

Case Study of an INERGEN Clean Agent System Installation

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Agenda

- Security Bldg Renovation
- New Clean Agent System
- Commissioning Efforts
- Lessons Learned



Old System – Halon 1301

- 1 cylinder
- 250 lbs
- 1 room
- 6350 cf



New System - INERGEN

- 14 cyl
- 6146 cf gas
- 34.2 % conc
- 2 rooms
- 12490 cf vol.



First Discharge Test

Feb 25, 2006

- 12 cylinders
- 1 nozzle - console room
- 2 nozzles - computer room
- Combined relief vent



Test 1 Results

- Passing Oxygen level is 13.8%
- 15.5% Console 15% computer room
- Blew out ceiling tiles
- Blew out access door in HVAC room



Second Discharge Test

June 16, 2006

- 12 cylinders
- 1 nozzle - console room
- 2 nozzles - computer room
- Combined relief vent
- Elim pinch point and add 20x20 relief in computer room



Test 2 Results

- 14.5% console rm - 14.1% computer rm
- Blew out ceiling tiles
- Cracked nozzle tile – clipped down
- 133 dbA sound level



Third Discharge Test

Feb 8, 2007

- 13 cylinders
- 2 nozzles console
 - 4 nozzles
- computer
- Changed piping
- Door Fan – 23 minutes

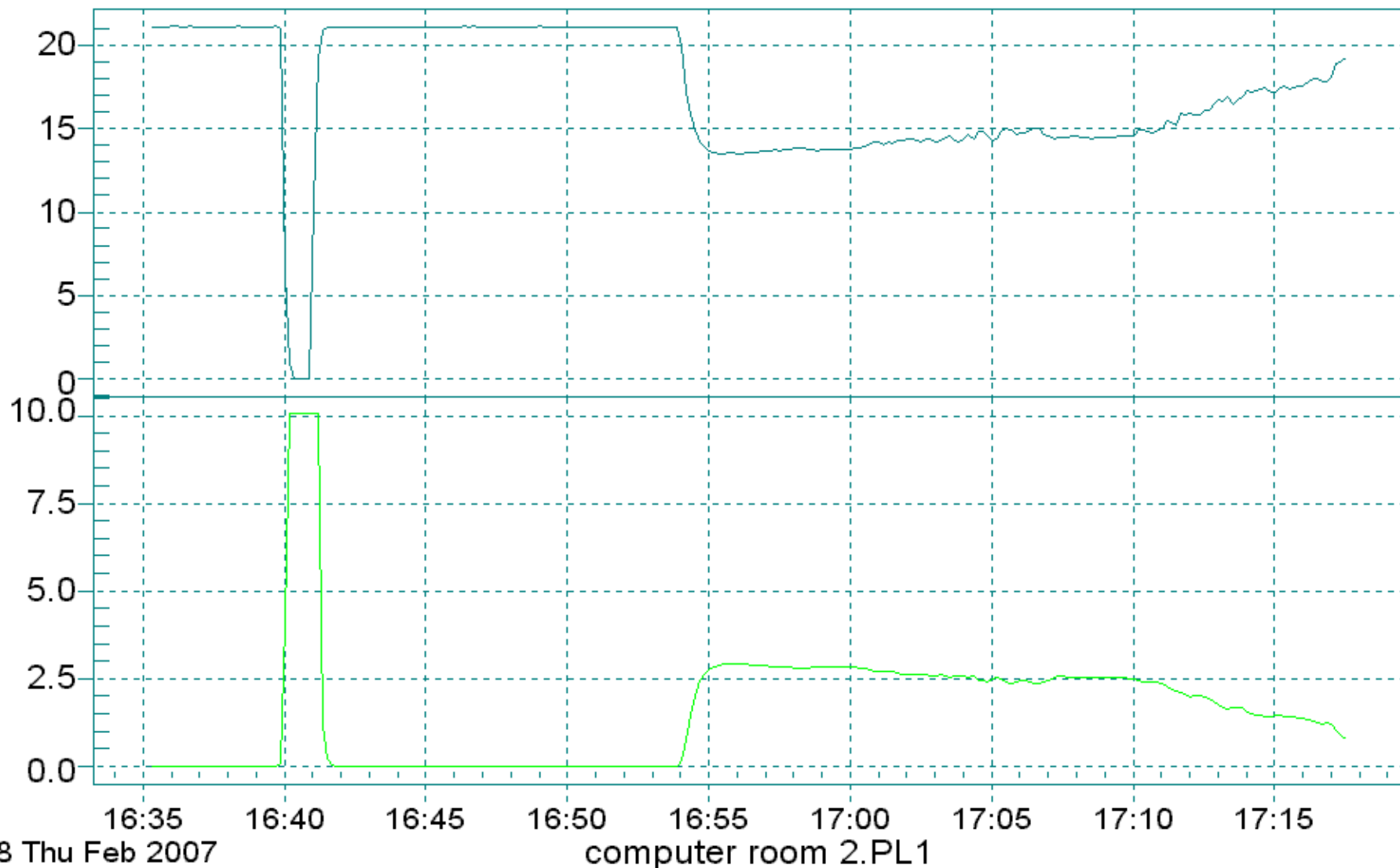


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Inergen Test Computer

■
% O₂

■
% CO₂




8 Thu Feb 2007

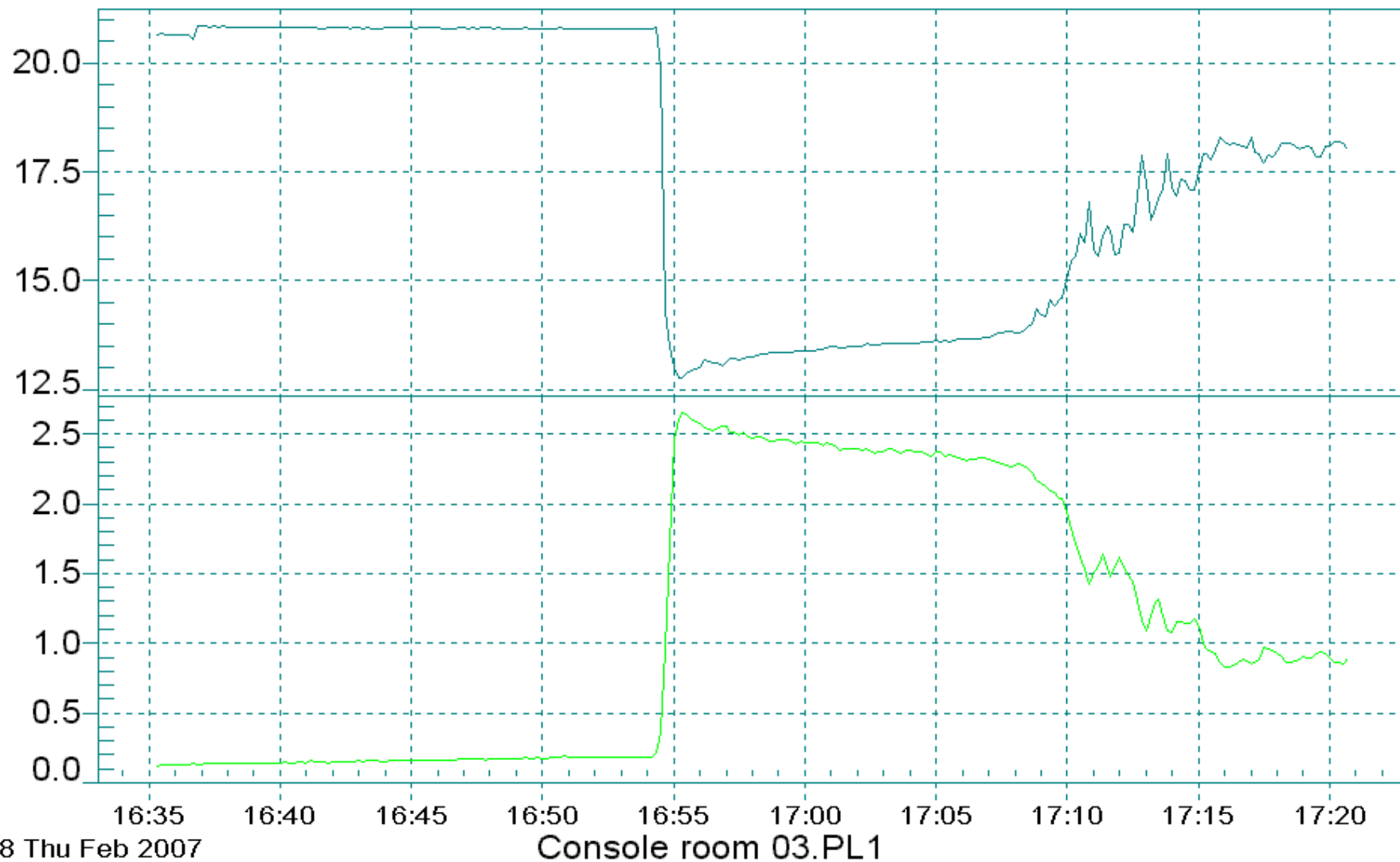
computer room 2.PL1

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INERGEN Test Console

 % O₂

 % CO₂



8 Thu Feb 2007

Console room 03.PL1

Test 3 Results

- Console room – 13.8% for 13.3 minutes
- Computer room 5 minutes at 13.8% and 9 min at 14.5%
- Close to meeting new NFPA 2001 criteria of 85% of conc. at height



Final Discharge Test

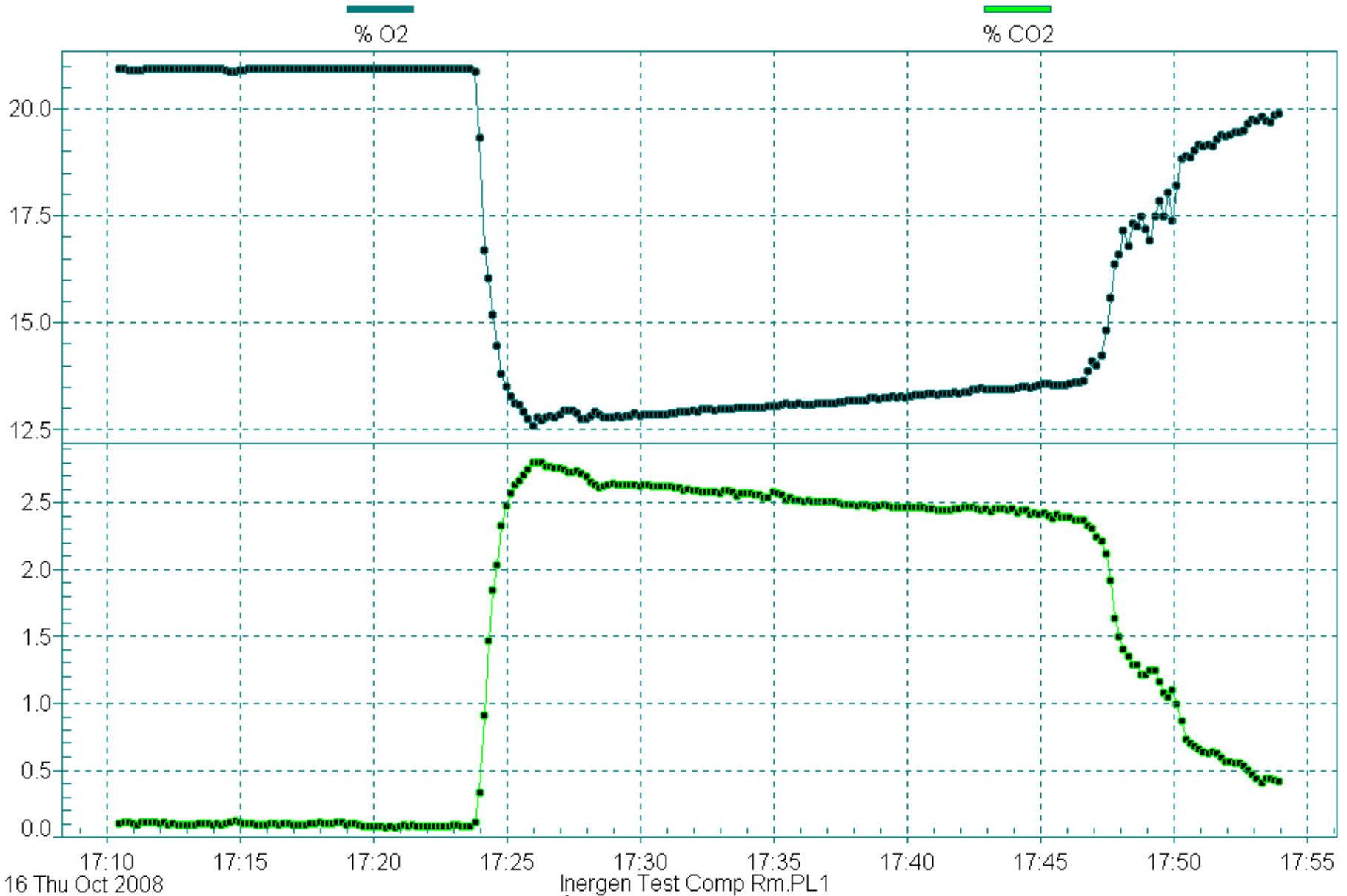
Oct 16, 2008

- 14 cylinders
- New nozzles (smaller)
- Addtl roof vent in console room



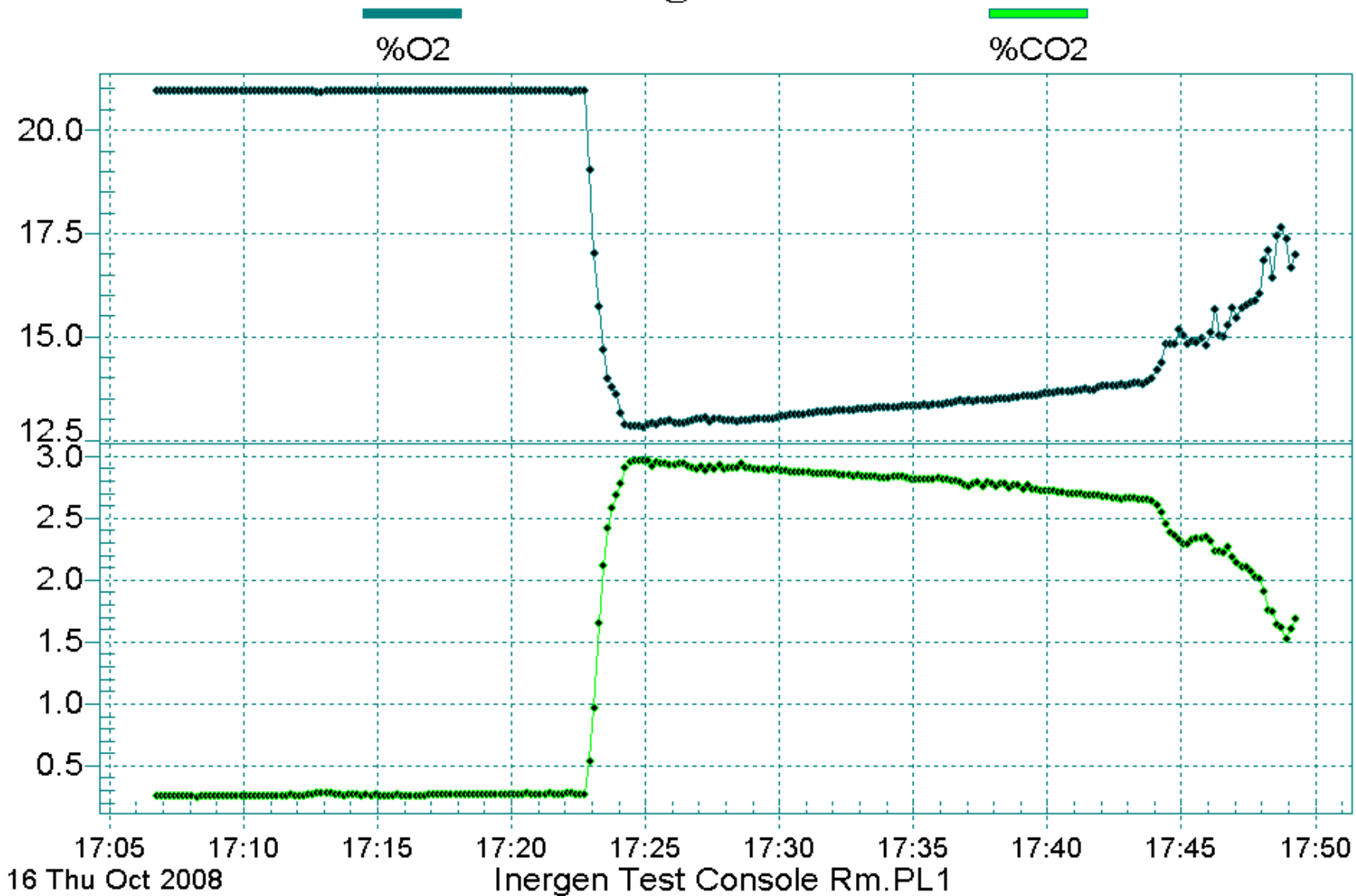
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INERGEN Test Console



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Inergen Test



4th Discharge Test Results

- Passed
- Console room held 13.8% for 18.5 min.
- Computer room held for 22 min.
- Door fan test predicted 15.8 min at 8.3 ft
- 67 sec discharge for 90% conc.



Lessons Learned

- Verify Venting
- Determine effective venting w/ducts
- Provide 1 vent/room if possible
- Avoid one-nozzle rooms
- Plan ahead – Nova meters long lead item

