mechanical insulation saves up to 500 times the energy and 750 times the emissions required for its production.



BC's mechanical insulators are leading a campaign to raise awareness among other mechanical contractors, building owners, developers, architects, engineers, politicians and senior staff at all levels of government and the public. The message is about the importance of the work that mechanical installations do and the value of properly applied insulation.

- We **went public** with the problems associated with incorrectly installed and eliminated insulation on high-profile construction projects in BC.
- We've **investigated** currently accepted practices related to mechanical insulation on publicly funded construction sites around the province and documented glaring problems. We've taken this information, including photographs, to property managers, developers, general contractors and city officials so that problems can be rectified before they're hidden behind drywall and wall coverings.





British Colombian Red Seal Insulators reduce their carbon footprint every hour they work and have been for over 100 years.

#### **A New Era for Mechanical Insulation**

Mechanical Insulation provides an excellent Return on Investment. Mechanical insulation pays for itself in a very short time frame!

- We've **commissioned** an independent white paper entitled *Pipes Need Jackets Too* showing how governments, utility companies, developers, engineers and building owners/operators can save millions of dollars and eliminate thousands of tonnes of greenhouse gas emissions each year.

**The mechanical insulators' craft is integral to reduced energy use and greenhouse gases, protection of public safety and health and the sustainability of modern construction work.**





### **BC's Insulation Trades People (BCITP)**

are focused on — and proficient at — energy efficiency, high performance and customer satisfaction.

**We are ready** to seize these green opportunities and are competitive in a marketplace that is turning greener every day.

**As energy conservation specialists** we are committed to providing the finest possible completed construction and/or restoration projects.

**RED SEAL professionals** play a key role in protecting the impact on the environment. Our skilled trades professionals work to the highest standards. We are proud of the work and commitment to building a greener BC.



If you'd like to know more, contact:

### **The BC Insulators**

at **604-877-0909**

or visit our website at

**[www.greenjobsgreatjobs.org](http://www.greenjobsgreatjobs.org)** or

**[www.energyconservationspecialists.org](http://www.energyconservationspecialists.org)**