COMPRESSED AIR IN TRUSS PLANTS

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Excessive noise. Hissing hoses. Failed fittings. Sticky cylinders. No, I'm not talking about my trusty old Holden, but compressed air systems in truss plants.

When was the last time you reviewed your truss plant's compressed air system?

What does it *really* cost you to run compressed air in your truss plant?

In this article I hope to provide owners and operators with sound principles that, when practically applied, could increase the efficiency and reliably of your air system, and lower your operating costs.

Firstly we need a basic understanding of what happens when air is compressed.

An air compressor does not just take in air, but water vapour, dirt, dust and gases. In the compressor the air is heated and also collects degraded compressor oil. So the air leaving the compressor is hot, wet, dirty and normally at a higher pressure than your downstream equipment requires.

In contrast, consider what the compressed air for reliable, low maintenance truss plant equipment should be:

• CLEAN - Free from moisture and particulate contamination that can damage internal components in a tool such as valve spools, cylinder seals and bores.

• REGULATED - Delivered at the pressure and flow rate specified by the tool manufacturer. Excessive pressures could cause accelerated wear or unsafe operation. Inadequate air delivery could cause inefficient or sluggish tool operation.

• LUBRICATED - An oil 'mist' or lubricant in the air ensures tool longevity.

These requirements are common sense and dictate the design of the air delivery system in your plant. Figure 1 shows a typical plant air delivery system. It demonstrates some basic principles for pipe layout and equipment selection.

The plant has a single compressor that has the capacity to supply the whole site. The compressor is positioned outside the main factory to reduce ambient noise and has a filtered external intake for cool, clean air.

A drier is used to remove large volumes of water in humid climates, which feeds into a receiver tank.

A receiver tank, located in the cool place to encourage condensation of moisture, large enough to cope with the varying demand on the system.

If a receiver tank is not large enough a traditional piston type compressor will endure excessive wear and tear from constant stopping and starting, or may run almost constantly.

Further condensation is expected in the mains pipes, which are laid out with a gradient so that water flows to drain legs. Vertical take-offs from the mains are from above and also have a drain leg.

Pipe sizes are adequate for peak flow rates, and pipe geometry is kept simple to avoid friction losses.

Each item of equipment has a shut off valve for maintenance, a filter regulator and a lubricator. This filter will remove any water, scale, dirt and oil in the air supply to the tool.

By now you may already be aware of tell tale signs that your sustem isn't up to scratch.

These may include:

• valves that fail regularly, or get 'sticky'.

• constant compressor noise resonating through the factory.

• hissing noises from pipe joints and equipment components.

• signs of water in failed components, or at the exhaust points on nail guns, staple guns, air cylinders etc.

• sluggish or weak operation of equipment during peak operating times.

• empty lubricators or full filters.

All of these items affect your operating costs. Even the air leaks. There is a common misconception that compressed air is a cheap source of power.

In fact, in comparison with other energy sources such as electricity, it is quite expensive when you take into account compressor running costs, distribution system, and maintenance costs.

For example a 1.5mm orifice in a 750 kPa system will discharge air at about 2.75 litres per second. In a 2,500 hour operating year this one leak is likely to cost $400 per annum.

Or consider what it would cost to have your wall framing machine down for a half day because of a simple $70 valve. So what simple things can you do to increase you air system efficiency?

Perform a basic system check-up. While the factory isn't running turn on the compressor and listen for loose fittings, cracks in hoses and damaged valves.

Do a visual check of you pipe layout and check for any water traps or missing components. Make sure your drain legs are getting drained. Ask operators if they are aware of their equipment or tools operating at less than 100 per cent.

If tools are sluggish and you suspect poor supply to a particular machine, have an engineer check you pipe sizes and system configuration.

And don't forget the safety issues associated with compressed air.This area has the potential to be the most costly of all if risks are not adequately controlled.

In summary, don't let your compressed air system have a hissy fit that costs you money!

TYPICAL PLANT COMPRESSED AIR LAYOUT