

Does MOT for gas heaters and boilers make sense?

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On 3 November, the news came out that the Dutch fire brigade (and in its wake the installers) calls for a mandatory "MOT" (periodical safety check like cars have) for gas heaters and boilers. This was not the first time. In the end of 2012 the same message was sent¹. In 2005, a proposal for such mandatory inspection was rejected in parliament. The government then deployed on information provisioning and reducing the number of unsafe heaters and boilers. The fire brigade believes that the policy should be revised because the number of deaths has not decreased in recent years, although there are fewer unsafe heaters and boilers today. This is an interesting asset management topic for a column.

One of the arguments used was that such a mandatory check is required in our neighboring countries. However, to establish such a measure without knowing backgrounds is a bridge too far for me personally, only substantive arguments count². But that does not mean it can not be a meaningful measure. To clarify the significance, we first look at the figures. For we first have to know how big the problem is and for what type of equipment it is the case. Then we look at the efficiency of the measure and a conclusion is drawn.

On the website of the Dutch Safety Board is stated five to twelve fatalities are estimated per annum; the exact number of victims is not measured. The total number of injuries last year was estimated on 113, in 2012 this was 158³. That it is a topical issue is evidenced by the publication on the website of District8.net of 18 November. It states in Schiedam several people were injured by carbon monoxide (CO). On the site mediatv.nl it can be read that on 12 November in Rotterdam two men were affected by CO, and 11 people in the same city on 16 November.

The fire brigade says the problems arise for unvented heaters and boilers. These are called "open" systems, like boilers with air supply from inside a building, even if they have an exhaust. There are about a million open systems in the Netherlands. With open systems the fumes are spread in the building where the heater or boiler is installed. Too little fresh air results in the odorless and poisonous carbon monoxide. Therefore, these systems may not be installed anymore. Already installed systems remain allowed⁴. If a boiler has a separate air supply (standard for boilers and heaters with a high energy efficiency) then it is a closed system.



Closed type CV boiler. Source figure:
Dutch wikipedia CV boiler site.

I can not trace back the number of incidents to the type of heater (perhaps that is why the Dutch Safety Board started an investigation into CO accidents in houses. The report is expected in the spring of next year). There are casualties with closed systems, but the figures I found seem relatively small compared to the totals, and I could not find statistics on this subject. A thorough root cause analysis can therefore not yet be conducted.

¹ <http://nos.nl/artikel/453704-verplichte-keuring-geiser-en-ketel.html>

² Will it be accepted as a reason, then I like to implement the Canadian law that prohibits to bury children under two yards of snow, or the law of North Carolina which prohibits a bingo to last longer than 5 hours

³ <http://red.mgl.nl/reportages/DDL-20141104-00002NL004.pdf>

⁴ [http://nl.wikipedia.org/wiki/Geiser_\(apparaat\)](http://nl.wikipedia.org/wiki/Geiser_(apparaat))

Previously we have shown what is spent to prevent a loss of life⁵. If we calculate a maximum of 10 million euros, in the case of 10 deaths we talk of 100 million euros per year. To this we have to add the hospitalization of the wounded. At 10.000 euros per person, we then have to add 1 million or 10 million euros when the hospital costs are 10 times higher.

According to the proposal of the fire brigade, the mandatory check should take place annually. If each inspection costs about 80 euros, then the cost for these checks of the open heaters and boilers are around 80 million euros per year. There should also be someone present when the inspection is carried out. Say that it takes about 1 million hours per year. If we value an hour at ten euros (not everyone needs to take time off, it can often be combined with already planned attendance), then we have to add a million or 10. When in 10% of the cases an abnormality is detected which costs 100 euros to repair, we can add another 10 million euros. The total cost of inspection including recovery are very roughly 100 million euros.

A system can be approved unjustly as a result of a check, in which case there still will be victims. At our home it once happened that a loving and hardworking bunch of crows had built a nest on our chimney in just one day, so the exhaust was closed. The protection of the boiler happily responded on time, before the carbon monoxide detector was triggered. Such a clogged chimney can also occur immediately after an inspection is carried out. Problems can arise at any time between the two checks, so they exist on average half the time. When an inspection is therefore effective in 50% of cases, then there will be 4 to 5 deaths and about 60 injuries per year less due to CO; so monetary somewhere between 40 and 55 million euros. Boldly stated the costs of the checks are therefore roughly a factor two higher than the monetary value of preventing fatalities.

The fire brigade states the number of deaths does not decrease. We however saw this number is only an estimate. The number of injured by CO does seem to decrease sharply. The current policy obviously still is effective, while the proposed action of the fire is not that efficient.

The fundamental solution (all open systems replaced by closed ones), solves all problems, except of course if the system is not installed incorrectly by the installer (who should also approve it). This boiler is paid back in a few years due to a lower gas bill. But in the very short term, you can of course also do something at much lower cost: buy a CO detector if you do not already have it, or ask one for Santa Claus. For just 30 euros or so you get a lot of extra safety. It is much cheaper than the proposed MOT and works for all causes. A very effective measure so.

Meanwhile our minister Stef Blok waits on the report by the Dutch Safety Board. If it still takes some time before the report appears, we all have a CO detector. In between Stef Blok can already read these two A4 sheets. Do not lose your chimney out of sight in the spring (birds), but also in December (Santa).



CO detector

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⁵ <http://www.assetresolutions.nl/en/column/you-are-worth-the-prize>