Levanta
Superior Workshop Solutions

A guide to workshop lubrication system design

8 key challenges to consider when planning your oil delivery system

When you're setting out to install the ideal lubrication system for your workshop, there are a host of design challenges to take into account.

A comprehensive fitout will incorporate oil and grease transfer pumps and guns, hose reels, metered and non-metered control valves, fluid dispensing products, evacuation products, in-line meters, automatic lubrication systems and oil boys. It's a lot to consider.

Opting for the best quality lubrication equipment is a given – but how do you ensure your system delivers best practice for WH&S, efficiency, cost-effectiveness, and minimising wastage?

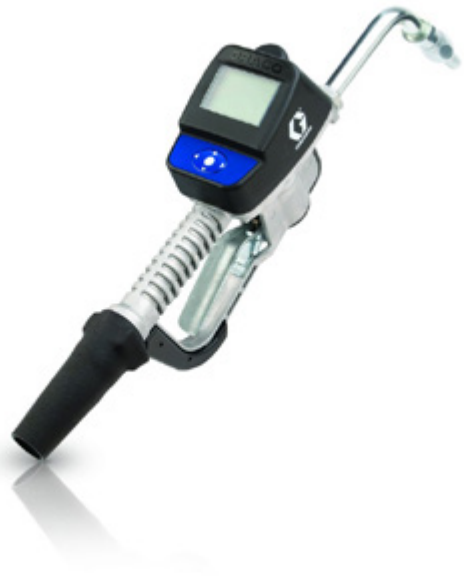
This comprehensive 8 point checklist is designed to help you not only understand the issues around workshop lubrication systems, but to meet and exceed them with superior design.

1 Plan from the start for your required capacity

When planning around your workshop's capacity, the key is to work 'backwards' from your required end flow rate to ensure your system has sufficient capacity.

So, if you're looking for say 5 litres/minute from 3 points simultaneously on a winter's morning, you'll need to ensure your planned layout and pumps can deliver this volume, at that rate, in those conditions.

You should also consider the different types of oil you'll be distributing. The different viscosities may require allowances in the equipment, hosing, piping, and piping route selections, to give you the correct flow rate at the oil gun available in Australia.



2 Minimise frictional loss in the system

Though you might think that, by its very nature, distributing oil will mean minimal friction issues, the truth is far more complex.

In fact, it's a crucial design factor – especially when you're dealing with heavier oils such as diff or transmission oil.

It's essential that as well as considering the factors imposed by local authorities, Australian Standards, and oil companies, your new system's dynamics and fluid mechanics should take into account:

- Piping pressure rating
- Thermal protection
- Average temperatures
- Minimum temperatures
- Route length and total friction loss
- Volume and pressure at delivery point. Note that excessive pressure is just as bad as too little
- Fluid viscosity
- Typical dispensed volume for the reticulated fluid. Certain fluids will typically be dispensed in much higher volumes than others (this is usually consistent across workshops)

3 Plan to meet a realistic load on the system

When you are thinking about flow rate, it's important to not just take a single oil gun into account. During your busiest working hours, you'll no doubt have 2 or 4 or more oil guns operating at once. So your lubrication system will need to deliver sufficient flow rate to cope with this demand.

The right engineering solution for your business can be determined by experienced workshop designers using a specialist calculator. They'll determine the correct size pumps and pipes to deliver the required flow rate from each oil gun.

There are two key questions to answer for your business:

- How many different oils are used?
- What volume is dispensed at any one time?

For a car dealership it's a good idea to allow for a simultaneous dispense for 7 technicians off the same fluid.

Failing to plan for adequate flow rate for the number of guns operating at once will mean slowing down every technician, right across your workshop.

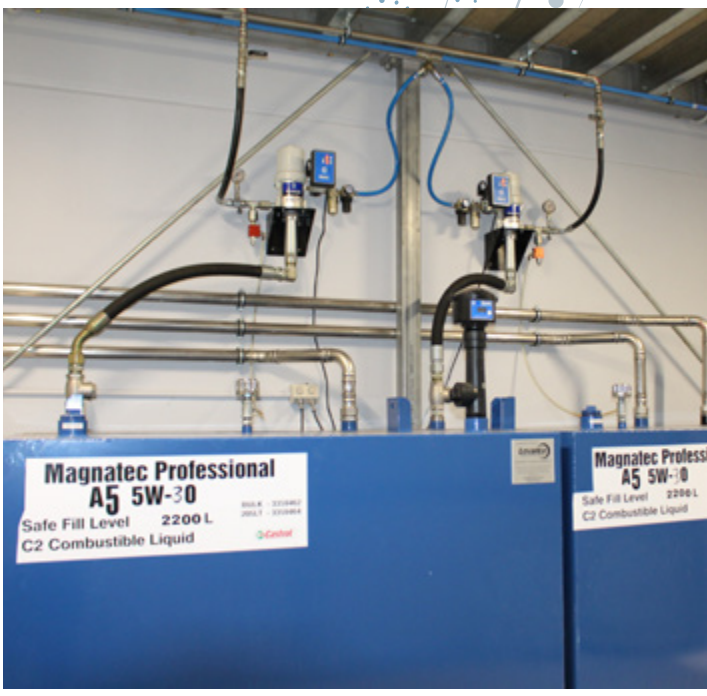
4 Ensure sufficient head pressure and suction lift

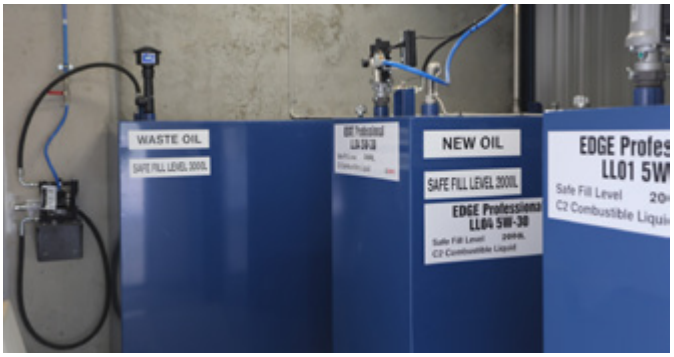
The more vertical height your system has, the greater the potential loss of pressure you'll have to deal with. What's more, you'll need a bigger capacity air operated pump for your lubrication system.

Normally head pressure is barely a consideration when you have pump capable of producing hundreds of pounds per square inch. Yet it all adds up. In today's high rise workshops you may be attempting to reticule over multiple floors, which will very quickly call for significant changes to your system design.

Another big issue is suction lift. Atmospheric pressure means the theoretical maximum suction lift height is 11m, however most pumps have losses and inefficiencies. Levanta recommends 7m as a maximum safe suction lift height. This becomes especially important with waste tanks located in basements.

Once again, smart lubrication system design goes a long way in ensuring the best outcome for your business. While every workshop will have some requirement for vertical piping in some areas, experienced designers can minimise this need and improve your ROI.



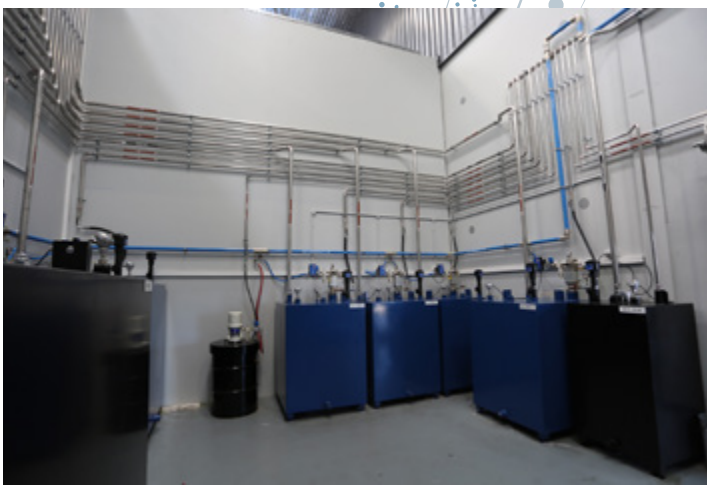


5 Use high quality pipework & fittings

A lubrication system that uses inferior quality fittings and pipework runs the risk of leaking oil right across your workshop – even under normal everyday use. You can easily imagine the effect this will have on the appearance of your business – not to mention the way you meet (or don't meet!) your OEM's Corporate Image requirements.

To ensure a better standard of fitting, opt for stainless steel pipework rather than the standard welded galvanized steel; and look for a design that utilises a crimp fit system to securely attach to the pipe.

Levanta's preferred system uses piping that comes with a 15 year fitting guarantee and a 30 year system warranty.



6 Install a quality oil management system

Want to monitor your workshop's complete lubrication function? By installing a superior oil management system you can take account of spillage, account for every mL of oil you dispense, and charge it to each job accordingly.

Such a system's benefits include:

- Pipe burst protection
- Tank level indication, measured at 2 hour intervals
- Before and after fill tank level auditing
- Email alerts for low new oil level, and high waste oil level
- Logs oil to technican and/or job
- Oil is allocated to a job, helping to prevent incorrect oil being dispensed

Investing from the start in such equipment can give you increased efficiency and profitability compared to using a less advanced oil management system.

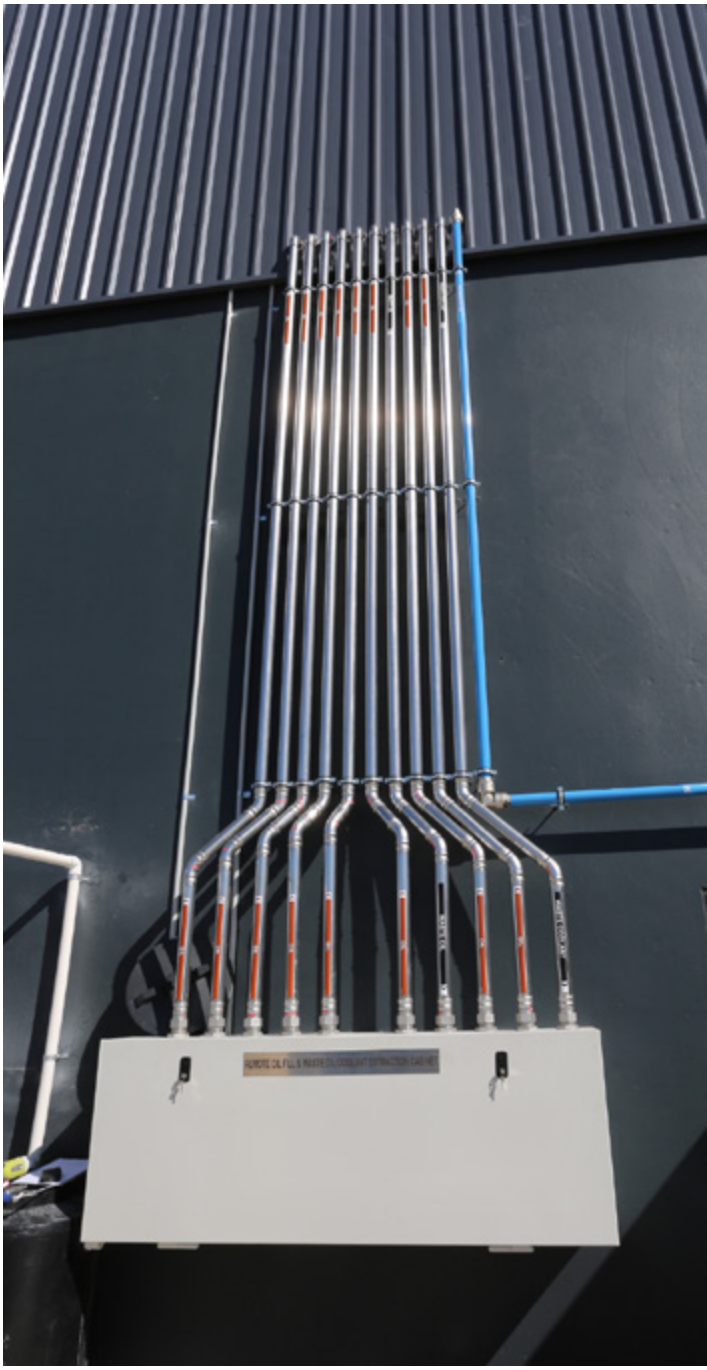
You can also use a management system to keep tabs on your oil supplier by taking a reading on your bulk oil tank before and after a bulk oil delivery. In this way you can be sure of the exact amount of oil you've received from your supplier. It never hurts to double check!

7 Ensure you start with correct engineering

A quality lubrication system should be a long-term investment that can contribute to your workshop's profitability for years – so it pays to get it right from the start.

Your system design should take into account the total distance of piping; the number of bends and junctions; and the number of guns being used simultaneously.

It's the type of engineering that can only be carried out by an expert team with wide experience, who can engineer the ideal lubrication system design for your needs.



8 Ensure compliance with relevant regulations

Last but not least, it's important to ask what the compliance requirements will be for your new lubrication system. It's not an easy question to answer, yet there are a few simple steps you can take when planning your system.

Check the Australian Standards
A good starting point for all installations and manufactured items in Australia (that have no other standard to comply with) is to check the relevant Australian Standards. Two we recommend that apply to lubrication installations are:

> AS 1940 Dangerous Goods Storage
> AS 1692 Steel Tanks for Flammable and Combustible Liquids

- And the Australian Standards for piping:
  > AS 4041 Pressure Piping
  > For Fabrication (Tanks)
  > AS 1554 structural Steel Welding

Other areas of compliance that you should keep in mind may include:

- Local government and authorities
- Mines regulations
- Site specific requirements – such as proximity to the water table or another environmentally sensitive area
- Other authorities (airports, ports etc)
- Oil companies or delivery contractors

These standards and authorities aren't intended to complicate the delivery of your reticulated oil/grease/water/air/coolant/waste system. Instead, they can provide you with a better finished, more reliable, easier to maintain, and of course safer system.

Complying with these standards also demonstrates that you've achieved your duty of care. And while the additional cost may seem prohibitive at the time, the long-term result will be far less expensive should a failure of any scale occur.

Talk to Levanta to find out more

For expert advice on designing the ideal lubrication system for your workshop, talk to the experienced workshop design team at Levanta. We'll evaluate your workshop on-site, and custom design a lubrication system that's cost-effective, efficient and delivers a positive ROI.

For more information on planning the ideal lubrication system for your workshop, contact Levanta on **1300 577 541.**