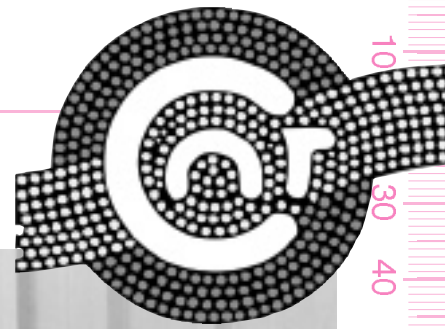


Gas fittings



MARK FLY, FIELD OFFICER WITH TJUWANPA RESOURCE AGENCY INSTALLS A FLEXIBLE PIG TAIL FITTING.

Background

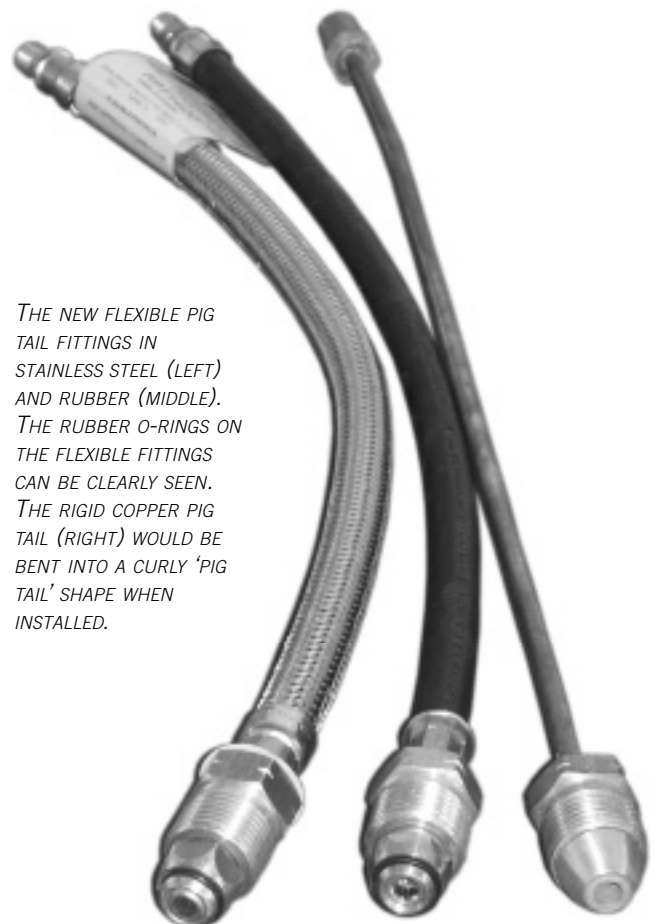
Gas is an option for heating and cooking, especially on remote outstations where electricity is expensive and often not available. Research into stoves (1997) and hot water supply (2000) revealed several barriers to the use of gas in remote areas. The performance of standard gas-bottle connections for 45 kg cylinders is one such problem. CAT researchers heard many complaints from Indigenous communities and pastoral properties and so began investigating alternative connections that were more convenient and safer to use.

Problems

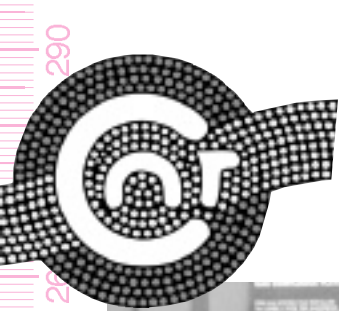
- The standard gas-bottle connection in current use in remote communities consists of a hard-nose Prest-O-Lite (POL) connection into the cylinder with a rigid copper line into the regulator. This line is called a 'pig tail connection' and supplies high-pressure gas. While the system is simple, it has a number of drawbacks;
- Left-hand thread, which can be confusing for inexperienced users
- Hard nose seal, which is easily damaged and has a tendency to leak
- Fine thread, which is often stripped and usually requires sealing tape
- Changing cylinders requires tools, which can be time consuming and inconvenient
- Copper pig tails are easily broken or damaged, leading to gas leaks.

Successful trial for new fitting

A new fitting has been trialed successfully at Tjuwanpa. The new fitting doesn't solve all of the problems listed above, but it is certainly a more convenient fitting. The parts are called 'flexible pig tails' (FPT) 1432 and 1412. The different part numbers



THE NEW FLEXIBLE PIG TAIL FITTINGS IN STAINLESS STEEL (LEFT) AND RUBBER (MIDDLE). THE RUBBER O-RINGS ON THE FLEXIBLE FITTINGS CAN BE CLEARLY SEEN. THE RIGID COPPER PIG TAIL (RIGHT) WOULD BE BENT INTO A CURLY 'PIG TAIL' SHAPE WHEN INSTALLED.



BUSH TECH BRIEF # 5

Gas fittings (continued)



THE RIGID COPPER PIG TAIL IS EXPERTLY AND INEXPERTLY BENT INTO SHAPE (LEFT). WITH THE USER-FRIENDLY, FLEXIBLE PIG TAIL FITTING (ABOVE), THE REFILLED GAS BOTTLE NEED NOT BE PUT BACK IN EXACTLY THE SAME PLACE.

depend on the kind of regulator that you have. They are made by Aquaknect in Queensland and conform to Australian Standards. The flexible pig tails are available in Alice Springs for less than \$15.00 retail.

The fitting has a soft nose POL with a flexible woven stainless steel hose. This fitting also has reverse thread but there are many convenient features.

- It can be tightened by hand (no tools are required when the bottle needs to be changed).
- It fits onto standard gas bottles that are already being used with the old copper pig tails (no adapters are required).
- A gas fitter is not required to install these. Your Essential Services Officer or Housing Officer can install the flexible pig tails.

Two versions are available. The difference is the thread size on the non-POL end of the fitting. This means that both old and new regulators, which have different sized threads, can be used.

Details of the trial

These fittings were installed at 18 locations on Tjuwapa outstations.

The Work Health Authority (WHA) approved a 12-month trial in June 2001. Actually, WHA approval is not required for standard usage because the flexible pig tails are available off the shelf from most local suppliers.

The trial involved three visits by CAT researchers over twelve months (June 2001 to July 2002) to check on the gas fittings. This included searching for leaks, checking the o-rings and asking outstation residents about their experience in using the fitting. On the final visit, all fittings were found to be in use and functioning well. The users were happy with the fittings. (The Tjuwanpa work crew is happier still, now that they don't have to wrestle with shifters and Teflon tape when changing gas bottles).

Remember the reverse thread!

Only one failure was reported among the 18 fittings installed at Tjuwanpa outstations; the small o-ring inside the soft nose POL.

This o-ring is important because, if it is damaged, gas will leak from the fitting. The o-ring failed because someone forgot about the reverse thread in the fitting. The fitting was tightened too much, instead of being undone. **This is something to be aware of.** It is important to remind users about the reverse thread. A good practice will be to check the o-ring when the gas bottles are changed over. Carry a few spare o-rings just in case. The manufacturer, Aquaknect, will be able to supply the spares.

Conclusion

The introduction of the flexible pig tail and soft nose POL fitting has helped to overcome some of the problems people experience in using gas in remote areas. Easier use of gas for cooking and heating is particularly relevant for communities that rely on remote area power supply (RAPS) and renewable energy systems for their electricity. Cooking with electricity is not affordable and this narrows their options to wood or gas.

What next?

The gas fitting from the bottle to the house is just one link in the chain of supply of gas to outstations for cooking and heating. Some other links in the chain are:

- Making sure that gas appliances are safe; e.g. stove and heater
- Understanding how to use gas safely
- Supplying and installing gas bottles in remote areas.

One idea is to explore the use of smaller gas bottles so that they can be moved easily and are more affordable to fill. Another challenge is to investigate whether more portable gas appliances can be used so that houses do not have to be plumbed with gas by a qualified gas fitter. Paying a qualified gas fitter to work out bush can be very expensive; for example Mabunji outstations near Borroloola must pay \$2000 for gas to be plumbed into a house. Perhaps portable gas BBQs and gas burners could be used on outstations to avoid these costs.

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