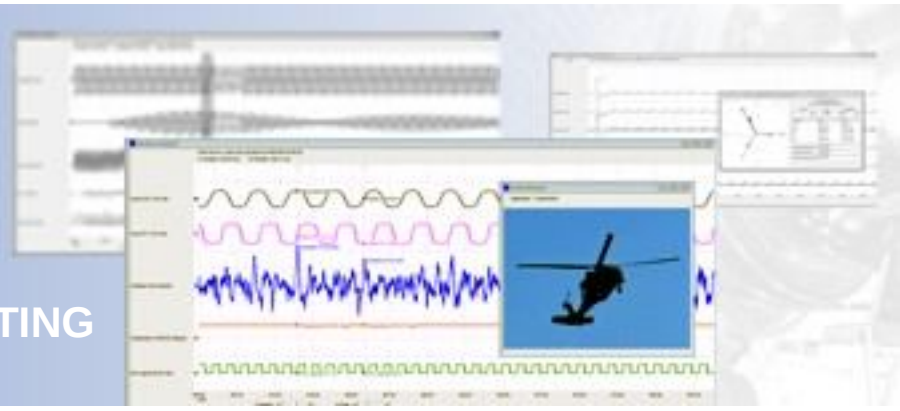
DIGITLINE



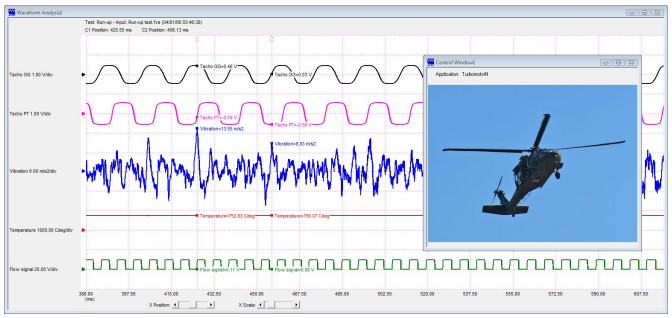
# TURBO ENGINE TESTING

The DSA 500 analyzer is being used for the acquisition and analysis of a turbo engine's main parameters.

Specific to the testing of turbo engines is the presence of two independent-speed rotors in their construction, GG and PT.

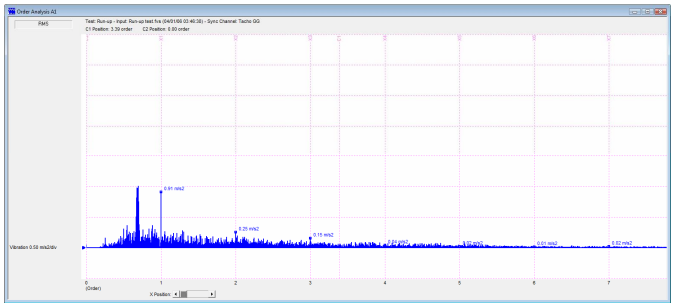
Monitored signals:

- Tachogenerator signals (their frequency is proportional to that of the rotor's speed)
- Engine casing vibrations
- Input gas temperature in power turbine
- Signal of the turbine-type flow transducer



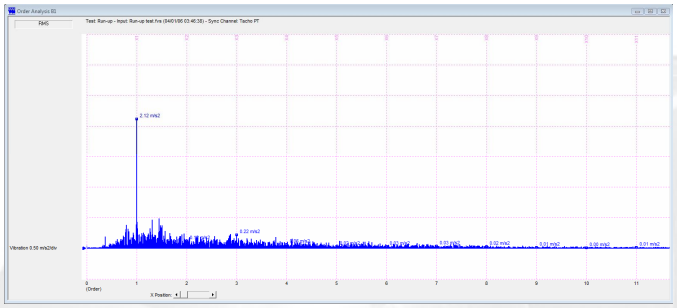
*Signal waveforms*

From the joint vibrations signal, the *Order Analysis A* function extracts the harmonics family specific to the GG rotor.



*Order Analysis A function*

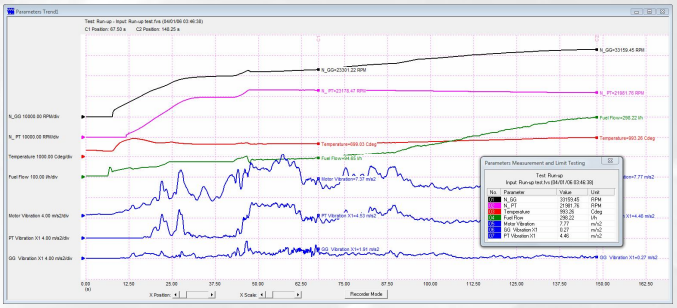
From the joint vibrations signal, the Order Analysis B function extracts the harmonics family specific to the PT rotor.



*Order Analysis B function*

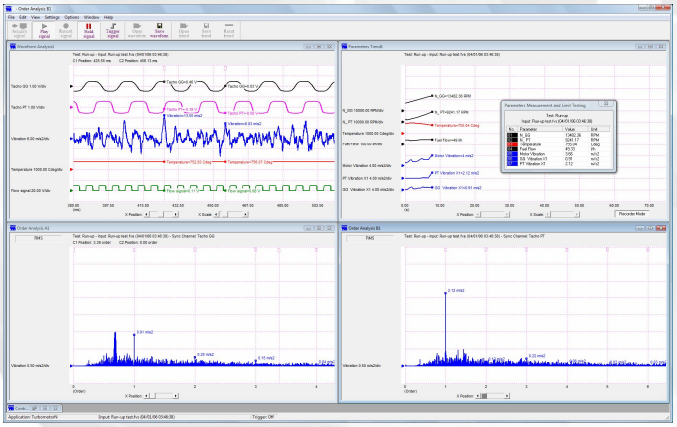
The fundamental components of the two families are being tracked simultaneously with the other measured parameters, and graphically displayed by time.

The recordings are available for the generation of the Bode diagrams and comparison to the limit or reference diagrams.



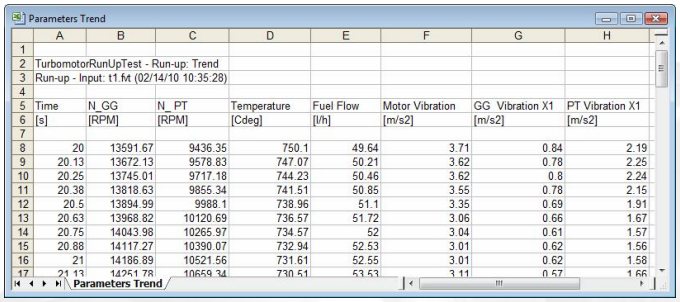
*Current values and parameters trend*

The analysis windows can be individually or simultaneously monitored, function of the test specificity and necessary information.



*Simultaneous visualization of the analysis windows*

Data can be saved in an instant-access proprietary format or an Excel-compatible format for various calculations or presentations.



Parameters Trend

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | TurbomotorRunUpTest - Run-up: Trend | | | | | | | |
| 3 | Run-up - Input: t1.fxt (02/14/10 10:35:28) | | | | | | | |
| 4 | | | | | | | | |
| 5 | Time | N_GG | N_ PT | Temperature | Fuel Flow | Motor Vibration | GG Vibration X1 | PT Vibration X1 |
| 6 | [s] | [RPM] | [RPM] | [Cdeg] | [l/h] | [m/s2] | [m/s2] | [m/s2] |
| 7 | | | | | | | | |
| 8 | 20 | 13591.67 | 9436.35 | 750.1 | 49.64 | 3.71 | 0.84 | 2.19 |
| 9 | 20.13 | 13672.13 | 9578.83 | 747.07 | 50.21 | 3.62 | 0.78 | 2.25 |
| 10 | 20.25 | 13745.01 | 9717.18 | 744.23 | 50.46 | 3.62 | 0.8 | 2.24 |
| 11 | 20.38 | 13818.63 | 9855.34 | 741.51 | 50.85 | 3.55 | 0.78 | 2.15 |
| 12 | 20.5 | 13894.99 | 9988.1 | 738.96 | 51.1 | 3.35 | 0.69 | 1.91 |
| 13 | 20.63 | 13968.82 | 10120.69 | 736.57 | 51.72 | 3.06 | 0.66 | 1.67 |
| 14 | 20.75 | 14043.98 | 10265.97 | 734.57 | 52 | 3.04 | 0.61 | 1.57 |
| 15 | 20.88 | 14117.27 | 10390.07 | 732.94 | 52.53 | 3.01 | 0.62 | 1.56 |
| 16 | 21 | 14186.89 | 10521.56 | 731.61 | 52.55 | 3.01 | 0.62 | 1.58 |
| 17 | 21.13 | 14251.78 | 10659.34 | 730.51 | 53.53 | 3.11 | 0.57 | 1.66 |

Parameters Trend

*Test results in an Excel table*

**DIGITLINE Automatizari SRL**

2-6 Baneasa Street
Bucharest, Romania
Email office@digitline.eu
Web www.digitline.eu