



## Vibration Analyst, Reliability, Machine Monitoring and Diagnosis courses schedule for 2021

### Vibration Analyst Schedule for 2021 – Public courses in Nærum & Darmstadt

| Training Course  | Dates 2021 in Nærum<br><i>(English only)</i>                  | Dates 2021 in Darmstadt<br><i>(English only)</i>               |
|--|---|--|
| <b>Category I</b> - Training & Certification<br><b>Basic</b> Vibration Analyst         | Week 12<br><b>March 23<sup>rd</sup> to 26<sup>th</sup></b>    | Week 10<br><b>March 9<sup>th</sup> to 12<sup>th</sup></b>      |
| <b>Category II</b> - Training & Certification<br><b>Intermediate</b> Vibration Analyst | Week 16<br><b>April 19<sup>th</sup> to 23<sup>rd</sup></b>    | Week 18<br><b>May 3<sup>rd</sup> to 7<sup>th</sup></b>         |
| <b>Category III</b> - Training & Certification<br><b>Advanced</b> Vibration Analyst    | Week 36<br><b>September 6<sup>th</sup> to 10<sup>th</sup></b> | Week 38<br><b>September 20<sup>th</sup> to 24<sup>th</sup></b> |
| <b>Category IV</b> - Training & Certification<br><b>Master</b> Vibration Analyst       | n/a   | Week 46<br><b>November 15<sup>th</sup> to 19<sup>th</sup></b>  |

### ARP Schedule for 2021 – Public courses in Nærum & Darmstadt

| Training Course   | Dates 2021 in Nærum<br><i>(English only)</i>               | Dates 2021 in Darmstadt<br><i>(English only)</i>             |
|---|--|--|
| <b>ARP-A, Advocate</b> - Training & Certification<br><b>Category I: Track A</b>     | Week 25<br><b>June 21<sup>st</sup> to 23<sup>rd</sup></b>  | Week 23<br><b>June 7<sup>th</sup> to 9<sup>th</sup></b>      |
| <b>ARP-A, Advocate</b> - Training & Certification<br><b>Category I: Track B</b>     | Week 25<br><b>June 23<sup>rd</sup> to 25<sup>th</sup></b>  | Week 23<br><b>June 9<sup>th</sup> to 11<sup>th</sup></b>     |
| <b>ARP-E, Reliability Engineer</b> - Training & Certification<br><b>Category II</b> | Week 40<br><b>October 4<sup>th</sup> to 8<sup>th</sup></b> | Week 42<br><b>October 18<sup>th</sup> to 22<sup>nd</sup></b> |



## Machinery Monitoring and Diagnosis courses Schedule for 2021 – USA Public courses

| Training Course  | Description  | Dates 2021 in Gardnerville<br><i>(English only)</i>           |   |
|--|--|---|---|
| <b>MD1 - Basic Protection and Condition Monitoring Training</b>                | <ul style="list-style-type: none"> <li>◆ Why use of vibration measurements, techniques and tools, off-line &amp; on-line monitoring systems.</li> <li>◆ Fundamentals of machine behavior. Best practice for taking measurements.</li> <li>◆ Covering Auxiliary machines, Balance of Plant (Rolling Element Bearing).</li> </ul>  | Week 23<br><b>June 10<sup>th</sup></b>                        |   |
|  |  | Week 36<br><b>September 9<sup>th</sup></b>                    |   |
| <b>MD2 - Turbomachinery Diagnosis &amp; Rotordynamics Training</b>             | <ul style="list-style-type: none"> <li>◆ Rotor diagnostics by vibration analysis, definitions and theory.</li> <li>◆ Fluid-film bearings and turbomachinery analysis techniques, fundamental rotor response, stiffness, instabilities.</li> <li>◆ Interpretation of waveform, phase, orbit, polar &amp; bode, vector, shaft centerline and full &amp; half spectrum plots. Root cause analysis, recommendations exercise.</li> </ul> | Week 24<br><b>June 14<sup>th</sup> – 16<sup>th</sup></b>      |   |
|  |  | Week 37<br><b>September 13<sup>th</sup> – 15<sup>th</sup></b> |   |
| <b>MD3 - Balancing Rotors in-situ Training</b><br><i>(2 options available)</i> | <b>Rigid rotor balancing</b>   | Week 24<br><b>June 17<sup>th</sup></b>                        | Week 37<br><b>September 16<sup>th</sup></b> |
|  | <b>Flexible rotor balancing</b>  | Week 24<br><b>June 18<sup>th</sup></b>                        | Week 37<br><b>September 17<sup>th</sup></b> |
| <b>MD4 - Hands-on Diagnostic Seminar Training</b>                              | <ul style="list-style-type: none"> <li>◆ How to correctly diagnose machinery fault conditions, including turbomachinery, suggest the right recommendations and practices.</li> <li>◆ Bearing types (journal and antifriction) and related faults. Interpretation of data plots and root cause failure analysis investigations, many case study and exercise.</li> </ul>  | Week 25<br><b>June 22<sup>nd</sup> – 24<sup>th</sup></b>      |   |



## Machinery Monitoring and Diagnosis courses Schedule for 2021 – EU Public courses

| Training Course  | Description  | Dates 2021 in Darmstadt<br><i>(English only)</i>                     |   |
|--|--|--|---|
| <b>MD1 - Basic Protection and Condition Monitoring Training</b>                | <ul style="list-style-type: none"> <li>◆ Why use of vibration measurements, techniques and tools, off-line &amp; on-line monitoring systems.</li> <li>◆ Fundamentals of machine behavior. Best practice for taking measurements.</li> <li>◆ Covering Auxiliary machines, Balance of Plant (Rolling Element Bearing).</li> </ul>  | Week 7<br><b>February 16<sup>th</sup></b>                            |   |
| <b>MD2 - Turbomachinery Diagnosis &amp; Rotordynamics Training</b>             | <ul style="list-style-type: none"> <li>◆ Rotor diagnostics by vibration analysis, definitions and theory.</li> <li>◆ Fluid-film bearings and turbomachinery analysis techniques, fundamental rotor response, stiffness, instabilities.</li> <li>◆ Interpretation of waveform, phase, orbit, polar &amp; bode, vector, shaft centerline and full &amp; half spectrum plots. Root cause analysis, recommendations exercise.</li> </ul> | Week 44<br><b>November 1<sup>st</sup> – 3<sup>rd</sup></b>           |   |
| <b>MD3 - Balancing Rotors in-situ Training</b><br><i>(2 options available)</i> | <b>Rigid rotor balancing</b> <ul style="list-style-type: none"> <li>◆ Balancing using 1 or 2 planes, 4 run no phase and overhung balancing methods. Types of unbalance, vector review.</li> </ul>  | Week 7<br><b>February 17<sup>th</sup></b>                            | Week 44<br><b>November 4<sup>th</sup></b> |
|  | <b>Flexible rotor balancing</b> <ul style="list-style-type: none"> <li>◆ Vector review, balance response and recognizing resonance. Mode shape, rotor non-linearity, thermal vector, field consideration, with balancing workshop.</li> </ul>  | Week 7<br><b>February 18<sup>th</sup></b>                            | Week 44<br><b>November 5<sup>th</sup></b> |
| <b>MD4 - Hands-on Diagnostic Seminar Training</b>                              | <ul style="list-style-type: none"> <li>◆ How to correctly diagnose machinery fault conditions, including turbomachinery, suggest the right recommendations and practices.</li> <li>◆ Bearing types (journal and antifriction) and related faults. Interpretation of data plots and root cause failure analysis investigations, many case study and exercise.</li> </ul>  | Week 48<br><b>November 30<sup>th</sup> – December 2<sup>nd</sup></b> |   |