

= Klein Bikes =

Klein Bikes was a bicycle company founded by Gary Klein that pioneered the use of large diameter aluminum alloy tubes for greater stiffness and lower weight .

Klein produced his first bicycle frames whilst a student at the Massachusetts Institute of Technology during the 1970s , and full production runs of frames began in the 1980s . In 1995 the company was purchased by the Trek Bicycle Corporation , and the original Klein factory at Chehalis closed in 2002 as production moved to the Trek headquarters at Waterloo . Widespread distribution in the United States stopped in 2007 , and ceased altogether in the rest of the world in 2009 .

= = History = =

Gary Klein , born (1952 @-@ 06 @-@ 09) June 9 , 1952 , attended the University of California at Davis before transferring to the Massachusetts Institute of Technology (MIT) . During the Independent Activities Period in 1973 , a group of students including Klein worked together under Professor Buckley to produce an aluminum framed bicycle . After analysing a number of contemporary steel frames , and examining ones that had broken in use , they were able to determine the stresses placed on a bicycle frame . Faced with limited available types of aluminum alloy tubing , the students chose to construct frames from 6061 aluminium alloy seamless drawn tube ; alternatives such as the stronger 7075 aluminum alloy were discarded because of the tubing dimensions .

After graduating from MIT in 1974 with a degree in chemical engineering , Klein took a business course for entrepreneurs . As a keen road racer , in 1975 , he started a business project with three other people and built a limited run of aluminum alloy framed bikes at the MIT Innovation Center , using a US \$ 20 @,@ 000 grant provided by MIT and US \$ 1 @,@ 000 of capital from each partner . The prototypes , with larger diameter tubes and thinner walls than those produced in 1973 , were displayed at the International cycle show in New York in the February of 1975 .

The next year , he relocated to some disused buildings on his parents ' farm in San Martin , California that had previously been used for dehydrating prunes . In 1977 , he patented use of large diameter aluminum alloy tubes to increase stiffness , and in 1980 , he moved from San Jose , California , to Chehalis , Washington . He started production runs of road bicycles in the early 1980s and mountain bikes in the mid 1980s .

Whilst Klein 's use of aluminium for a bicycle frames was not entirely novel , his use of large diameter tubes was . Aluminium alloys have a Young 's modulus around a third that of steel , but with thicker tubes he was able to make a bicycle that weighed around 15 % less than a conventional model .

In 1995 , Trek bought Klein bikes , after Klein found it hard to compete without the sales network of a larger company in place .

At its peak , around 250 people worked at the Chehalis plant , but operation gradually moved to the main Trek factory in Wisconsin . In 2001 , a workforce of around 70 people produced 15 @,@ 000 to 20 @,@ 000 frames a year . In 2002 , all production moved to the Trek headquarters at Waterloo , Wisconsin . Bikes were still sold under the Klein name until around 2009 in Japan , but widespread distribution ceased circa 2007 in the United States .

A green Klein mountain bike can be seen hanging on the wall in Jerry Seinfeld 's apartment in the television show Seinfeld .

= = Innovations = =

Some off @-@ road models featured two designs of one @-@ piece welded stem @-@ bar combination , marketed as " Mission Control " (MC) , that eliminated clamping bolts and excess material . The original version , MC1 , used a quill stem and required a 1 inch (25 mm) threaded steerer . MC2 used a locknut tightening against a collet that sat between the fork steerer and the stem , and a special eight pointed wrench was required to remove it . The steerer had to be cut to

the correct length in order to adjust the height of the stem . MC3 was a third version that was only the stem , thus the handlebar was not welded .

Klein held a patent (US 5433465) for an improved method of routing cables through the frame of a bicycle , that reduced aerodynamic drag and stress on the frame . The front and rear derailleur cables were routed through the down tube , and the rear brake cable through the top tube , although some models changed in 2002 to top tube cable routing for greater harmonisation with Shimano components .

In the 2002 model year , Klein replaced 6061 aluminium alloy with a new alloy called ZR 9000 , that used zirconium in place of chromium ; the new alloy had not been assigned an industry number and it was named after the unused 9000 series . Advertised improvements included a 190 grams (6 @. @ 7 oz) decrease in weight per frame and a fatigue life five times longer than the 2001 model year frames .

= = Techniques = =

Klein bicycles were famous for their paintwork , and offered a large number of custom colours and patterns . The paint used was a Durethane enamel non @-@ metallic paint that cost up to US \$ 1 @, @ 800 per gallon . The Klein logo was debossed into the frame by painting the frame in the colour of the logo , then applying a mask and painting the pattern .

Beginning with the MC2 frames , Klein used " Gradient tubing " , where the wall thickness varied along the length and diameter of the tube . Highly manipulated chainstays on mountain bikes allowed a tighter rear triangle to accommodate large off @-@ road tyres , and facilitated efficient transfer of power .

Welded aluminium needed heat treating to restore strength lost in welding . After the treatment , frames were required to be aligned to within 0 @. @ 004 inches (0 @. @ 10 mm) on all alignment surfaces , and were then machined to within 0 @. @ 0002 inches (0 @. @ 0051 mm) .

= = Models = =

Klein produced both mountain bikes and road bikes .

Models are sourced from the official catalogue for that particular year . Years marked in red are incomplete due to a lack of reliable source information .

= = Sponsored teams = =

Klein made custom bikes for San Francisco 's Lombardi team which were ridden in 2001 . German cycling team Gerolsteiner rode Klein Quantum frames before 2003 , when Gerolsteiner changed their bike sponsor to Wilier Triestina . For the 2004 season , Klein sponsored the Jittery Joe 's cycling team .