

# Minutes of Meeting

Document No CO-1452-17

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|----------|--------------------------------|------------------|-----------------------------|
| Subject  | CO Sub Group                   | Circulation      | All members                 |
| Date     | 21 <sup>st</sup> February 2017 | Circulation Date | 14 <sup>th</sup> March 2017 |
| Location | CoGDEM offices Hitchin         | Circulation by   | Website & email             |

## Attendees

Mike Byrne - Ei Electronics (Chairman)  
John Saffell - Alphasense  
Arthur Burnley - Alphasense  
Leigh Greenham - CoGDEM  
David Richardson - Ei Electronics  
Martyn Walley - Aico  
Tony Banfield - Chair EXL/31/1 etc  
Richard King - Honeywell Analytics  
Adrian Keats - Honeywell Analytics  
Ian Ballinger - Sprue Safety  
Jason Perrins - FireBlitz  
Peter Philpott - TPI  
Andy Burnett - Kidde Safety  
Rob Lyon - Sprue Safety  
Matthew Herrick - GES  
Paul Basham - Crowcon  
Kazuaki Watanabe - Figaro Engineering  
Taro Amamoto - Figaro Engineering  
Masahiro Uehara - New Cosmos  
John Darby - City Technology  
Billy Mitchell - Smart Compliance  
Jonathan Gilby - HH60 Consultants  
Sebastian Meier - Testo  
Damian Cairns - Anton  
Steve Cork - CSA/Sira

## Apologies

Colin Mitchell - Ei Electronics  
Tim Jack - Gas Tag  
David Johnson - Alphasense  
Julian Butler - Dara Solutions  
Rob White - DD Scientific  
Kevin Brown - DD Scientific  
Dean Kavanagh - Geotech  
Graham McKay - BSI  
Kevin Milesen - GES  
Tom Gurd - City Technology  
Andrew Keenan - CSA/Sira  
John Walsh - Sprue Safety  
Jane Howitt - Honeywell Analytics  
Neil Perdell - Aico  
Zoe Forman - Mandeville Marketing

## Agenda

- 1) Apologies and member introductions
- 2) Approval of previous minutes and matters arising
- 3) Lobbying activities (inc. All Party Group)
- 4) Publicity update (inc. Europe, Holland and UK)
- 5) CO alarms standards review (inc. EN 50291-1, M109 mandate, sensor pre-approval)
- 6) Flue Gas Analysis (inc. Bluetooth comms opportunities)
- 7) Non-compliant CO alarms (inc. Status)
- 8) AOB (inc. updates from HSE, helpline)
- 9) Dates of next meetings – Tues 13<sup>th</sup> June 2017, Tues 17<sup>th</sup> October 2017

Guest presentation – Ian McCluskey, IGEM (CO, CO<sub>2</sub> and gas research)

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## 1 Apologies and member introductions

The above list of apologies was displayed and read out.

Members introduced themselves around the table including two new member companies. New Cosmos Electric Co Ltd is based in Osaka Japan and Masahiro Uehara briefly mentioned his company's gas detection products for both domestic and workplace applications. LG introduced Gas Tag as a new UK company about to launch an RFID tag for domestic and industrial gas meters with a cloud-based app which identifies the details of gas appliances fed by that meter. Tim Jack (ex-Honeywell) is their new Sales Director and could not be present today, but the product was discussed during the FGA section of today's meeting, see item 6 below.

## 2 Approval of previous minutes and matters arising

The Minutes of the previous meeting (18<sup>th</sup> Oct 2016, CO1451-16) were read and accepted. Matters arising were covered during the rest of the agenda.

## 3 Lobbying (inc. All Party Group)

### All Party Parliamentary Carbon Monoxide Group (APPCOG):

To enable commercial organisations to be involved with Parliamentary affairs, APPCOG has the 'CO All Fuels Action Forum' funded by industry (including CoGDEN) and overseen by an Advisory Board that LG is part of.

There have been several APPCOG and Forum meetings and events since our last CoGDEN meeting, but some disruption has occurred since the December resignations of the Manager and Researcher from the Policy Connect secretariat of the APPCOG and the Forum. LG was asked to be involved with the interview process for his replacement, a good ex-civil servant was appointed and started in January, but he was then poached back into the Foreign & Commonwealth Office, so another round of interviews will be held in March with LG's input again.

At Forum meetings, LG continues to push for APPCOG to keep up the pressure on the coordination of large scale CO awareness-raising campaigns with the gas retail and distribution companies working together with other stakeholders. This was brought into focus by the surprise start of this year's CO-Be Alarmed campaign which kicked off on 6<sup>th</sup> Feb with a press release stating survey results showing around two-thirds of homes do not have domestic CO alarms in use. Another media push will occur on 7<sup>th</sup> March aimed at families, a well-known 'mummy' blogger and vlogger will be used with LG as technical back-up in a series of regional radio interviews.

After the Which? magazine report release in October highlighting the difference between compliant and non-compliant CO alarm reliability, the APPCOG arranged several parliamentary questions about making BS EN 50291 compulsory in the UK. Although this stands little chance of success, the questions and answers did get some publicity, and a junior Minister within BEIS has requested a meeting with the MP who asked the question to find out more. LG has requested an invitation to that meeting. As mentioned before, post-Brexit the UK may be able to make 'national' arrangements to impose mandatory BS EN 50291 requirements that are currently impossible under EU regulations on free-trade.

The Science and Technology sub-group led by Roland Wessling at Cranfield University held its December meeting at Liverpool John Moores University with LG as Chair as RW could not attend. The LJMU CO project is still to be completed in 2017, and we were shown the three domestic properties that have been built on campus to simulate building standards from the 1920s, 1970s and today.

As a follow-up event to a previously reported Sci/Tech conference, the Ontario Technical Safety Standards Authority (TSSA) held a global conference in Toronto in November to look at the public health implications of CO exposure incidents. LG made a presentation on technology that can be used to mitigate the effects of CO exposure incidents. There were several dozen presentations from global experts, mostly concentrating on the 'burden of disease'. The report of the conference has just been released and can be circulated to interested CoGDEN members on request to LG. On the second day of the conference it was agreed that an international collaboration of health experts is to be formed so as to get more accurate figures and statistics on CO incidents worldwide.

The Medical Practitioners' sub-group led by Isabella Myers (who also presented at the Canadian event) had to delay the planned launch of its own report in December due to the management team changes mentioned above, this should now take place in the next couple of months.

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The new APPCOG AFAF sub group for the CO safety of tourists (COAST) is yet to become active, but the Thomas Cook sponsored 'Safer Tourism Foundation' now has a new CEO who is keen to be engaged with COAST which might give it some impetus. LG had a meeting with the STF CEO (Katherine Atkinson) to brief her on CoGDEN's activities and other aspects of the CO community.

APPCOG remains engaged with the CO safety aspects of the rollout of Smart Meters for gas consumers. LG mentioned a comment from one of the biggest installers of gas Smart Meters (British Gas) who are concerned that the deadline for completion of the rollout (2020) will be difficult to achieve and financial penalties may have to be paid to Ofgem. BG is struggling to attract enough suitable fitters for the rollout, their training is time consuming and they have little time when doing a meter-swap in a domestic property to add any other activities, such as checking for CO problems.

### Others:

Gas Safe Register issued some publicity claiming great success for last September's Gas Safety Week, and LG passed around a printed leaflet with statistics of the number of publicity interventions achieved during the week. LG attended a meeting at GSR to cover Flues-in Voids, see the report in item 6 later in these minutes. He also took part in a phone interview to give opinions on the effectiveness of GSR as part of the decade review process.

IGEM (Institution of Gas Engineers & Managers) will be holding a CO conference in London on 21<sup>st</sup> November 2017. This was mentioned by Ian McCluskey, during the presentation he gave after this CO sub group meeting, see notes of his presentation at the very end of these minutes below.

The Marine Accident Investigation Branch (MAIB) is still very active with its reports on the June 2016 double fatality on a cabin cruiser ('Love for Lydia') on the Norfolk Broads, and a subsequent fatality in a Cardiff marina in November ('Vasquez'). Both incidents were caused by huge amounts of CO from the engine exhausts entering the cabin, with no CO alarms present. LG attended a 'Recommendations Meeting' at the MAIB HQ in Southampton in November and a subsequent meeting at the Marine & Coastguard Agency in Feb where a coordinated awareness campaign for boaters was discussed. He was told there had been a third incident, but in that case a CO alarm had activated and the boat owner was able to take appropriate action, so this may be used as a case-study. The new Boat Safety Scheme (BSS) CO leaflet has been reprinted thanks to sponsorship by Ei and Kidde. LG will be helping BSS with a project to provide their boat examiners with portable gas detectors capable of alerting them not only to the presence of CO, but also CO<sub>2</sub>, flammable gases or low oxygen levels.

The National Caravan Council (NCC) is keen to coordinate a new campaign about CO risks, and LG suggested that they might wish to create a leaflet based heavily on the BSS leaflet, so he will meet with David Whitehead of NCC at the end of March. This publicity initiative will hopefully involve the user groups 'Camping & Caravanning Club' and 'Caravan and Motorhome Club'.

Gas Industry Safety Group (GISG) still has LG on its Board of Directors, so issues related to domestic CO are always high on the agenda. As well as the Smart Meter issue, GISG will publish a statement about the Government's recent release of English Housing Statistics showing less than 33% population of CO alarms, down as low as 21% in private rented properties. This should help provide evidence during this year's review of the English landlord regulations for smoke and CO alarms. We have also asked GISG to investigate the lack of a 'closed loop' in the way the gas industry deals with emergency call-outs, where once the gas supply has been 'made safe', the householder is left to fend for themselves. A recent call to Kidde had highlighted this weakness after multiple genuine activations of their alarms. The competence of new gas engineers entering the industry is another concern for GISG, following a recent investigation which uncovered some worrying knowledge gaps.

## 4 Publicity update (inc. Europe, Holland and UK)

### Europe:

Zoe Forman had hoped to be present today but had to give her apologies at short notice, so LG and JK gave a brief update on European activities run by ADS Insight. Members of the European PR group had already received full details and had attended a separate meeting at Ei's Oxfordshire offices in November where the strategy for the coming year was discussed and decided. The CO alarm manufacturers had wanted to see a balance of activities that would equally promote the use of alarms and FGAs by competent workers throughout Europe. It is hoped to have another 'roundtable' event in the EU Parliament building in the autumn, and perhaps focus on the outputs from the Dutch sub group (below) and a proposed similar group to be established either in France (awkward due to the imminent elections) or Poland.

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The link between CoGDEM and figawa on this project had taken longer to formalise than first thought, but there is now agreement on the parts of ADS's workload they will co-sponsor. This includes lobbying for the revision to the Energy Performance of Buildings Directive (EPBD) to bring smaller heating appliances within scope (<100kW). JK and ADS attended a figawa meeting in January in Cologne to discuss the project and also persuaded figawa to sponsor the European media monitoring task. This now uses Meltwater after a suggestion made by Colin Mitchell, so Zoe visited the ADS office to set this up.

### **Netherlands:**

JK continues to lead the CoGDEM NL sub group with good publicity at the end of 2016 after the Dutch government's decision to enact the recommendations of the Dutch Safety Board to establish a registration and competence scheme for gas engineers. We await the imminent publication of the NVWA's report on CO alarm reliability, but they have not wanted to engage with CoGDEM to discuss the finding, and there is some concern that their report might focus on the negatives.

### **Which? Report:**

The review of CO alarm functionality was published just after the previous CoGDEM meeting, around the same time that the BBC repeated the edition of 'Fake Britain', so the need for vigilance on choosing EN 50291-compliant CO alarms received some high profile media coverage. Most of this was positive and led to the helpful questions in Parliament (reported in item 3 above), but one of the test-gas suppliers took advantage of the publicity to try to sell more of their product by issuing dubious press releases using their normal tactics. This meant that LG had to be involved with the National Landlords Association to correct some of the false information that had been placed online and had to visit HomeServe to explain the true facts of CO alarm operation and reliability.

## **5 CO alarms Standards review (including EN 50291-1 update and M/109 Mandate)**

Any comments on the circulated final draft of CO alarm standard EN 50291-1 must be received by the BSI secretariat by mid-March in time for the end of March deadline set by the Working Group. Once this part 1 standard is ready for publication, it should be possible to release the part 2 simultaneously (recreational vehicles) as this is complete. It is likely to be 2018 before both standards are published.

Post-meeting note: BSI received a question about how EN 50291-1 deals with the ongoing testing of CO alarm reliability, so a proposal to modify the Annex A has now been circulated to the CO alarm manufacturers.

There was little progress to report on the actions being taken to get these standards harmonised under the Construction Products Regulations (CPR) so that compliance with the standard can become a mandatory requirement across the EU. As the smoke alarm community is grappling with similar issues of 'detectors' not being 'measuring instruments', we might benefit from progress they make. This might necessitate generating a 'measurement' output from the sensor, so that the alarm's absolute response time can be checked by the Notified Body. Although the "goalposts are changing", this measurement approach may get around the problem of detection 'levels' not being allowed.

### **Domestic CO sensor approval:**

Figaro Engineering had another meeting with BSI the day before the CoGDEM meeting, to make progress with setting up a CO sensor testing regime that could lead to an equivalent of UL's 'Recognised Component' status. Kazuaki Watanabe gave us some details of the UL requirements, where 15 sample sensors are tested for stability at concentrations of 0, 15, 70, 150 & 400 ppm, tested by the manufacturer every month but witnessed by a UL representative.

One suggestion is a 'standard' that requires a 1 year drift test plus accelerated lifetime testing that might simulate 7 years life by cycling the sensors from -20°C to +60°C perhaps 250 times. All electrochemical sensor manufacturers have their own techniques for such accelerated life testing, so John Saffell suggested a working group of CoGDEM's CO sensor manufacturers and alarm manufacturers to define and agree a system for accelerated life testing of such sensors. This was agreed.

Billy Mitchell of Smart Compliance said that Aberdeen University had undertaken some oven testing of CO sensors and had seen failures, LG asked if their results could be circulated so everyone could see the conditions of the tests they conducted.

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### 6 Flue Gas Analysis (inc Bluetooth comms opportunity)

LG attended a recent meeting at GSR of the Flues-in-Voids working group to review the final report from BSRIA after the practical tests they conducted to assess whether CO<sub>2</sub>-calculating FGAs could spot an increase in CO<sub>2</sub> concentrations in voids containing a leaking boiler flue. It has previously been reported that only significant leaks could be detected using such FGAs, whereas FGAs and ambient air monitors using infrared sensors to measure CO<sub>2</sub> directly (rather than by calculation) could perhaps be used to spot the low rates-of-rise of CO<sub>2</sub> concentration from flues with only small leaks.

BSRIA had conducted field trials in two neighbouring apartments with hidden flues, and in one case they did spot an increase in CO<sub>2</sub> within the void once the boiler was fired. However, GSR and HSE have reached the conclusion that this technique cannot be used in isolation to prove the hidden flue is in good or bad condition, a visual inspection is still required.

While discussing CO<sub>2</sub>, LG remarked that it is disappointing that ambient monitoring for combustion appliance fumes by measuring the CO<sub>2</sub> increase in a room containing a gas appliance is not part of the CMDDA1 assessment. It was suggested that this situation could be investigated by contacting the body that determines the content of these industry assessments, Energy & Utility Skills (Ian Moss).

As mentioned earlier, Gas Tag Ltd has become a member of CoGDEM, so LG briefly described their innovative Gas Tag product and app. The company would like to be able to wirelessly (via Bluetooth) gather data into the app from FGAs after combustion readings have been taken from domestic gas-fuelled appliances. The consensus at today's CoGDEM meeting was for the FGA manufacturers to individually inform Gas Tag of the format and technique that they use to export data from their instruments, rather than have a group meeting to discuss it. LG will facilitate contact between the relevant companies.

JK pointed out that we still await publication of the new version of TS 50612 with a wider scope to include all gas-fired appliances rather than just boilers, it is hoped this will appear in March 2017. Together with TR 16940 (guidance for the safety of gas installations), mainland Europe now has two relevant documents which state that electronic combustion gas analysers (FGAs) should be used, and that these should comply with EN 50379. He added that there has been progress with making a European version of the UK's technical bulletin TB143 which outlines the need to measure combustion gases when installing and commissioning a new gas boiler, the trade association EHI is now willing to distribute this to all boiler manufacturers across Europe.

The work to create a new standard for gas pressure meters ('tightness testers') will start soon, a first draft has been prepared by JK by extracting the relevant clauses from the FGA performance standard EN 50379.

### 7 Non-compliant CO alarms (inc. Status)

LG informed the meeting that he had made contact with 'Status', a UK-based electrical goods importer, after a CoGDEM member bought one of their domestic CO alarms from a discount store and questioned their claim of EN 50291 compliance. It appears that the alarm unit itself was tested and passed by BRE, yet the instruction sheet contained some very poor and incorrect text, such as a statement telling the user not to place the alarm in a kitchen or within 6 metres of a boiler. After a delay, Status modified the instructions and asked the retailer to identify buyers where possible so that the new instructions could be sent to them.

The Dutch NVWA organisation's tests on compliant and non-compliant alarms have yet to be reported, but LG asked if any of the manufacturers knew the results, as he had picked up that some alarms may have had different time responses from those required by the EN 50291 standard. This led to a discussion of the difficulties that can be experienced when 'surveillance testing' is conducted in larger test chambers rather than the smaller chambers used in product compliance type- testing. Richard King explained that it is vital that the test lab monitors the gas concentration within the chamber, particularly during the longer tests. Wandering gas concentrations can lead to premature or late activations, and this has been proven by Honeywell in a series of identical tests that they commissioned at three UK accredited test laboratories. Andy Burnett added that the situation can be even worse in Europe, where some surveillance tests have produced apparent failures that were subsequently discovered to be caused by the test lab's incompetence, e.g. incorrectly fitting the CO alarm's batteries.

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### **8 AOB (including updates from HSE, helpline)**

#### **a) HSE**

Mike Hemingway from HSE/HSL could not be present this morning but attended the afternoon meeting (and IGEM presentation) when he informed LG that he had no relevant updates for the domestic CO community.

#### **b) CoGDEN's CO Helpline**

LG mentioned recent calls related to CO alarm activations on a boat due to hydrogen from overcharged lead/acid vehicle batteries. Also, high readings on CO breath-monitors potentially caused by exhaled hydrogen from sufferers of lactose intolerance. Then a call related to CO alarm activations in a room where a new concrete floor had been laid, again caused by the presence of hydrogen. He has consequently asked manufacturers for their up-to-date hydrogen cross-sensitivity data. We also received a question asking why gas cooker hob flames would burn with a pinky/orange colour, this turned out to be residual 'elements' in the air after an outdoor firework sparkler was lit using the flames on the gas cooker.

#### **c) NICE IAQ project**

At our previous meeting, LG stated he had registered CoGDEN as a stakeholder in the NICE (National Institute for Health & Care Excellence) project to investigate the health effects of poor indoor air quality. He attended a scoping meeting in Manchester in January prior to NICE launching a formal consultation in February. The scope had initially ruled out investigating acute CO poisoning from combustion fumes as this subject had been investigated elsewhere, but several attendees pointed out that this was perhaps the major contributor to poor domestic air quality so could not be ignored.

John Saffell mentioned that Lord Paul Drayson's company is making IAQ CO pollution detectors available, these can be seen at <https://store.clean.space/>.

#### **d) Guardian luggage**

LG had recently been made aware of a crowdfunding project to invest in the development of hand luggage which would incorporate a CO detection and alarm function. Interested members were invited to look online at <http://guardianluggage.com/>

#### **e) GASG**

The most recent meeting of the Gas Analysis and Sensing Group was held in December in London. The next GASG event will be held on 6<sup>th</sup> April at Southampton University on the subject of gas detection in the 'space industry'.

### **9. Dates of next meetings:**

**Tues 13<sup>th</sup> Jun 2017 (AGM), Tues 17<sup>th</sup> Oct 2017**

### **Guest Presentation – Ian McCluskey, Technical Services Manager – IGEM**

Ian gave an overview of IGEM (Institution of Gas Engineers & Managers) since its foundation in 1863 and its membership of engineers from the UK's fuel-gas industry. He talked about IGEM's more recent 50-year role in providing technical standards and guidance in the use of natural gas and IGEM's sponsorship of relevant research in areas such as the future of heat, gas and electricity, carbon monoxide research, standards of training and low-carbon networks.

Handing over to Mike Hemingway of HSE/HSL, he reviewed the findings of the recent HSL lab testing project sponsored by IGEM and Gas Safety Trust that investigated whether increased concentrations of CO and CO<sub>2</sub> would occur in poorly ventilated spaces where 'normal' gas appliances are operating. Mike explained that CO emissions were not massive (~30ppm max) but CO<sub>2</sub> levels of up to 2% were experienced and oxygen levels could be seen to drop to 18% for portable bottled gas 'cabinet' heaters, ovens and hobs under some conditions of poor ventilation. Datalogging MultiRAE instruments were used. Further work is being considered, particularly with loaded gas hobs in simulated kitchen environments.

Ian displayed several slides on the subject of 'gas quality' in the UK, this being a major issue for IGEM which has a large and active working group. Less than 50% of our fuel-gas now comes from the North Sea with the remainder being imported and mixed. This has changed the calorific value and 'Wobbe Index' of the piped natural gas, so the UK will need a law change to allow a wider range of Wobbe Index which may necessitate the use of

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nitrogen ballasting to keep the gas within limits. Ian also talked about the possibilities and trials of hydrogen as a fuel, including a current project looking at the implications of blending 20% H<sub>2</sub> into our gas network. Paul Basham asked about the different calorific value of H<sub>2</sub> compared with CH<sub>4</sub>, and Ian also pointed out issues with flame speed.

Jonathan Kane raised his concern that consumers would end up footing the bill for any problems that might arise from widening the UK's Wobbe Index window, and he was concerned there were potential safety problems with unserviced gas appliances when the fuel-gas changes.

Ian finished by announcing that IGEM will be holding a CO conference on 21<sup>st</sup> November 2017 at The King's Fund, Cavendish Square London, where there will be opportunities for presentations and exhibition.

Ian's presentation is available as a pdf document on request to LG.