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## FROM MEASURED TO ADDED VALUE IN LESS TIME

Diamond Aircraft opts for software from Kistler  
to evaluate its flight test data



Thomas Tholl, who heads the flight test instrumentation team at Diamond Aircraft, relies on the jBEAM and MaDaM software solutions from Kistler in his daily work with measurement and test data.

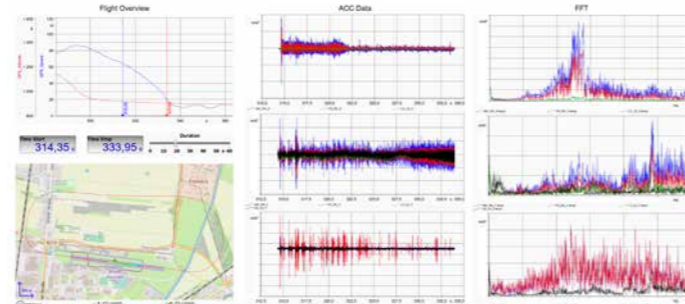
**Diamond Aircraft puts its trust in jBEAM from Kistler for the tests needed to develop its successful light aircraft. Disparate data can be evaluated rapidly thanks to this measurement data analysis and visualization software – and in combination with Kistler's MaDaM measurement data management software, jBEAM saves valuable time that can be devoted to research and development tasks.**

Austria is home to one of the leading manufacturers in the general aviation sector: Diamond Aircraft, founded back in 1981 as Hoffmann Flugzeugbau, adopted its present name in 1996. Diamond's safe and cost-efficient single- and twin-engine light aircraft are especially popular with flight schools across the globe, but they are also sold to clubs and private individuals. As well as aircraft for special missions such as camera and radar monitoring, the range includes state-of-the-art flight simulators that give aspiring pilots their first experiences of flying.

Diamond Aircraft was acquired by China's Wanfeng Aviation Industry in 2017. With over 1,200 employees, the company's presence comprises three aviation facilities in China, Canada and, of course, Austria. Diamond Aircraft's heart still beats in Wiener Neustadt, about 50 kilometers south of Vienna: around 800 employees work here at the company's headquarters, which has seen tremendous development ever since 1987 – and even includes its own on-site manufacturer of aircraft engines, Austro Engines. Thanks to new ideas such as the use of diesel engines and fiber composites as well as fully electronic cockpits like those in large aircraft, Diamond Aircraft has repeatedly set new standards and is now a full-service provider in the general aviation industry.

**Flight test data: fast and simple visualization and analysis**

"Developments are constantly moving ahead – and at present, of course, the main trend is towards sustainable flight," according to Thomas Tholl, who joined Diamond Aircraft in 2009 and now heads the flight test instrumentation team in the company's Flight Science department. He continues: "We're currently working on a new aerobatic turboprop trainer with tandem seat configuration in our DART project, which is tying up most of our testing capacity." For the upcoming development tasks, Tholl is relying on jBEAM and MaDaM – which he has been using since 2021. Kistler's software – jBEAM for measurement data analysis and visualization, and MaDaM for management and archiving – has proven extremely helpful in day-to-day work, and it saves precious time in the development process. "With jBEAM, we can import, synchronize and visualize the data from different measuring systems in the raw format. In the past, we had to process this data successively with a variety of different tools such



With Kistler's jBEAM measurement data analysis software, raw data in a variety of formats (including video and GPS) can be imported, synchronized, analyzed and assembled flexibly to create reports.

as MATLAB, Octave, Python, MathCAT and Excel. So I estimate that the time we need for each test flight is reduced by one hour," Tholl explains.

**Comprehensive import, analysis and visualization of measurement data**

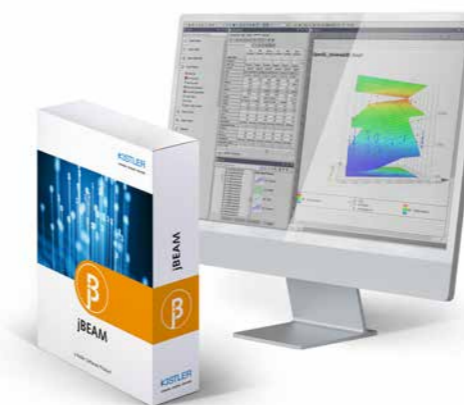
With jBEAM from Kistler, users can evaluate a huge variety of measurement and test data in virtually any way they choose.

**Key features:**

- Rapid import from over 100 file formats
- Wide-ranging visualization functions
- Synchronization of measurement data, including video and GPS
- Flexible reporting and report generation (multilingual)
- Varied extension options (CEA-Java, scripts, MATLAB, etc.)
- Direct customer support, including new features and much more

jBEAM is constantly being developed, and application-specific editions are also available: jBEAM Lab, jBEAM Durability, jBEAM Crash and jBEAM Powertrain.

Diamond Aircraft started with three licenses each for jBEAM and MaDaM. These were recently expanded with two jBEAM single-user licenses for the two power users. A gradual adjustment to the increasing demand is still planned. "jBEAM is very fast – and because it is simple to operate, other colleagues can also use it for tasks such as certification and calibration," Tholl adds. The software's openness and hardware independence are highly appreciated, as is direct contact with the developers: this allows ongoing development of features and functions as required.



At Diamond Aircraft, Kistler's jBEAM software ensures fast and comprehensive analysis and visualization of flight test data from flight tests across multiple devices and types of software.

**Speeding up the process from raw flight test data to qualified statements**

Some of the individual flight tests – such as vibration analysis on the aircraft – proceed very dynamically and have their own specific characteristics. Given these conditions, fast and precise data analysis with slight variations for each flight is the perfect solution. The data is evaluated directly after the test flight, which can last from two minutes to two and a half hours. As soon as the results are available, the process can continue with the next iteration – so it is critically important to work efficiently. "The flight test engineer wants to know as quickly as possible, or see from a graph, whether the test was successful," Tholl points out. "We also maintain close contact with Kistler to keep on developing the processes – to improve the evaluation of maneuvers, for instance, or even to evaluate them directly in the future – that's to say, while the aircraft is still in the air." For data import and evaluation, jBEAM is usually faster than other analysis software – and as time goes on, it is even replacing various tools that are no longer able to process the recorded measurement data. In combination with Kistler's MaDaM measurement data management software, this gives Diamond Aircraft a reliable data source – the 'single source of truth' – that also opens up possibilities for later data analyses, cross-comparisons, pattern recognition and many other applications. In all these ways, the Kistler software plays a decisive part not only in the ongoing development of Diamond Aircraft's portfolio, but also in the imminent transformation to sustainable aviation.

**A valuable companion on the journey to sustainable aviation**

"At the moment, we're developing the eDA40 – an all-electric aircraft that can fly for over one hour without any emissions. What's more, it can be charged quickly – probably within 20 to 30 minutes," Tholl notes. "As well as that, we've launched one project on sustainable aviation fuels (or SAFs), and another that focuses on hydrogen-powered planes. We'll also continue to deploy technology from Kistler in the future – right now, for instance, we're testing their very compact and lightweight accelerometers. So it's likely that we'll be using hardware as well as software from Kistler going forward."



Successful maiden flight: members of the Diamond Aircraft team and project partners in front of the new all-electric eDA40, which took off for the first time from Wiener Neustadt on 20 July 2023.

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**Kistler Group**

Eulachstrasse 22  
8408 Winterthur  
Switzerland

Tel. +41 52 224 11 11

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