

# Lake Margaret Pipeline - Tasmania

## Vent-O-Mat Air Valves Used to Protect Historic Woodstave Pipeline in Tasmania

Pictured below is a section of the historic Lake Margaret timber pipeline that has been recently re-built utilising the superior technology provided by Ventomat Air Release and Vacuum Break Valves with Integral Surge-Alleviation Mechanism.

In the picture below you can see the new Alaskan Yellow Cedar pipeline with a 100mm Ventomat Series 'RBX' Air Valve.



*Pic 1: The new 1200mm Alaskan Yellow Cedar Woodstave Pipeline at Mt Margaret, Tasmania*

### **The Old Pipeline:**

In 1911 the Mount Lyell Mining and Railway Company at Queenstown, Tasmania built a hydro-electric power station at Lake Margaret, it is one of the oldest hydro-electric plants in the Southern Hemisphere.

In the early 1980's it was taken over by Hydro Tasmania and in 2006 it was closed down due to safety concerns spurned from the 70 year old 'King Billy' pipeline springing many leaks and the pipe requiring constant maintenance that was putting operators at risk.

According to Earthmover and Civil Contractor Magazine it was dubbed "the world's biggest soaker hose" (see picture below). In early 2007, during a period of drought, the leakage in the pipe was so bad that it drew down the level of Lake Margaret by 10% from the leaks alone. One way the operators fixed the leaks was by flushing a bag of wood shavings down the pipeline (Huon Pine worked the best because of its

excellent anti-rotting properties).



*Pic 2: The old King Billy Pine Pipeline "Soaker Hose"*

The King Billy Pine used to construct the pipeline was not actually the first material used (wood was the chosen material as it was cheaper than other materials at the time such as steel and was also expected to last longer).

In 1913 The Australian Woodpipe Company determined that the local King Billy pines' properties were not good enough for the construction of the pipeline and subsequently Oregon Pine was imported from Canada. This deteriorated very quickly and had to be replaced in 1938 when the local King Billy Pine was utilised and the line remained in service until 2006.

The King Billy Pine is named after William Lanne or King Billy who was the last full-blooded Aboriginal male in Tasmania and after his death, the tree was named after him. The events after his death were controversial to say the least. His skull was stolen and replaced with a white mans skull and his body exhumed illegally. The stolen parts were sent to England for research and display against the wishes of local authorities and the person responsible was rewarded for this dispicable deed with a gold medal from the Royal College of Surgeons in England. All of this was for nothing as the skeleton was never seen again and the skull never made it to England and was lost.

The tree is now listed as a threatened Australian plant and has been found to make an excellent sound quality in stringed instruments, particularly the classical guitar.

### **The New Pipeline:**

The new pipeline was designed by Johnstone McGee and Gandy (JMG) in Hobart and was constructed by Hazell Bros with technical assistance from the International Tank and Pipe Company from Portland Oregon. The old "king Billy" line was preserved in three sections one of which can be seen below.



*Pic 3: Old and New Pipeline side by side*

Local lobbying groups were against the shutting down of the power station and were very much for rebuilding the pipeline in woodstave as both plant and pipeline are major tourist attractions and an important part of the local history. The clean energy was also a major point to consider and during 2007 when blackouts occurred, the power station allowed the copper mines to remain on line and functional and prevented mine chambers from flooding.

In 2009 JMG and Hazell Bros were jointly awarded for engineering excellence at the Engineers Australia Tasmania Awards Night for the project. A self propelled trolley was designed for construction and maintenance of the pipeline, a worlds first for pipeline design and construction.

#### **Ventomat Air Release and Vacuum Break Valves with Integral Surge Alleviation Mechanism**

Ventomat Air Valves were the only choice for such an important pipeline as **all** Ventomat Air Valves come integral with the original "Anti-Shock" surge and water hammer alleviation mechanism.

The Ventomat valve range provide the standard functions during normal operation and then the "Anti-Shock" float will automatically come into action during a surge event such as during a blackout where the water column separates at the high point. As the pumps re-start and the water column rejoins, very high rates of air are released very quickly and the valve will react to this and control the release of air in order to protect against over pressures.

A good analogy to describe this unique function is to look at it like an airbag in a car

i.e. it is there to protect and cushion the blow when required.

Another important aspect for choosing Ventomat is the full flow characteristics. All Ventomat valves are full flow which means the inlet, outlet and flow areas all equal the size of the valve. Grant Atherton from JMG pointed out that at one point a boulder fell from the mountain and destroyed a large section of the pipeline, by utilising the full flow characteristics of the Ventomat you can be assured that large volumes of air will be "sucked" into the pipeline and protect it from negative pressures during such an event.

To help determine sizing and positioning of valves the Ventomat CATT (Controlled Air Transfer Technology) Program was utilised. This is a sizing and positioning program developed by Ventomat and your free copy can be obtained by contacting Ventomat Australia (see contact details below).

Ventomat Air Valves provide four functions:

- 1) High Volume Air Release
- 2) High Volume Air Intake
- 3) Pressurised air release
- 4) Surge and Water Hammer Protection

The valves are virtually maintenance free, self cleaning made from superior materials and are proven in over 10 year in the Australian market and over 30 years in world markets.

