

## Welcome to the First Issue of the D-JET Flyer

In well over 20 years of working in aviation, the D-JET is by far the most exciting program I have had the privilege to be a part of and would like to share this excitement with you. This is the first issue of "The D-JET Flyer", a periodic newsletter to keep you informed with regard to all aspects of the program as we move forward towards certification and customer deliveries. In the interest of getting information out when it is fresh, we will be distributing electronic versions of the newsletters, however if you prefer paper, we'll be pleased to send you that as well. Kindly indicate your preference by registering directly at [diamondair.com/djetflyer](http://diamondair.com/djetflyer).

### From Concept to Delivery

At Diamond, having successfully brought four completely new and innovative certified clean sheet designs to market since 1991 (plus variations of each model), we understand the magnitude of the task to introduce a new certified aircraft design. As meaningful an accomplishment as it is to build a successful experimental airplane or prototype, it is another matter entirely to type certify an airplane, to bring it into volume production and to support it successfully long after delivery, such that customers are satisfied with the entire ownership experience. Equally, we know that merely gaining a type certificate, as difficult as that is, isn't enough either. Every certified aircraft has one, but that doesn't mean all certified aircraft are equally good. A type certificate merely means that a specific serial number aircraft, produced in conformity with its type design, meets the absolute minimum regulatory standards to be eligible for a certificate of airworthiness. Not exactly the stuff of legends!

Our goal is to create a true milestone aircraft, one that far exceeds the minimum regulatory requirements, possesses enduring qualities and captures the imagination of pilots worldwide. We intend to have the D-JET follow in the footsteps of legendary and successful designs such as the Bonanza and Baron, the Skyhawk and Skylane, the JetRanger, and the original Citation. In their day, all of these aircraft offered a perfect balance of performance, real world practicality and, in their respective market segments, honest value. They were rarely the very fastest, or the least expensive, but they were all very successful, by any measure. We are confident that our concept for a Personal Light Jet is the right one and we are encouraged by the many industry experts and position holders who think so too.

In future issues of the D-JET Flyer, expect to see a wide variety of information, from updates on our flight test program, applied technology features, people profiles, vendor spotlights, engineering accomplishments, certification efforts, production updates, pilot training, insurance, and much more.

We hope you will find the D-JET Flyer to be a good source of information as you anticipate your D-JET delivery – and reading material to keep you excited about the right choice you made by becoming a D-JET customer.

Again, thank you for being part of our great group of customers.

A handwritten signature in blue ink, appearing to read "P. Maurer", with a long horizontal flourish extending to the right.

Peter Maurer  
President

P.S. Your opinion truly matters and I would like to hear from you. Please send your comments directly to [maurer\\_djetnews@diamondaircraft.com](mailto:maurer_djetnews@diamondaircraft.com).

## D-JET S/N 002 Rolls Out July 20<sup>th</sup>, 2007!

On Friday, July 20<sup>th</sup>, S/N 002 rolled out in preparation for its first flight, joining the Proof of Concept S/N 001, that first flew on April 18<sup>th</sup> of last year. Celebrating the roll out were Diamond's London Ontario based employees, with a lunch time barbecue, before getting back to work in the afternoon! It has been a tremendous effort to put 002 together, because it is the first D-JET to conform to the expected production configuration, in its structural layout and aerodynamic design. That meant a higher level of effort with regard to supporting documentation, drawings, tooling and manufacturing processes, than would apply to a strictly experimental airplane. Although originally planned for April 2007, we made the decision to accept a later S/N 002 first flight date in order to commit to production quality tooling to produce this first of four prototypes that will be used for the flight test certification program. The benefit will be a smoother transition from prototype build to series production – and a reliable delivery schedule.

It was encouraging to hear the repetitive remarks on how well everything fit together, first time, from small structural parts to the wing and fuselage mating.

In preparation for S/N 002 first flight next month, there remains the installation of miscellaneous vendor equipment, ground system function testing, GVT (ground vibration testing), flight control loading tests, and finally comprehensive ground taxi tests, prior to first flight. Safety is our utmost concern and at this stage every detail is checked and rechecked.

S/N 002's primary purpose will be to validate the aerodynamic configuration. Handling qualities, stability and control, performance, and engine operation will all be evaluated with this airplane. Our extensive work with S/N 001 gives us a high degree of confidence that significant development work will not be required on S/N 002.

S/N 002 is equipped with 2 seats, both with a rapid emergency egress system and extensive flight test instrumentation. The avionics system is the production configuration GARMIN G1000, with two 12" PFDs and single 15" MFD. The environmental control system, cabin pressurization, airframe and engine deice, autopilot and production interior will be progressively added to S/N 003 through 005.



## Proof of Concept Test Program

Since its maiden flight in April 2006, D-JET S/N 001 has conducted well over a hundred ground and flight tests, designed to reduce the development work on subsequent airplanes. Since the airplane is not 100% aerodynamically conforming, definitive performance measurements are not possible, but what we have seen gives us a high degree of confidence that performance will meet our expectations. Some of the development carried out on S/N 001 included engine and avionics integration, aerodynamic optimization of ventral strakes, wingtips, engine fairings, and wing / fuselage interface, flight control optimization, development of an improved braking system, and ongoing turbine inlet water ingestion testing.

To date, S/N 001 has been flown by seven different PIC's, with the common feedback being that the production D-JET will be a very suitable and nice flying airplane for the typical private pilot with high performance complex experience. Our Manager of Flight Test, Giorgio Clementi, and Chief Test Pilot, Daniel Ribeiro, have flown the bulk of the missions and are anxiously looking forward to getting their hands on S/N 002.

S/N 001 was the star at EAA Oshkosh on July 26<sup>th</sup>, 2006 when Diamond CEO Christian Dries and NRC Test Pilot Anthony Brown flew the airplane into Oshkosh where it was welcomed in AeroShell Square by FAA Administrator Marion Blakey, EAA President Tom Poberezny, and Gary Kelly and Matt Huff of Garmin and Williams International, respectively.

*Standing in front of the D-JET in AeroShell Square at Oshkosh are: Marion Blakey, Administrator of the Federal Aviation Administration, Christian Dries CEO of Diamond Aircraft, Tom Poberezny President and CEO of the EAA, Peter Maurer, President of Diamond Aircraft, and Anthony Brown, test pilot.*



*D-JET S/N 001 C-GVLJ on early test flight in summer 2006.*



*D-JET S/N 001 taxiing out to test the new ventral strakes, which will be part of the production configuration.*



*Manager of Flight Test Giorgio Clementi and Chief Test Pilot Daniel Ribeiro with S/N 001*



## The D-JET Team

To support the design of the D-JET, prepare for the certification program, and get the initial steps in place towards actual production, we have been engaged in a massive hiring effort. Currently over 140 people, dedicated to the D-JET Program exclusively, have been added to our workforce in London Ontario.

This group includes:

- Performance and aerodynamic engineers charged with conducting advanced computational fluid dynamics modeling, wind tunnel testing and performance analysis
- A prototype production team of 35, to build S/N 001 through S/N 005 for the certification program
- Propulsion engineers, who work together with a team from our engine partner, Williams International
- Structural, mechanical and systems engineers and specialists focused on design, equipment integration, and certification
- Material engineers responsible for composite material and process qualification and certification
- A flight test department with engineering test pilots and engineers, aircraft and instrumentation technicians, responsible for aircraft development and certification tests
- A ground test group that designs and produces the fixtures and equipment required to perform structural and systems ground tests
- The avionics and electrical systems group, responsible for design of the electrical system and integration of the GARMIN G1000 system and other electrically interfaced equipment
- The interiors group, that created the stunning interior design shown in our full scale mockup and will transition this concept to production



- A large number of support groups that plan and coordinate the work of others, source purchased material, administer the finances, recruit personnel, address human resource issues, etc. etc.

“One of the most interesting aspects of this program is the diversity of our team. We have men and women from literally all over the world, including the USA, Canada, Ireland, Scotland, England, Germany, France, Belgium, China, Korea, New Zealand, Australia, Serbia, Russia, South Africa, Italy, Austria, Brazil, and many more. To see people of such different origins and cultures function as an increasingly efficient team is remarkable,” says Peter Maurer, President of Diamond’s North American operations. “We have a highly talented team of people working together on this program, whose vast experience and valuable skills will make the D-JET truly great. Our team includes aviation experts with experience at just about every well known large and small airplane manufacturer, automotive industry experts, and senior managers with extensive experience working for Transport Canada and the FAA.

The depth and size of our team is what enables us to make rapid progress towards certification. It also highlights the commitment Diamond has made to ensure that the D-JET will be an outstanding success.”

## Technology

Gone are the days when a successful airplane design came from the mind of a single genius designer, who more often than not was also the test pilot.

Diamond's CEO Christian Dries however comes very close, being the visionary that directs Diamond's designs and then actually takes the controls, more often than not on the very first test flight!

However the quest for absolute efficiency, coupled with ever increasingly challenging regulatory requirements aimed at improving safety, dictate that modern optimization techniques be used. This is common to any high performance machines, be they aircraft, boats or automobiles. Diamond continues to invest heavily in design, analysis and production technology. Just some of the technologies applied to the D-JET program include advanced CAD/CAM (computer aided design, computer aided manufacturing), CFD (Computational Fluid Dynamic Analysis), Wind Tunnel Testing, Icing Tunnel Testing, Spin Tunnel Testing, Finite Element Structural Analysis, CNC "realtime prepreg" resin impregnation, and much more. With future newsletters, we will explore some of these technologies and see how they contribute to a successful program.



*Christian Dries, Diamond Group CEO after his first flight in D-JET S/N 001 on April 19<sup>th</sup>, 2006*

As an example, the investment in these technologies pays off when we see good correlation between the CFD analysis, the Wind Tunnel Testing and the actual airplane flight characteristics. Knowing that we can accurately predict how the real airplane and its systems will behave allows us to significantly reduce the development time. CFD allows us to study many different configurations before committing to production of the most promising design which is then tested in the Wind Tunnel and or the actual airplane. This allows us to compress the development schedule, and to optimize the design to a degree that just was not possible only several years ago.

### Wind Tunnel Testing

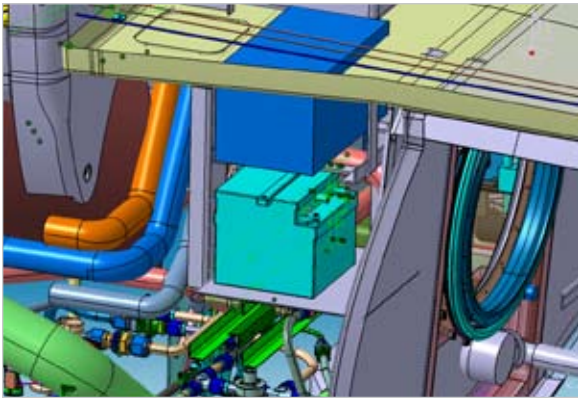


*The solid aluminum 1/5 scale instrumented D-JET wind tunnel model has made over 600 "flights" in over 100 configurations in the span of just 4 weeks. This work minimizes actual flight test time and allows a compressed flight test schedule*

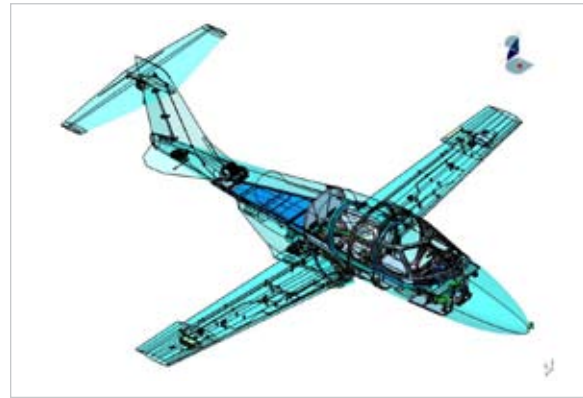
## Computer Aided Design with CATIA V5

CATIA (Computer Aided Three dimensional Interactive Application) is a multi-platform commercial software suite developed by Dassault Systems and marketed world-wide by IBM.

Using CATIA V5 CAD software, all detail parts are virtually “built” in the computer and then “assembled” into the complete airplane, ensuring perfect parts fit and system interfaces when the actual airplane is built. CATIA V5 is the industry standard, in use at Boeing, Airbus and most established aircraft manufacturers.

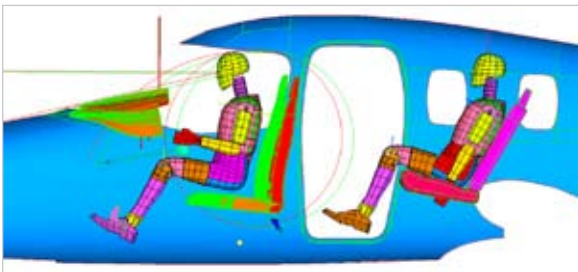


*This image shows details of the engine installation interfaces created in CATIA.*



*All parts and systems are progressively assembled into the entire airplane, layer by layer. For clarity, the designer can choose to view only the layers of interest.*

## Dynamic Crash Simulation



*Diamond uses advanced dynamic simulation software to analyze the structure and occupant restraints for optimized occupant protection.*

## Spin Tunnel Testing



*The 1/11th scale D-JET scale model in the Spin Tunnel is "spun" at various attitudes, rotational speeds and configurations to establish the natural spin modes and speeds. This work greatly minimizes flight test risk as well as compressing development and flight test time.*

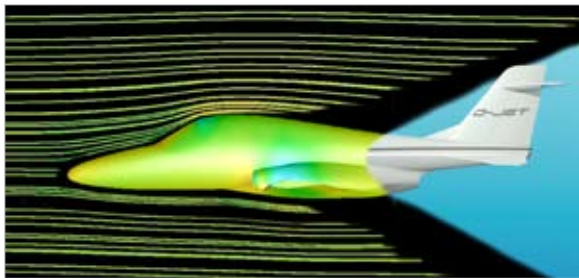
## In Focus: CFD – Computational Fluid Analysis

Computational Fluid Dynamics (CFD) is the use of numerical methods and algorithms to analyze and investigate the aerodynamic design of the D-JET. State of the art commercial software, running on a cluster of parallel computers, is used to solve the millions of calculations required to model the interaction of fluids and gasses with complex engineering surfaces.

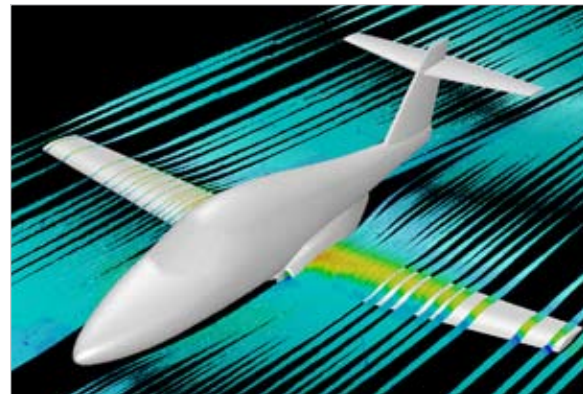
CFD is often referred to as a “virtual wind tunnel” since it allows engineers to quickly study different configurations or changes to a design. However, only approximate solutions can be achieved in many cases, so the computational results are always compared and validated against actual wind tunnel testing.

During the design process, these computational tools are sometimes applied in a “reverse fashion”, where the engineer specifies the required results e.g. minimum drag or maximum lift, and the aerodynamic surfaces are adapted accordingly. Think of it as shaping an aircraft model from clay – pushing and pulling different parts, until it is exactly what you want.

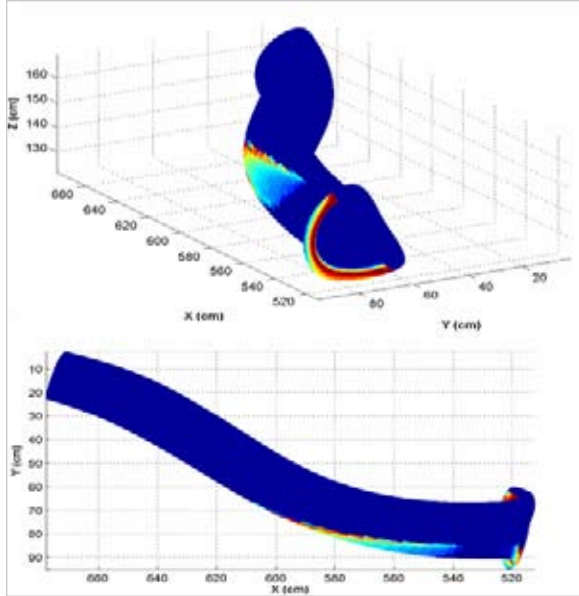
The application of CFD to the design is not only limited to aerodynamics, but is also used to investigate topics like the analysis of airframe noise or the accumulation of ice on the aircraft and engine inlets.



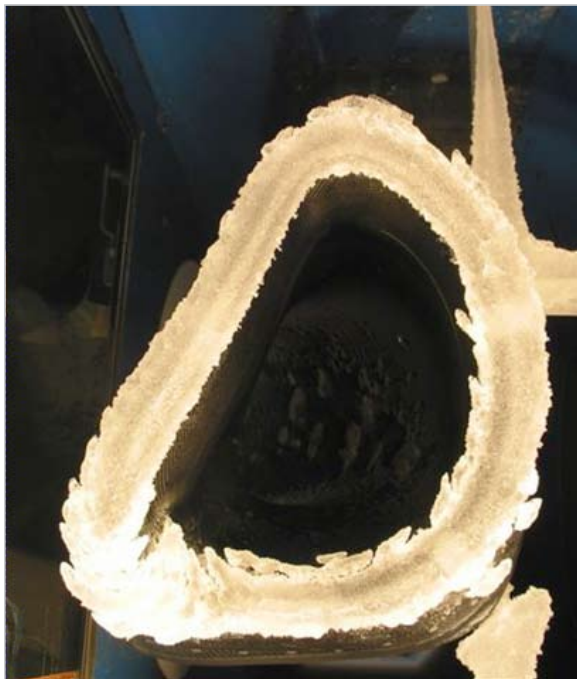
*Stream-lines showing airflow around the D-JET in Cruise. The different colors represent different local flow velocities or air pressure. This allows the designer to identify areas where the airflow is too fast, or where local flow separation would occur that would increase airframe drag.*



*Stream-lines showing airflow and air pressure gradients over the wing.*



*Specialized CFD allows prediction of ice accumulation in the engine air intake duct to define areas requiring ice protection.*



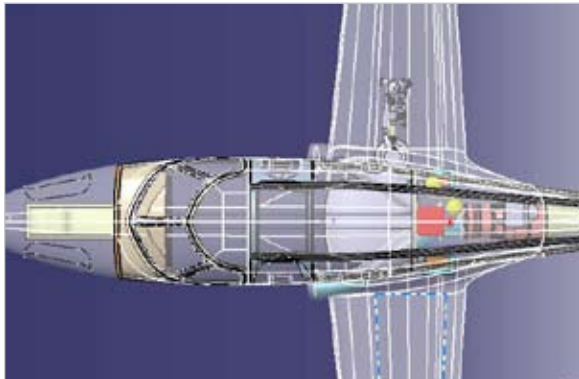
*Icing tunnel testing is used to validate the CFD analysis. In an icing tunnel, full scale components are tested in a specialized wind tunnel operating at freezing temperatures and with different amounts of moisture in the air to simulate many different types of in-flight icing encounters. Shown is the D-JET inlet with ice protection switched off.*

# Certification Airplanes Built on Production Quality Level Tooling

Both POC flight testing and the investment in advanced engineering technology have given D-JET Corporation the confidence to make a major commitment. We have invested in production quality level tooling to build the four certification test planes. This investment will help to not just ensure the quality of our certification planes – but also enable us to transition to production quickly, in parallel to the later stages of the certification program.

## From Computer Screen to Flying Hardware

### Step 1 – The virtual airplane



Design Engineers create the shape of the D-JET fuselage using the CATIA V5 CAD system.

### Step 2 – The Fuselage Master



The Fuselage contour data is fed directly to a huge milling machine that machines a full scale fuselage master that exactly conforms to the intended design. This is the CAM, or Computer Aided Manufacturing part of CAD/CAM.

### Step 3 – The Fuselage Mold



A fuselage half-shell mold is made from the master. It is made of carbon fiber reinforced epoxy such that it will expand and contract in unison with the actual part during the high temperature curing process.

### Step 4 - Fuselage shell being laminated



During the laminating process, successive layers of epoxy resin impregnated carbon fiber cloth are laid into the mold in strict adherence to engineering drawing. Fiber direction and positioning are critical to achieving an optimized structure.

### Step 5 - Fuselage shell removed from mold



After both half-shells are cured, the internal structure is bonded into one of them and then the entire assembly is bonded together to create the rough finished fuselage, ready for trimming, secondary bonding, external finishing and final assembly.

## Production Quality Level Assembly Tooling

S/N 002 has been built using very expensive production level quality assembly tooling to ensure accuracy and conformity to intended design. “It is always a tense moment, when you take the first article built out of such an expensive tool, and fit the two sides together”, comments Chris Eaves, head of Prototype Production. “In this case, everything went very smoothly: the two fuselage halves went together without a problem, confirming the quality of the tooling design.”

While we prepare S/N 002 for first flight, the prototype production team will be busy using this tooling to build S/N 003, S/N 004 and S/N 005 in short succession. All four aircraft will be used in the certification testing program: S/N 002 will primarily be used for aerodynamics and performance, S/N 003's role is for systems development and certification, S/N 004 will be the electrical and avionics system, autopilot and de-icing development and certification platform, while S/N 005 will be fully conformed, including a production quality interior. Full-scale static test articles will also be built for use in structural testing.



*Fixturing the main Spar is the first step in the wing structure assembly.*



*Sophisticated wing assembly fixtures ensures precise positioning of spars, ribs, wing skins and attachment fittings.*



*When the tooling is opened, a finished wing will emerge.*



*Test fit of wing structure (without top wing skins installed) to fuselage, S/N 002.*

## Other Program Updates and Outlook

Over the past half year, D-JET Corporation has taken our message to the road – literally: the D-JET mockup has been touring the country. Thousands of people have had a chance to sit in the plane and be impressed by the beautiful interior, its roominess, and pilot-friendly cockpit.

The reaction to the D-JET has been overwhelmingly positive. “Wherever we took the D-JET, people couldn’t believe how big it is,” says Fred Ahles, President of Premier Aircraft Sales, the Diamond Regional Distribution Center for Florida, the South-East and Texas. “I have had people come, very skeptical about the plane’s size – and leave convinced. One of our visitors was a pro-football player. At 6’6”, he was used to having a hard time fitting into pretty much any General Aviation cockpit – but the D-JET fit him very well.”

In addition to the D-JET tour, we have advertised the D-JET in many aviation publications and used direct mail to reach likely buyers. We have also updated the D-JET web site – if you haven’t visited it lately, please check it out at [www.diamondair.com/djet](http://www.diamondair.com/djet). All these efforts have paid off with over 300 total orders to date. The North American retail delivery schedule is completely sold out for the first 1½ years of production, with only a very limited number of Premium deposit slots available for late 2009 delivery from select Diamond Distributors. “If you have friends or acquaintances who might be interested in the D-JET, we would advise them to contact us soon”, says Heike Larson, Vice President of Sales and Marketing for Diamond. “With the strong interest we have, and multiple weekly stops of the D-JET tour, we will very soon be looking at 2010 delivery positions, even for our Premium \$100,000 program. We expect that significant milestones such as S/N 002



*D-JET trailer.*



*D-JET mock-up.*



*D-JET mock-up interior.*

joining the test program, Diamond's first official appearance at NBAA, and expected attendance of one of the Flight Test aircraft at AOPA EXPO 2007 in Hartford Connecticut will boost the order book even more."

## Program Schedule

With 002 joining the test fleet, a great milestone has been achieved and the focus is now on the completion of the progressively more complete and complex 003, 004 and 005. Although we have set ourselves very ambitious goals, the overall program progress is excellent and the planned activities and program schedule are consistent with the planned delivery schedule per the D-JET Deposit Agreement. With future issues of the D-JET Flyer we will be updating you on a regular basis as we progress through the remainder of the program.



*D-JET mock-up at AOPA 2006.*