AMS/ACSM Tips, Tricks & FAQ’s

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AMS User’s Meeting
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On AMS systems 10+ years old, we’ve seen this fan fail, leading to the pumps shutting down when the inlet is opened.
ePTof Issues

• Wild frequency fluctuations displayed on the blue ePTof box?

• DAQ Crashing when trying to acquire ePTof data?

  • Maybe can be fixed with an ePTof electronics calibration.

  • Maybe not...
Pfeiffer Pump Oil

- Oil leaked from lubricant reservoir
- Replace oil reservoir
  - p/n: PM 143 740 –T
- Tool for replacement
  - p/n: PV M40 813
- Pfeiffer recommends replacing reservoir every 4 years
ePToF Issues
Filament Failures

- New Filament
- Normal Wear and Tear Failure
- Likely TPS Low Voltage Supply (LVS) Failure
Filament Installation
Install filaments such that they are as parallel as possible to the ion cage.
Be EXTRA careful when installing that nothing is shorting.
The ceramic washer is critical, as it isolates the filament from ground.
Critical ceramic washers
This side down!
Tuning Tip:

• Tune *both* Filaments *before* leaving for the field.
  • This can save time and possibly prevent one from having to vent while in the field. Also, sometimes a filament does not tune as well as one would like, so one may get a better tune with the second filament.
Error code on DAQ corresponding to high temperature in the Prisma

-> Fan broken (replaced to cool down)

-> error status OK!
Check total filter (if clogged -> replacement) and/or how switching valve rotates.
AMS Maintenance

• Always monitor pump performance
• Always monitor MD1 pressure (load/no load)
• Clean vacuum chamber surface
• Check for loose/missing connections/fasteners
• Clean cooling fan filters
• Check for stressed cables
• Dirt inside computer
• “Dirt” on computer HD (clean up and defrag)
## Agilent Pumps

What are the operating currents for all pumps?

<table>
<thead>
<tr>
<th></th>
<th>Gas Load Off (mA)</th>
<th>Gas Load On (mA)</th>
<th>Delta T* (Degrees C) Closed/Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2</td>
<td>~ 450</td>
<td>~ 850</td>
<td>9/13.3</td>
</tr>
<tr>
<td>P3</td>
<td>~ 250</td>
<td>~ 300</td>
<td>9/9.3</td>
</tr>
<tr>
<td>P4</td>
<td>~ 200</td>
<td>~ 250</td>
<td>6/5.9</td>
</tr>
<tr>
<td>P5</td>
<td>&lt; 200</td>
<td>&lt; 200</td>
<td>6.2/6.5</td>
</tr>
<tr>
<td>P6</td>
<td>~ 200</td>
<td>~ 200</td>
<td>9.6/9.6</td>
</tr>
</tbody>
</table>

*Delta T = Pump Temp – Ambient Temp
What are the operating currents for all pumps?

<table>
<thead>
<tr>
<th></th>
<th>Gas Load Off (W)</th>
<th>Gas Load On (W)</th>
<th>Delta T* (Degrees C) (Closed/Open)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>~ 25</td>
<td>~ 70</td>
<td>9/13.3</td>
</tr>
<tr>
<td>P2</td>
<td>~ 3</td>
<td>~ 3</td>
<td>9/9.3</td>
</tr>
<tr>
<td>P3</td>
<td>~ 2</td>
<td>~ 2</td>
<td>6/5.9</td>
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AMS Pressure Measurements

What is the backing pump pressure?
What is the lens pressure?
Corrosion
Corrosion

Rust
Salt corrosion
Inspect Shipping Container

Fork Lift Damage

Don’t leave instrument in the shipping container
Maintenance Issues, cont’d

Missing fasters
Maintenance Issues, cont’d

Aluminum dust

Missing fastener, chaffing metal
Maintenance Issues, cont’d

Dirty fan filter

Stressed cables
Dust and Electronics are mortal enemies!
Lesson: This really shows how hard your instrument could be jerked around in transport. Be careful when selecting transport. This crate was knocked over in transport.
“Crashed” Turbos

Exchange pumps are less expensive than new, but require sending back the failed pump.

Sending back a “crashed” pump, Agilent will impose their “Crash Fee.”
Thank you!

Any Questions?