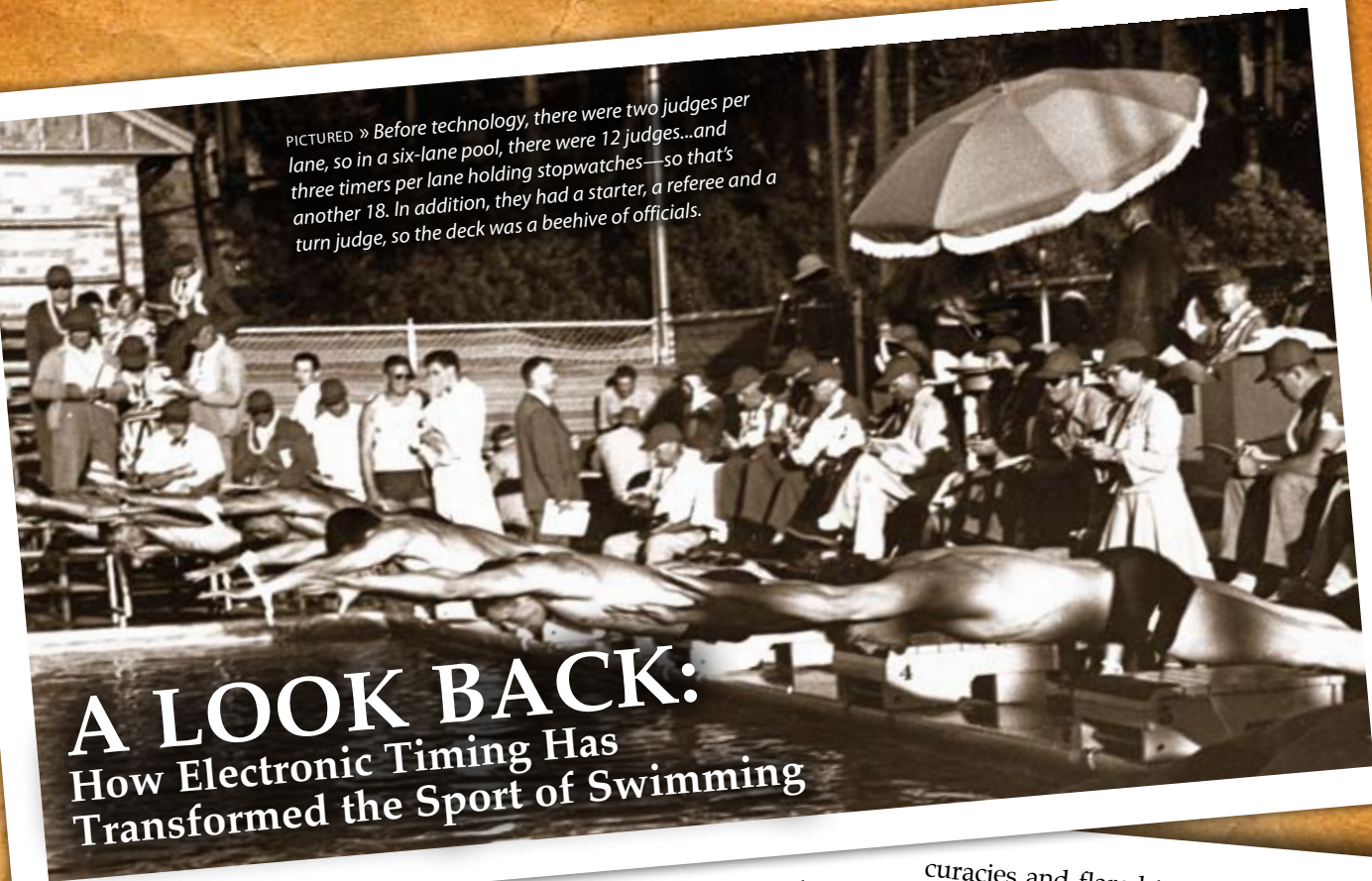


[PHOTO BY SEATTLE MUNICIPAL ARCHIVES]

PICTURED » Before technology, there were two judges per lane, so in a six-lane pool, there were 12 judges...and three timers per lane holding stopwatches—so that's another 18. In addition, they had a starter, a referee and a turn judge, so the deck was a beehive of officials.



# A LOOK BACK: How Electronic Timing Has Transformed the Sport of Swimming

PROVIDED BY COLORADO TIME SYSTEMS

*It's important to remember the sport's history and how swimming has evolved into what it is today.*

**H**ow many Olympic or competitive swimmers today could imagine their swim meet touchpads and electronic timing replaced with a team of volunteers determining their fate with stopwatches and questionable eyesight?

Competitive swimmers today rely on state-of-the-art technology during their practice and during meets to measure their performance precisely and accurately. However, only 40 years ago, the sport of swimming looked very different than it does today—and we have technology to thank for many of the advances.

Swim meets circa 1970 and earlier were a stark contrast to what the sport looks like today. With very little technology available in the early days, people had to do everything that the current technology does during a swim meet.

Before technology, there were two judges per lane, so in a six-lane pool, there were 12 judges...and three timers per lane holding stopwatches—so that's another 18. In addition, they had a starter, a referee and a turn judge, so the deck was a beehive of officials.

Add all of the competitors and coaches, and the environment became a breeding ground for inaccuracies and flared tempers. Imagine trying to see who won a race through white-out splashing, or determining if swimmers were touching underwater or above water at the finish line. Swim times could vary as much as 3-tenths of a second among the three human timers. This caused delays, arguments and—many times—no clear-cut winner.

Each race's start was signaled by the sound of a pistol. Designated timers started a stopwatch, and coaches hoped that the timers' thumbs were pushing the stopwatch "on time." After the race was finished—and before the meet could continue—swimmers waited for the "official recorders" to write down their times on paper.

One could only imagine the possibilities for errors during this process. Human error combined with human bias opened up an array of concerns for competitors and coaches during these early years.

## THE OLYMPIC CONTROVERSY THAT PAVED THE WAY FOR ELECTRONIC TIMING

The 1968 Mexico City Olympic Games marked the first time swimming was fully automated, using electronic timing. Previously, stopwatches were used, and the times were only recorded to 1-tenth of a second—compared to electronic timing, which records to the hundredth of a second. This introduction didn't happen because the sport welcomed technology—rather, there was a timing controversy that led up to the 1968 Olympics' adoption of electronic timing.

During this time, there was actually a great deal

— continued on 17

of pushback from the establishment—it resisted change and distrusted the reliability of technology. It also questioned the safety of using technology underwater.

All this changed in 1960 during the Rome Olympics after a controversial race in which Australia's John Devitt was awarded the gold medal in the 100 meter freestyle over American Lance Larson.

At the time, there was an electronic timer being used—but only as a back-up system. Results in 1960 were decided by finish judges who relied on their eyes, and they did not use replays. That reliance on human eyesight began this Olympic controversy.

It seems that Larson knew the only way he could win was just reach for the wall underwater while Devitt touched the wall in plain sight above water. There were three first-place judges and three second-place judges. Of the three first-place judges, they were split, 2-1, favoring Devitt. The three second-place judges also favored Devitt for second, by 2-1. Therefore, the six judges were split, 3-3, in terms of who won.

There were three official timers in 1960 for each lane and swimmer, all timing by hand. All three timers for Devitt, in Lane 3, timed him at 55.2 seconds. The three timers for Lane 4 had timed Larson at 55.0, 55.1 and 55.1 seconds. Therefore, the timing seemed to favor Larson.

The judges then turned to the electronic back-up timer to break the tie. The electronic timing had Larson in 55.10 seconds and Devitt in 55.16 seconds, a difference of about four inches. Using both the hand times and the electronic times, Larson's time should have been listed as 55.1, with Devitt at 55.2.

After a long delay, the chief judge, Henry Runströmer of Sweden, cast the deciding vote and declared Devitt the winner. He ruled that Larson would be given a time of 55.2. However, the rules at that time did not provide for the chief judge to have a vote or give him the right to break ties. Ties were supposed to be broken by referring to the timing machine.

The U.S. team appealed, also using the proof of a *Sports Illustrated* photo that they felt clearly showed Larson winning. The appeal jury—headed by Jan de Vries (NED), also the President of the Fédération Internationale de Natation (FINA) in 1960—rejected the appeal, keeping Devitt the winner.

Because they ruled Devitt the winner, this controversy sparked intense discussion about the use of electronic timing and ultimately ended in the adoption of a fully-automated electronic timing system for swimming in the 1968 Olympics.

### **THE ADOPTION OF ELECTRONIC TIMING INTO ALL LEVELS OF COMPETITIVE SWIMMING**

During the early 1970s—after the breakthrough of the 1968 Olympics—there were a handful of sports timing companies around the world (Omega Timing and Swiss Timing), but none with the complete focus on swimming—except for one: Colorado Time Systems (CTS).

CTS began with four Hewlett-Packard engineers

spinning off from HP to found the company. It was then that they began manufacturing electronic timing systems exclusively for the sport of swimming.

For many veterans in the sport, it's hard to believe that it's been 40 years since CTS offered the first practical display timing, touchpad and scoreboard system to the American marketplace. It featured easy-to-read final time displays plus the first "split time" display available on a swim timer.

This first generation of timing was a huge leap for the sport, however, it didn't solve all of the problems. It didn't store competitors' times, so humans still had to record times manually and then reset the system, losing those times forever.

A few years later, CTS created a printing timer system that incorporated a built-in paper strip printer. This printing timer instantly printed split and final times at the end of each heat. This soon became an affordable option and a standard in the sport. A shift toward automation was occurring in the sport versus human recorders and timers.

During this time, many other timing companies were trying to create timing systems for dozens of other sports, however, CTS was busy researching how they could improve its timing systems for swimming.

Colorado's second generation timer added an internal printer, which created an audit trail so meet organizers could see exactly what the real race times were months later. As the timers were used more, new features were added to meet the demand, such as adding backup batteries (in case of a power failure, the timer would keep on timing accurately, and no data would be lost). Also, CTS touchpads were updated to a non-slip material to alleviate slipping. Later versions added more memory to store thousands of races internally.

The next version of the timer added the ability to transmit times by an electronic signal to a meet management computer. This advance eliminated all human transcription of times and greatly increased the speed of getting out the full results from an event.

CTS also responded to the need for more advanced training systems and launched a complete timing training system. In 2002, relay judging platforms were introduced to add more accuracy to relay races and to automate the process. In 2004, CTS launched a complete full-color scoreboard and display division to work seamlessly with their timing systems.

### **A LOOK BACK AND PREDICTIONS FOR THE FUTURE**

An entire generation of swimmers exists that has never known a swim meet without electronic timing, touchpads and even electronic starting horns. It's important to remember the sport's history and how swimming has evolved into what it is today.

The future of technology in swimming is dependent on the needs of the coaches and competitors and, of course, the companies willing to work shoulder-to-shoulder with them in order to improve the sport as we embark on the next 40 years. ♦