Keeping the water flowing at outdoor whitewater park

Flygt pumps provide outdoor enthusiasts with gallons of fun at a National Whitewater Center in North Carolina

Opened in mid-October 2006, in the heart of Charlotte, NC, the U.S. National Whitewater Center (USNWC) presents the thrill of rapids, chutes, dips and bends as kayakers, canoeists and rafters run the world's largest man-made whitewater river. The $35-million mecca for whitewater enthusiasts and groups searching for an outdoor adventure is constructed on 10 acres (4 hectare) of the 307-acre (124 hectare) Tuckasegee Ford Park.

In addition to offering something for just about everyone interested in the outdoors, there are a number of activities that specifically center around water.

Four-, six- and eight-person rafts run the 15-minute experience down a man-made river. The channels, open for canoes and kayaks, are watched over by a legion of "river guards" and skirted by numerous restful eddies. A 200-foot (61 m) incline conveyor system gently shuttles guests and watercraft back up from the finishing pool to the headwaters for another run. With the breathtaking twists and bends, the whitewater channels drop 21 feet (6.5 m) in elevation from headwater to pool and can be modified to diverse levels of challenge.

To bring all of this to a reality, Liquid Design, Inc., a specialty design firm, oversaw the entire project, while Recreation Engineering and Planning was brought in to develop the design of the water channels. Scott Shipley, a former world champion kayaker and 3-time U.S. Olympian, led the fluid design team. With a Master's degree in Mechanical Engineering, Shipley was presented with a dream opportunity to design a true world-class facility that could inspire construction of many other whitewater facilities and broaden the market. Early-on, the design team traveled to Europe to inspect several existing whitewater venues, many built as part of previously held Summer Olympic competitions.

The resulting design includes several 5- to 6-foot deep channels that range in difficulty from Class I and II flows to predominantly Class III and, with 7 large pumps in operation, Class IV rapids that will challenge even the Olympic contenders who train here. The 1,670-foot (509 m) Wilderness Channel offers limited Class I and Class II rapids for beginners. The Freestyle Channel extends 1,460 feet (445 m) and flows through Class II and Class III rapids before converging into the same pool. The Bump 'n' Run Channel runs 1,170 feet (357 m) and gives rafters a bouncy drenching in sustained Class III and Class IV turbulent water highlighted by a 7-foot wave. This is the world's only multi-channel re-circulating whitewater river.

Shipley's favorite run is the Competition Channel that draws Olympic and World Cup athletes to train and compete. This 1,370-foot (418 m) channel filled with roiling whitewater rushes through Class III and Class IV rapids that are strewn with truck-sized boulders. Guests at an overlooking restaurant lodge can take it all in below while naturally banked seating is in place for spectator events.

Water flow ranges from 200 CFS (5,663 l/s) to 700 CFS (19,822 l/s) in the most challenging course. Water is delivered into the channel system from the pump house where 7 powerful Flygt heavy-duty electric submersible pumps are housed. Set in 6-foot diameter steel tubes, the rarely seen Flygt model PL-7121 pumps, driven by integral 650-hp (485 kW) motors keep the park's lifeblood flowing through the channels. "We selected Flygt, first and foremost, because we needed a knowledgeable staff backing-up efficient and reliable equipment," Shipley noted. The added beauty is that the pumps are out of sight, quiet in operation, and limit the elevation of the civil works, allowing for a lower-profile pump house building.

The USNWC facility has been designated as an official Olympic Training site by the U.S. Olympic Committee. In addition, the national governing body for the sport, USA Canoe and Kayak (USACK) has designated the USNWC as its new home.

A second smaller whitewater kayak facility, called the Action Sports Center, was constructed in western Maryland and debuted in the summer of 2007, utilizing 5 model PL-7121 pumps from ITT Flygt.

With the USNWC facility acting as a template for future facilities, up to 10 additional whitewater kayak facilities are currently in design or under study in the U.S. from New Hampshire to California. One such outdoor sports facility being developed in Arizona near Phoenix will envelope 250 acres (101 hectare) and could utilize as many as 20 Flygt propeller pumps, including 12 model PL-7121 pumps to be utilized within several whitewater and surfing sports venues.

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