AUSTRALIAN TANK INSULATION

2019 Wine Engineering Association National Conference

Future Planning and Risk Management

Dimitri Giourgas – General Manager

About Us

Australian Tank Insulation

- We fabricate and install all kinds of insulation materials specific to the needs of the product
- We insulate a range of different products including but not limited to tanks, pipework, vessels, refrigeration units, and personal protective cladding
- We undertake work in Australia and overseas

Overview

- Why invest in insulation?
- Tank insulation in the wine industry
- Impact of insulation on our environment
- Why do we offer and use Expanded Polystyrene?
- Minimising the exposure of Expanded Polystyrene
- Future planning
- Preventative maintenance
- Range of different materials
- Future planning and steps moving forward

Why invest in Insulation?

- Decrease refrigeration energy consumption
- Reduction in operating costs and increase in efficiency
- Controlled heat absorption
- Efficient temperature control while reducing load on the refrigeration plants

What insulation do wineries predominantly use and why?

Expanded Polystyrene (EPS)

- Cost effective
- Lightweight
- Easy to handle and work with
- Durable
- Strong & flexible
- Low water absorption
- Shock absorbent
- Vibration dampener
- Low combustibility
- No food value for insects & rodents

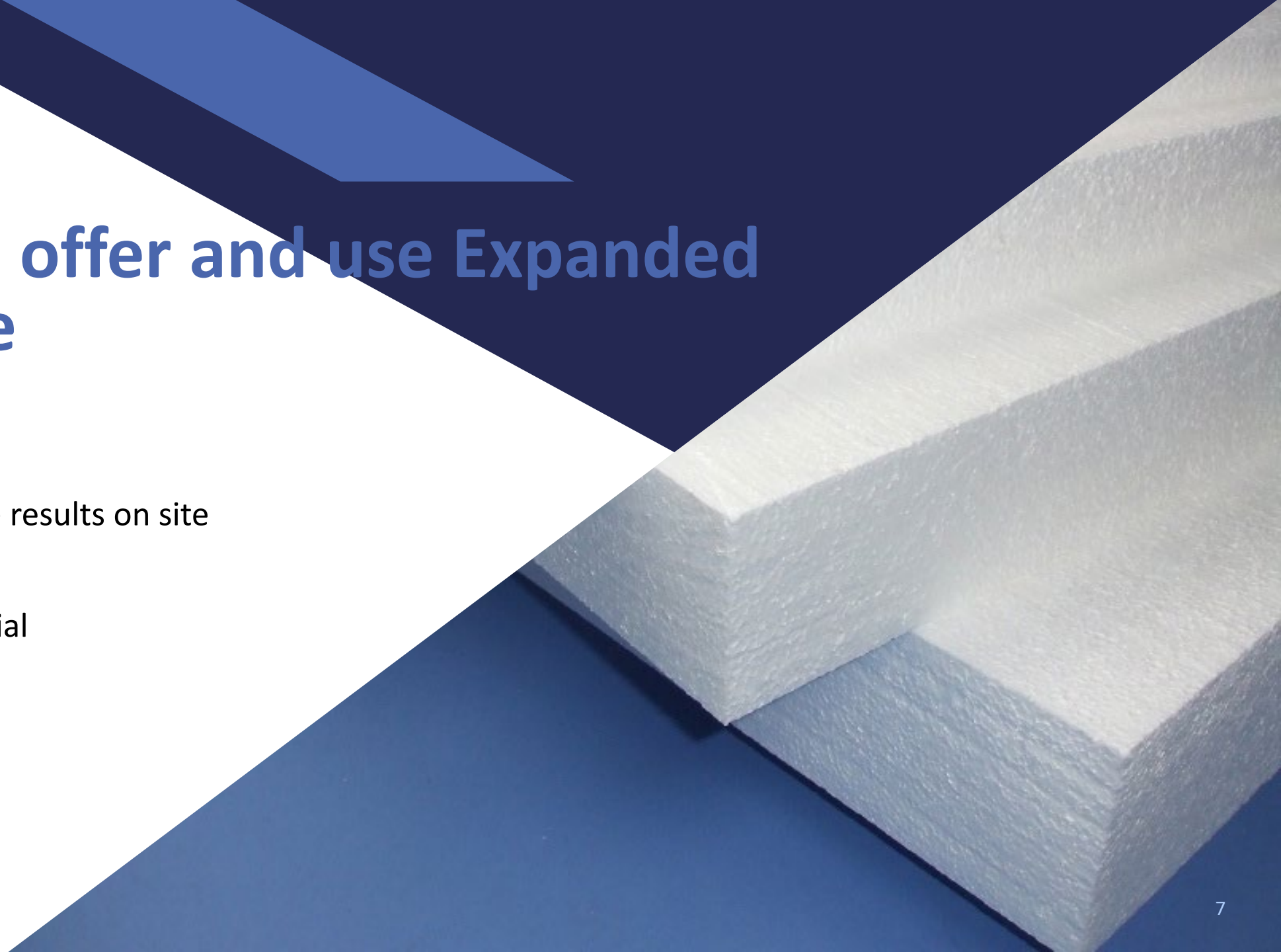
Impact on the environment

Expanded Polystyrene

- Environmentally friendly and recyclable
- No ozone depleting gases
- Does not degrade into harmful substances
- Does not contaminate ground water
- No nutritional value to animals
- No reports of any harmful effects on health

Why do we offer and use Expanded Polystyrene

- Cost effective
- Quick and achievable results on site
- Space saving
- Pre-fabricated material



Minimising the exposure of EPS

Metal Outer shell cladding

- Limits the insulation's exposure to flames and other igniters
- Alternative material to consider
  - Aluminum sheeting
  - Stainless Steel sheeting

Future planning considerations

- Compulsory Specification
  - Upgraded material
  - Upgraded insulation support
  - Upgraded foam density support
- Advantages of upgrading to stainless steel cladding
  - No corrosive materials
  - More robust material
  - Longevity of insulation structure
  - Increased fire protection
- Preventative Maintenance
  - Extends lifespan
  - Maintains efficiency
  - Lower emergency costs
  - Safer work environment

Preventative Maintenance

- Considerations
  - Heat fluctuation of light gauge material
  - Stainless steel tank designs
  - Corrosive cleaning acids
  - Water absorption in insulation
  - Increased weight of insulation
  - Failed fasteners
- Resolutions to consider
  - Heavier gauge aluminium sheeting
  - Stainless steel sheeting
  - Additional stainless steel stiffening rings
  - Fasteners using all aluminium and stainless components
  - Ongoing maintenance programs
  - Insulation maintenance budgets

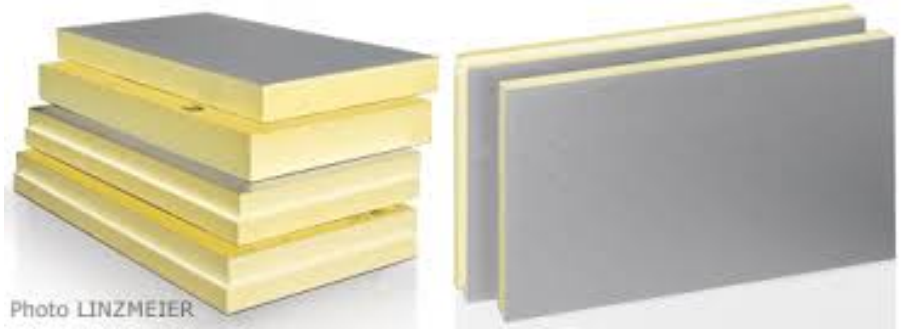
Range of different materials

Rigid Polyurethane (PUR) and Rigid Polyiso (PIR)

- Does not melt at high temperatures
- Retains structural stability
- Pressure-resistant
- Low water absorption
- Chemical resistant
- High combustion rating
- Can be pre-fabricated off site

Considerations

- Flammable
- Significantly higher cost for insulation
- Significantly heavier
- Difficult to handle
- Overall high fabrication costs



Range of different materials

Glasswool

- Not flammable
- Great heat retention
- Highly purpose effective
- Cost effective (for hot insulation)

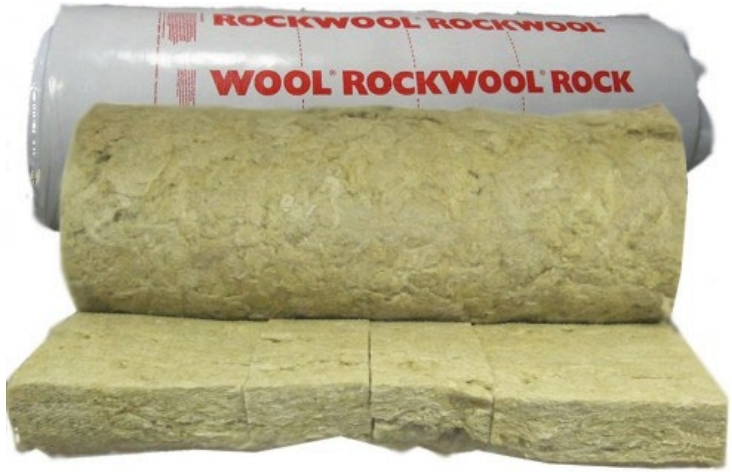
Considerations

- Not suitable for cold storage applications
- Absorbs substantial amount of water
- Higher cost
- No structural stability
- Scaffold/EWP would be required during installation process

Range of different materials

Rockwool

- Not flammable
- Great heat retention than Glasswool
- Highly purpose effective
- Cost effective (for hot insulation)



Considerations

- Not suitable for cold storage applications
- Absorbs substantial amount of water
- Higher cost
- No structural stability
- Scaffold/EWP would be required during installation process

Range of different materials

Askin XFLAM

- Absorbs less water than EPS
- Non-combustible material
- Can be pre fabricated offsite as the structure integrity is rigid like EPS

Considerations

- Up to 5 x more costly than EPS
- Increased fabrication and labour costs

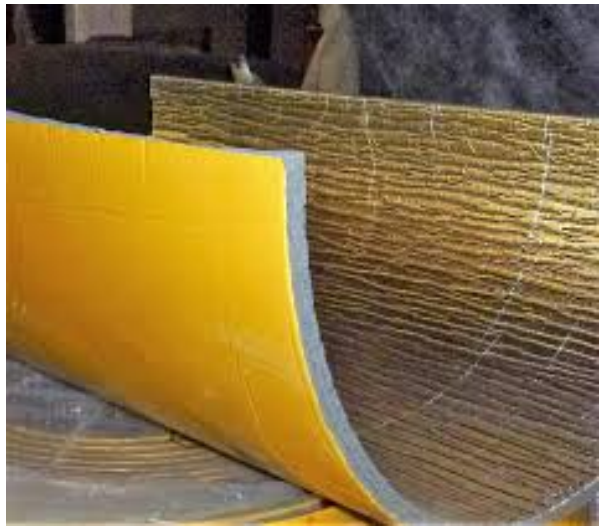
Range of different materials

Thermobreak

- Greater flexibility
- User friendly
- Tough and durable
- Higher temperature range than EPS
- Does not absorb water
- Does not require cladding

Considerations

- Significantly more expensive than EPS, as much as 8 times
- Cannot be pre fabricated due to low density characteristics
- Longer installation process on site

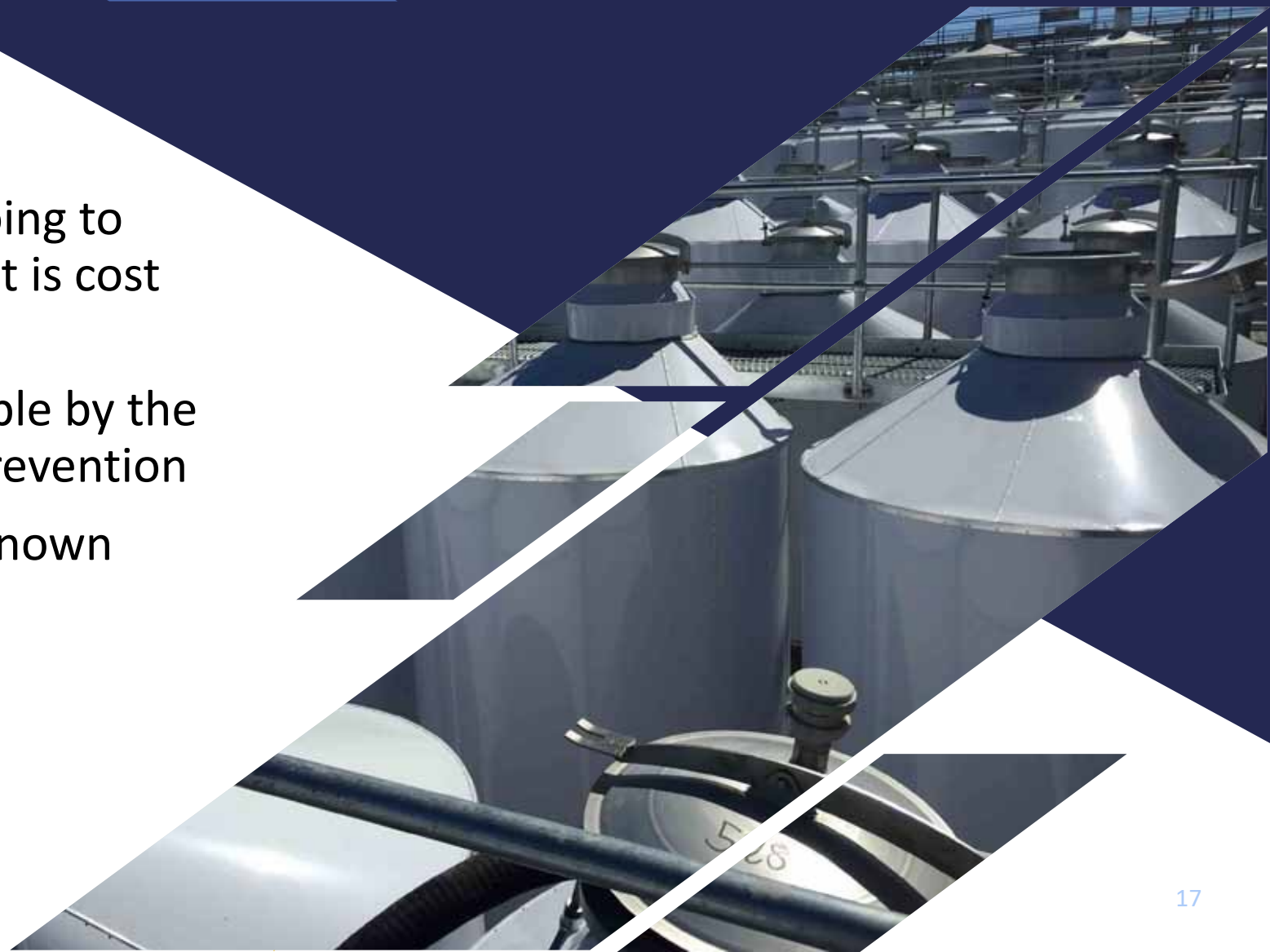


Comparisons of insulation

INSULATION MATERIAL	THICKNESS	SERVICE TEMP RANGE	WATER ABSORPTION	FIRE PROOF	COST PER m3
POLYSTYRENE (EPS)	75mm @13kg	-10 to 75	YES	NO	$ 100.00
POLYURETHANE (PUR)	75mm @38kg	-60 to 110	YES	NO	$ 900.00
POLYISO (PIR)	75mm @38kg	-80 to 120	YES	NO	$ 1000.00
THERMOBREAK	50mm @28kg	-50 to 100	NO	NO	$ 800.00
XFLAM	75mm @32kg	-10 to 75	YES	YES	$ 400.00
GLASSWOOL	50mm @32kg	-30 to 380	YES	YES	$ 400.00
ROCKWOOL	50mm @80kg	-20 to 450	YES	YES	$ 500.00

Summary

- Research and development is ongoing to provide a product and material that is cost effective
- There will be a new product available by the end of the year focussing on fire prevention
- Costs of material are currently unknown



AUSTRALIAN
TANK INSULATION
(ATI) PTY LTD

Thank You.

Dimitri Giourgas

0406431332

australiantankinsulation@outlook.com

www.australiantankinsulation.com.au