Why Upgrade My HP/Agilent 5890/6890 GC to an Agilent 7890B GC?
Today’s Challenges
Economic Backdrop: Tension and Uncertainty

- Operating expenses increasing
- Capital Budgets decreasing
- Asset management and protection a priority

Operations

- Regulations, compliance and technology driving need for lower level detection
- Sample complexity increasing
- Many analytes are labile

Technology

- Expertise often sequestered at COE and not at local level
- Lean operation drives cross-training
- Higher staff turnover

Human Resources
## Advances

A more facilitated user experience

Powerfully Intuitive Software Solutions:

- New OpenLAB CDS
- MassHunter for MSD
- Integrated Intelligence
- Analyzer Solutions

## Cost-Reduction

Reduced operating expenses: gas use

Improved asset utilization & protection: maintenance feedback & improved GC:MSD communication

Increased productivity: fast MSD vent mode & Rapid consumables

Parts Finder tool

## Technical

Better analyze detection: improved performance specifications

Better protection of labile compounds: Agilent Inert Flow Path

Expanded lab capabilities: improved FPD, ECD as 3rd detector, dual MMI

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Innovations in Hardware, Software, Chemistries and Workflows
## More Efficient Operation

**Utilize Resources More Efficiently**

<table>
<thead>
<tr>
<th>Integrated Intelligence</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated GC calculators</td>
<td>Develop methods easier</td>
</tr>
<tr>
<td>Barcode Scanning with Auto-Input</td>
<td>Easier configuration</td>
</tr>
<tr>
<td>Integrated early-maintenance feedback</td>
<td>Manage assets more efficiently</td>
</tr>
<tr>
<td>GC:MSD communication including MSD fast vent</td>
<td>Protect system better</td>
</tr>
<tr>
<td>3D Interactive Consumable and Parts Finder</td>
<td>Find parts faster &amp; order easier</td>
</tr>
<tr>
<td>Easier sleep-wake functionality, with MSD</td>
<td>Lower cost of ownership</td>
</tr>
<tr>
<td>Interactive Graphical Backflush Wizard</td>
<td>Faster Easier Backflush</td>
</tr>
</tbody>
</table>

**Execution**
## Resolve Data Analysis Bottleneck

### OpenLAB CDS: A More Efficient Software Solution

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td>40x faster than ChemStation; 10x EZChrom</td>
</tr>
<tr>
<td><strong>Data Analysis</strong></td>
<td>Next-Generation integration and visualization tools</td>
</tr>
<tr>
<td><strong>Reporting</strong></td>
<td>Intelligent reporting with GC-specific calculations</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>Scalable: Workstation → Work Groups → Enterprise</td>
</tr>
<tr>
<td><strong>Workflows</strong></td>
<td>Streamlined modern UI with state-of-art technology</td>
</tr>
<tr>
<td><strong>Paced Adoption</strong></td>
<td>Customers can upgrade at their own pace</td>
</tr>
<tr>
<td><strong>Smooth Migration</strong></td>
<td>Method Migration, Data preservation: Business Continuity</td>
</tr>
</tbody>
</table>
Reducing Operating Expenses
Reducing Dependence on He

Manage He Use Optimally

- Set time to sleep
- Set time to wake
- Choose to condition GC before first run
- Use only the gas you need

Sleep-Wake Function

Can save as much as 15% in gas usage – up to $4,000 per year per instrument for many labs

Economic
Reducing Operating Expenses
Reducing Dependence on He

Manage He Use Optimally

- Use He only when needed
- Extend He tank usage
- Reduce operating costs
- Reduce gas supply uncertainty

He Conservation Module

Switching to N2 gas overnight and on weekend downtime can save up to 180 days of He per GC instrument
Improved Asset Utilization
Avoid Unplanned Downtime

Optimize your maintenance plan

- You determine your maintenance schedule, not your instrument
- Use only the consumables you need, when you need them
- A maintenance SOP built into your GC

**Early Maintenance Feedback**

When production or shipment decisions are on the line, unplanned downtime can cost $1000’s

Economic
Improve Asset Utilization
Leverage and Protect Your Investment Better

5977A → 7890B

During MSD vent…
→ Increases GC carrier gas flows,
  Cools MSD faster
→ 40% Faster Vent Times
  (280°C → 100°C)

In event of MSD Failure…
→ Stops GC Flows
  → Don’t waste expensive He
  → Don’t build-up H₂

5977A ← 7890B

GC monitors GC/MSD connection.

If communication lost…
→ GC shuts down various (GC) thermal zones

Integrated GC-MSD Communication

Faster Maintenance, better asset protection, safer H₂ use

Economic
Increase Productivity
Identify and Order parts faster and easier

• See only parts relevant to your configuration

• Quickly locate the part number and add to the parts list or favorites

• Print or save parts list

• Link to the Agilent.com store

• Update parts and part numbers via the Agilent website for download.

Economic
Increase Productivity
Faster and easier method development

Bar Code Scanning Option
AutoInput column, liner and septum information into method. Integrated with Parts Finder for seamless consumables management.

Economic
### Improved Performance

Deliver better results

<table>
<thead>
<tr>
<th>Detector</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSD</td>
<td>Scan 1500:1 S/N; SIM 10 fg IDL</td>
</tr>
<tr>
<td>FID</td>
<td>&lt;1.4 pg C/sec</td>
</tr>
<tr>
<td>ECD</td>
<td>&lt;4.4 fg/sec</td>
</tr>
<tr>
<td>FPD</td>
<td>&lt;2.5 pg S/sec; &lt;45 fg P/sec</td>
</tr>
<tr>
<td>SCD</td>
<td>&lt;0.5 pg S/sec</td>
</tr>
<tr>
<td>NPD</td>
<td>&lt;0.01 pg P/sec, 0.08 pg N/sec (Blos bead)</td>
</tr>
<tr>
<td>TCD</td>
<td>400 pg/mL</td>
</tr>
</tbody>
</table>
Protection from Injection to Detection
Agilent UltraInert and UltiMetal-Plus Technologies

Core Competency

Proprietary Deactivation Chemistry for Glass, Steel, Gold, Fused Silica, Glass Wool
Improved Performance
Deliver better results

UltilMetal – TCD, FPD, NPD/FID Jets
UltilMetal Inlet Weldment, Shell and Transfer Lines
UltilMetal Inlet Liner
UltilMetal Capillary Flow Technology Devices, Ultimate Union
Ultra Inert Gold Seal
New UltilMetal FlexiMetal Ferrules
Ultra Inert GC Column

...now from a single supplier
Agilent Inert Flowpath SSL Inlet Option
Proprietary UltiMetal-Plus Treatment

Enhanced performance for trace GCMS and GC-ECD analysis of pesticides and drugs of abuse

Protects labile analytes contacting injector metal structure during high volume injections

Available as 7890B Inert Flowpath option #114 or upgrade G3453B for 7890A/B
Expanded Laboratory Capability
Increasing Asset Flexibility

FPD Plus

Advanced components
UltiMetal Deactivation
Design Improvements for enhanced performance

Max Temp
- 250°C
- 400°C

MDL pg/s
- S: 3.6
- P: 60

Higher Tmax
Higher Response
Lower Noise

7890A FPD
7890B FPD Plus

Agilent Technologies
Expanded Laboratory Capability

Increasing Asset Flexibility

FPD Plus

Advanced components
UltiMetal Deactivation
Design Improvements for enhanced performance

Technical

Dibenzothiophenes in Light Crude

ASTM Method requires operating temperature above 300°C

4, 6-DMDBT
2,3 DMDBT
C3-DBT’s
Expanded Laboratory Capability
Increasing Asset Flexibility

FPD Plus
- Advanced components
- UltiMetal Deactivation
- Design Improvements for enhanced performance

ECD 3rd Detector
- Allows Cl-containing pesticides in environmental and food samples to be detected along with an FPD and FID installed

Dual MMI
- A split/splitless injector with PTV capabilities when needed

Technical
Introducing the 7890B Gas Chromatograph
Re-defining Gas Chromatography

Improved Performance Specifications
Best-in-class package of performance specifications

New & Expanded Accessories & Options
Improved FPD-Plus detector
ECD as 3rd detector option
New Inert Flowpath option
Dual MMI inlets

Integrated Intelligence Functions
GC-MSD communication
Sleep-wake function
Method development calculators
3D Interactive Graphical Parts Finder
Early Maintenance Feedback
Barcode Scanning with Auto-Input
## Similarities: 6890N vs. 7890B

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage/Benefit</th>
</tr>
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<tbody>
<tr>
<td>Inlets</td>
<td>Same as 6890N plus new MMI</td>
</tr>
<tr>
<td>Detectors</td>
<td>Same, now FPD + (Plus), SCD, NCD, NPD Blos beads, improved sensitivity and detection limits on most detectors; additional detectors available through CP for additional flexibility of analysis</td>
</tr>
<tr>
<td>Same RT/Area performance</td>
<td>Methods compatible, methods transfer 6890 → 7890</td>
</tr>
<tr>
<td>Same column &amp; supplies</td>
<td>Low cost of ownership</td>
</tr>
<tr>
<td>Similar look &amp; feel (keypad)</td>
<td>Low cost of training</td>
</tr>
<tr>
<td>Trouble-free Operation</td>
<td>Same Reliability, low-cost maintenance, ease of use</td>
</tr>
</tbody>
</table>
Looking Forward
Continuous Improvement on the Horizon

7696A Sample Prep Workbench
Serial Dilution SW
LC Rack
Weigh Station

6-Valve External Valve Oven
Combined NGA/RGA Valve oven temperature independence

Analyzer Solutions
Std Pre-configured analyzers
Minimize Method Development

Agilent Technologies
7890B Solution Portfolio
Driving Business Value and Success

- Proven 7890 Reliability
- OpenLAB and MassHunter SW
- Integrated Intelligence
- Improved Performance
- Greater Operating Efficiency
- Expanded Accessories and Options