SINGLE SOURCE SYSTEM SUPPLY

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

GLOBAL SUPPORT FACILITIES

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

GLOBAL SUPPORT FACILITIES

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

GLOBAL SUPPORT FACILITIES

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

GLOBAL SUPPORT FACILITIES

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

GLOBAL SUPPORT FACILITIES

UNIVERSAL AET is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.
A turbine generator is a substantial capital investment. However, there is a precious balance between air filtration, noise reduction, emissions treatment and turbine efficiency. With Universal, a qualified and experienced team of engineers and system experts are available to optimally balance your air filtration, acoustic treatment and turbine efficiency requirements.

The list of components we design, manufacture and install are:

- Site Survey
- Design Improvements
- Demolition
- Ductwork
- Stacks
- Air Filter Housings
- Enclosures
- Steel Support Structures
- Plenums
- Transitions
- Commissioning
- Project Management

In December 2011, Universal Acoustic & Emission Technologies began replacing complete exhaust systems for two Westinghouse 501DS gas turbines (103.7 MW each) for the Puget Sound Energy-Fredonia station in Mount Vernon, Washington. The scope included expansion joints, transitions, silencers, stacks, appearance siding, new ladders and platforms, as well as demolition and installation for each system. Universal offered a system design that enhanced the acoustic design while improving the system longevity and maintaining system pressure loss performance.

A compressed project timeline required fabrication and installation of the equipment by July 1, 2012, so Puget Sound Energy could be generating revenue. The turbines could not be taken out of service until early May, requiring a highly coordinated effort of equipment production, logistics, demolition and installation.

RECOMMENDATION

"Randy’s team at Universal won the bid to build our WD 501DS exhaust systems. Randy was the project manager. It was a pleasure to work with him. He was extremely responsive (via email, site visits, conference calls), and very accountable. His commitment to getting the job done right, safely, on time and on schedule, made this multimillion-dollar project proceed seamlessly. Thanks, Randy!"

Service Category: Project Manager
Year first hired: 2011
Top Qualities: Great Results, Personable, On Time

– Deepa Narayanan, PE
A turbine generator is a substantial capital investment. However, there is a precious balance between air filtration, noise reduction, emissions treatment and turbine efficiency. With Universal, a qualified and experienced team of engineers and system experts are available to optimally balance your air filtration, acoustic treatment and turbine efficiency requirements.

The list of components we design, manufacture and install are:

<table>
<thead>
<tr>
<th>INLET SYSTEMS</th>
<th>EXHAUST SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Silencers</td>
<td>Exhaust Silencers</td>
</tr>
<tr>
<td>Pulse Filtration Systems</td>
<td>Diverter Dampers</td>
</tr>
<tr>
<td>Barrier Filtration Systems</td>
<td>Structural/Support Steel</td>
</tr>
<tr>
<td>Anti-Icing Systems</td>
<td>Emissions Packages</td>
</tr>
<tr>
<td>Inlet Cooling Systems</td>
<td>Bypass and HRSG Stacks</td>
</tr>
<tr>
<td>Fogging Systems</td>
<td>Platforms/Ladders</td>
</tr>
<tr>
<td>Ductwork</td>
<td>Plenums</td>
</tr>
<tr>
<td>Transitions</td>
<td>Expansion Joints</td>
</tr>
<tr>
<td>Ductwork</td>
<td>Oxidation Catalyst</td>
</tr>
</tbody>
</table>

Do you have a turbine system that needs updating or replacement? Universal is your single source for inlet and exhaust reconditioning. From site survey to commissioning, we have the experience and expertise to make this logistical nightmare easy for you.

**ONE SINGLE POINT OF CONTACT PROVIDES YOU:**
- Site Survey
- Design Improvements
- Demolition
- Ductwork
- Stacks
- Air Filter Housings
- Enclosures
- Steel Support Structures
- Plenums
- Transitions
- Commissioning
- Project Management

**PROJECT CASE STUDY**

In December 2011, Universal Acoustic & Emission Technologies began replacing complete exhaust systems for two Westinghouse 501DS gas turbines (103.7 MW each) for the Puget Sound Energy-Fredonia station in Mount Vernon, Washington. The scope included expansion joints, transitions, silencers, stacks, appearance siding, new ladders and platforms, as well as demolition and installation for each system. Universal offered a system design that enhanced the acoustic design while improving the system longevity and maintaining system pressure loss performance.

A compressed project timeline required fabrication and installation of the equipment by July 1, 2012, so Puget Sound Energy could be generating revenue. The turbines could not be taken out of service until early May, requiring a highly coordinated effort of equipment production, logistics, demolition and installation.

**RECOMMENDATION**

"Randy’s team at Universal won the bid to build our WD 501DS exhaust systems. Randy was the project manager. It was a pleasure to work with him. He was extremely responsive (via email, site visits, conference calls), and very accountable. His commitment to getting the job done right, safely, on time and on schedule, made this multimillion-dollar project proceed seamlessly. Thanks, Randy!"

Service Category: Project Manager
Year first hired: 2011
Top Qualities: Great Results, Personable, On Time
– Deepa Narayanan, PE
**SINGLE SOURCE SYSTEM SUPPLY**

**UNIVERSAL AET** is a global leader in acoustic, emission and filtration technology. Since 1959, Original Equipment Manufacturers, packagers, and end-users in the power generation, oil and gas, marine, locomotive, industrial process and wastewater markets have relied on Universal. Universal has expertise in air movement applications, diesel engines and gas turbine engine systems. In addition to an expansive portfolio of standard products, Universal is also recognized around the globe for its customized systems for noise control, emission and air filtration technologies.

Single source system supply from Universal means valuable advantages for any project, including system optimization, incorporation of latest technologies and consolidation of multiple vendors. For our customers this leads to reduced risks and complexity, shorter lead times, and lower costs. Universal takes total system responsibility for all aspects of a project, including acoustics, emissions, back pressure, temperature, structural integrity and system fit-up.

With over 500 years of combined engineering and design experience, Universal is the best choice to handle any noise control, emission or filtration challenge—from the most basic to the most complex.

**GLOBAL SUPPORT FACILITIES**

**UNITED STATES**
CORPORATE HEADQUARTERS
1925 Highway 51/138
P.O. Box 411
Stoughton, WI 53589 USA
Phone +1 (608) 873-4272
US@universalAET.com

**EUROPE**
Barleyfield
Hinckley
Leicestershire
LE10 1YE
Phone +44 (0)1455 894488
Europe@universalAET.com

**ASIA PACIFIC**
71 Bukit Batok Crescent #05-07
Prestige Centre
Singapore 658071
Singapore
Phone +65-6665 6731
AsiaPacific@universalAET.com

**INDIA**
Survey No. 270/1/16
Baner, Pune 411045
India
Phone +91 020 32319914
India@universalAET.com

**GAS TURBINE INLET AND EXHAUST SYSTEMS**

Providing clean air quietly to the world.