INNOVATION THROUGH EXPERIENCE

PERFORMANCE WITHOUT BARRIERS
Knight wheels are a new generation of super-fast, stealth wheel designs that take construction and safety standards to a whole new level, underwritten by a truly global team effort enlisting brains, engineering, technology and personality from all over the world.

Knight places our core values and upholds our credibility and integrity in our people, our products and our community, with thousands of hours of research, design, engineering and testing utilising some of the world’s most advanced aerodynamic and manufacturing technologies, we are proud to have created the world’s fastest bicycle wheels.

So we welcome you to the worldwide community of Knight Composites. We’re happy to have you ride with us.
KNIGHT WHEELS ARE AVAILABLE IN THREE SPECIFIC RIM DEPTHS THAT COVER A BROAD RANGE OF RIDING STYLES, CONDITIONS AND TERRAIN. ALL RIMS HAVE BEEN OPTIMIZED FOR AERODYNAMICS, WEIGHT AND STABILITY.

KNIGHT 35

THE KNIGHT 35 IS A DO-IT-ALL WHEEL THAT OFFERS OUTSTANDING VERSATILITY AND STABILITY, MAKING IT A GO-TO FOR PROS AND ENTHUSIASTS ALIKE.

THE KNIGHT 35 - ENGINEERED TO:
- CUSHION THE IMPACT OF THE ROUDEST ROADS
- BE EXTREMELY LIGHT, WEIGHT AND NIMBLE
- PROVIDE A STRONG AERO ADVANTAGE OVER A STANDARD BOX RIM

TECH SPEC
- FRONT
  - DEPTH (MM): 35
  - WIDTH (MM): 25.5
  - HOLE COUNT: 20
  - ERD: 586
  - WEIGHT: RIM ONLY (G): 445
  - WEIGHT: DT 240 (G): 641
  - WEIGHT: DT 180 (G): 636

- REAR
  - DEPTH (MM): 35
  - WIDTH (MM): 25.5
  - HOLE COUNT: 24
  - ERD: 586
  - WEIGHT: RIM ONLY (G): 445
  - WEIGHT: DT 240 (G): 641
  - WEIGHT: DT 180 (G): 636

-set

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In this comparison, we show a Knight 35 vs a standard OE box rim as the baseline (in this case – a Fulcrum 5). This chart shows what can be gained from switching from a standard wheel to a Knight 35 rim. Observe that the OE rim never exhibits any aerodynamic gains at yaw and shows high drag even at zero degrees. The Knight 35 is both light weight and low drag - an unbeatable combination.

KNIGHT 65

THE KNIGHT 65 RIM HAS BEEN DEVELOPED USING TEAM TECH SHAPING, TO PROVIDE AN OPTIMIZED PERFORMANCE BETWEEN 10- AND 20-DEGREES YAW - THE MOST COMMON RIDING CONDITIONS.

THE KNIGHT 65 - ENGINEERED TO:
- MINIMIZE "WIND STEER" BY MOVING A HIGHER PERCENTAGE OF LIFT TO THE BACK OF THE WHEEL
- ADD LIFT TO REDUCE THE WATTS REQUIRED FOR THE SAME RESULT - PROVEN BY OUR PROPRIETARY PARABOLIC SHAPE
- ENHANCE YOUR PERFORMANCE ON FLATTER ROAD RACES AND CRITS, AS WELL AS TECHNICAL OR WINDY TRIATHLON COURSES

TECH SPEC
- FRONT
  - DEPTH (MM): 65
  - WIDTH (MM): 28.0
  - HOLE COUNT: 20
  - ERD: 526
  - WEIGHT: RIM ONLY (G): 545
  - WEIGHT: DT 240 (G): 741
  - WEIGHT: DT 180 (G): 736

- REAR
  - DEPTH (MM): 65
  - WIDTH (MM): 28.0
  - HOLE COUNT: 24
  - ERD: 526
  - WEIGHT: RIM ONLY (G): 545
  - WEIGHT: DT 240 (G): 741
  - WEIGHT: DT 180 (G): 736

-set

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  - DEPTH (MM): 65
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This was the size that presented the largest challenge as most competitors in this class are high performers. Our first prototype performed poorly and set us back about 3 months. We created two final design candidates and both were leaders in this class. Observe that the Knight 65 gaps the competition by 30 grams of drag at zero degrees yaw, and builds upon this lead even past 20 degrees yaw.

KNIGHT 95

THE KNIGHT 95 RIM PROVIDES ALL THE BENEFITS OF OUR 65MM RIM, IN A DEEPER, MORE AERO FORMAT.

THE KNIGHT 95 - ENGINEERED TO:
- REDUCE DRAG BY 2080 OVER A STANDARD RIM AT 15 DEGREES OF YAW
- BEAT SIMILAR DEPTH RIMS FROM THE COMPETITION BY 6.5 WATTS/32.5 SECONDS OVER A 40KM COURSE, WHEN TRAVELLING AT ROUGHLY 30MPH
- SHATTER YOUR PB ON ALL BUT THE STEEPEST/MOST TECHNICAL TIME TRIAL AND TRIATHLON COURSES

TECH SPEC
- FRONT
  - DEPTH (MM): 95
  - WIDTH (MM): 28.25
  - HOLE COUNT: 16
  - ERD: 486
  - WEIGHT: RIM ONLY (G): 655
  - WEIGHT: DT 240 (G): 861
  - WEIGHT: DT 180 (G): 846

- REAR
  - DEPTH (MM): 95
  - WIDTH (MM): 28.25
  - HOLE COUNT: 20
  - ERD: 486
  - WEIGHT: RIM ONLY (G): 655
  - WEIGHT: DT 240 (G): 861
  - WEIGHT: DT 180 (G): 846

-set

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  - DEPTH (MM): 95
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This chart shows the remarkable aerodynamic performance of a deep rim. Not only does the Knight 95 completely erase its own initial drag at zero yaw (160g), it yields an additional -22g "sail effect". At 15 degrees yaw, it has 45g less drag than its nearest competitor (6.5 Watts or 22.5 seconds saved over 40km) and 288g less drag than a traditional V-rim.
TRAILING EDGE AERODYNAMIC MANIPULATION

The majority of aero wheels currently in the market place the design focus on the leading edge - the tire and rim’s outer edge. While this makes sense when the wheel is looked at in isolation, our engineering team made the strategic decision to design Knight Wheels as part of the bicycle system, which lead to the development of Trailing Edge Aerodynamic Manipulation, or TEAM Tech.

When carbon wheels were first introduced to the cycling world, the manufacturing process was laborious, and produced products with a broad spectrum of consistency and quality. Thanks to numerous advances in technology, the process has been significantly refined. Knight Composites borrows technology from high-end race bikes to lay up and mold its carbon rims. Our aerospace-grade Toray carbon fiber, used in Boeing’s 777 aircraft and many others, is renowned throughout all industries and is arguably the finest available for rims. Our Expanded Polysterene (EPS) lay-up and molding process is the standard for creating frames and forks for the best race bikes in the world.

During the production process, an EPS part is molded to precisely match the inner wall wheel dimensions, with allowances for the bladder. An expandable bladder is then inserted over the EPS part. Carbon fiber patterns are laid up around the bladder to a precise “layup” designed by our engineers. The “preformed” part is then laid in a steel tool, like a clamshell for molding - it’s basically a “tool within a tool.” The steel tool is then heated and high pressure compression is used to inflate the bladder. Our engineers then developed a “ramp cycle,” with incremental increases to heat and pressure to cure the carbon part.

By employing these cutting edge techniques within our manufacturing process, Knight Wheels can offer a strong, reliable and more precisely constructed rim.

Prior to being made available to consumers, most manufacturers subject their wheels to the CEN (European Committee for Standardization) standards test. While this test is not easy to pass, the Knight Wheels engineering team sets a much stricter testing and safety protocol for our wheels in addition to these industry standards.

Once our wheels prove they can pass industry standards, we conduct additional testing in-house at a state-of-the-art production facility in 12 different protocols to ensure that everything from the spoke holes to the brake track are at the safest and most durable levels possible. These tests are primarily designed to ensure the safety of every Knight wheel but also ensure that they meet our requirements for roundness, trueness and strength.

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As our engineering team continued through the design process, they moved on to defining the shape. After running numerous shape options through Computational Fluid Dynamics (CFD) and several wind tunnels, they determined that a parabolic shape offered the most aerodynamic benefit. Starting with a NACA (National Advisory Committee for Aeronautics, now NASA) airfoil-based shape, the engineers reworked it by manipulating the arc and elongated the shape.

The result is a propriety shape that:

- Eliminates flaws in more common “V” and “U” shaped frames
- Offers a gradual widening of airflow around the trailing edge, how it affects the air as it flows from the rim, to the tire and onto the downtube and rest of the frame. Our TEAM Tech shaping is designed to maximize the airflow attachment around the downtube and then the rear triangle.

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The result is a propriety shape that:

- Eliminates flaws in more common “V” and “U” shaped frames
- Offers a gradual widening of airflow around the trailing edge, which produces less disturbance over the downtube and frame
- Provides the optimal curve in rim for best air trajectory around tire/downtube interface

The Knight Team

Knight Composites, LLC is the brainchild of Jim Pfeil, Beverly Lucas and Kevin Quan. Whilst these names might not resound immediately with consumers, they share some pretty impressive industry palmaries that span a collective 50+ years around the world.

Jim Pfeil started his composites career with Cobra Golf and later moved into the sport he loved to become the original founder and owner of Reynolds Composites in southern California. Despite being told by industry leaders that the carbon fork market was crowded and questioned the viability of carbon steerer, he and his partner, Mike Lopez, bet big to design and resulted in the Reynolds Zuzo Pro and Ouzo Comp forks being spec’d on OEM bicycle brands worldwide. Following the sale of Reynolds, Jim later helmed composite operations management roles in the US bicycle industry, where he shared an industry relationship with Lucas for almost 15 years.

Beverly Lucas, originally from the UK, started a career with Felt Bicycles in southern California during its formative years and was instrumental in putting the brand on the map not least by taking them to their first Tour de France with Jonathan Vaughters’ Slipstream team. Working later with Zipp VELO Composite, she identified a need for an expert aerodynamicist to enhance Zipp’s talented composites engineering and manufacturing, and so introduced British Formula One motorsports R and D to the bicycle wheel industry by conceiving and managing the Smart ENVE Series partnership.

Canadian-born Kevin Quan, has a degree in Mechanical Engineering from the University of Toronto. While employed at Cervelo, he designed the iconic P3C and SLC. Kevin Quan Studios opened in 2007 and assembled a multi-disciplinary team of engineers and industrial designers. Their focus is on the development of aerodynamically and mechanically superior bicycle frames for global brand customers such as Accell Group, BH, Parlee, and Neil Pryde.

Knight Composites is headquartered in the now iconic bike town of Bend, Oregon, USA, with partners in the United Kingdom, Canada, Australia, Germany and Taiwan.