

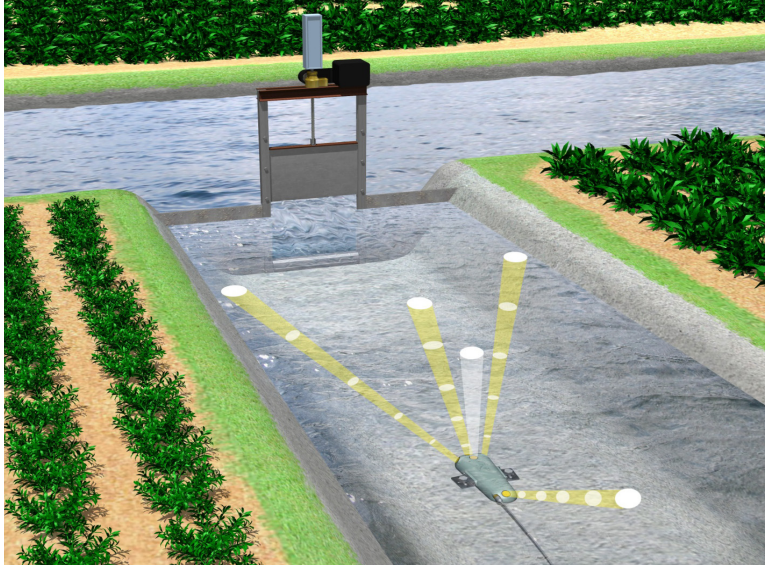
Product Introduction: The SonTek-IQ

Over the years the demand for monitoring flow in open channels has evolved significantly. Climate change and water scarcity issues have increased the demand to quantify increasingly smaller flows. In the past, the irrigation community has applied a variety of technologies for “good enough” or “close enough” flow measurements and total volume deliveries. SonTek has been involved in measuring flow for almost 20 years, and decided to take on the challenge of developing an affordable instrument that can accurately measure flow.

Combining our previous expertise with feedback from the flow monitoring industry, engineers at SonTek took on the challenge. Working with funding from a Small Business Innovation Research (SBIR) grant from the United States Department of Agriculture (USDA) SonTek has developed an innovative and advanced solution for monitoring in open channels; the SonTek-IQ or commonly known as the IQ. The IQ has been extensively tested at flow laboratories and field sites making sure that the solution is not only robust and provides high quality data, but also is user friendly and easy to use.

The IQ is an intelligent flow meter specifically designed for measuring flow in open channels. The innovative 5-beam design incorporates a vertical beam and four velocity profiling beams. The vertical beam works in tandem with

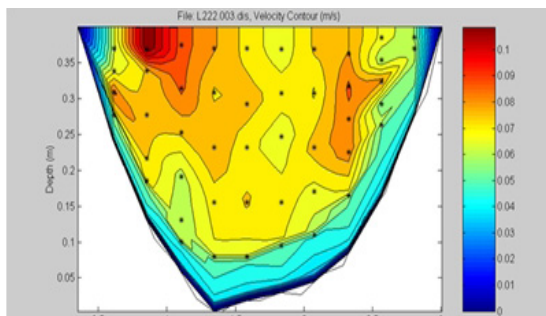
a high-resolution pressure sensor to define water level that is then used to compute channel cross-sectional area (via a user entered cross-sectional survey). The four velocity profiling beams measure the horizontal and vertical distribution of velocities in the channel - in the end the IQ provides accurate flow data that you can make decisions on. There are two versions of the IQ, a standard version and a **SonTek-IQ Plus** version.



The IQ is a bottom mounted system or otherwise known as an “up-looker”. The IQ collects the horizontal and vertical distribution of water velocity as well as water level data

to determine flow. After talking extensively with water managers in the water industry, SonTek determined that having reliable and dependable flow data from the field is important for decision making. Existing technologies provide data, but the data have limitations due to the accuracy that can create problems.

For example, is an Irrigation District providing the farmer the right amount of water? Not enough water means an unhappy farmer; while too much water means that the Irrigation District could have sold that water elsewhere and made more money. Bottom line is that water is a valuable resource and the IQ can give you data that you can make sound decisions on.



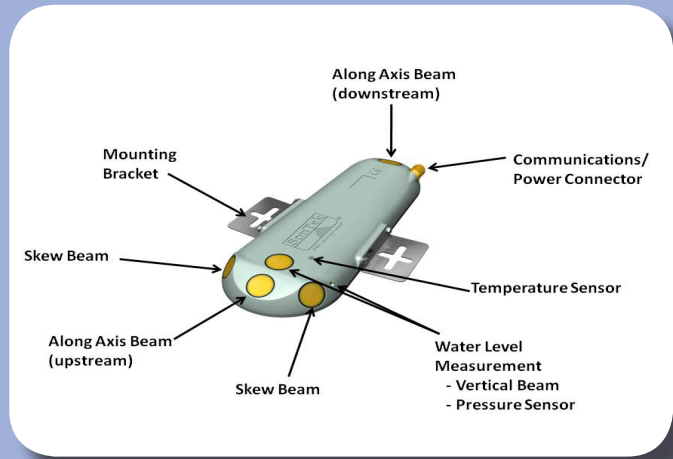
Here is an example of a FlowTracker measurement and corresponding isovel map – data from these measurements and hundreds more were used to define beam geometries and flow algorithms. In the end, the IQ is a that collects data that you can make decisions on.

	Operating Range (m)	Velocity Output	Software
IQ	0.08 - 1.5 m	SmartPulse ^{HD} Average Velocity	Standard data display, no data reprocessing
IQ Plus	0.08 - 5.0m	SmartPulse ^{HD} Velocity Profiles (cell sizes as small as 2 cm)	Advanced data display and data reprocessing

The SonTek-IQ software package is the starting point for interfacing with the instrument. The “SmartPage” has built-in icons that guide users through the configuration steps

SonTek-IQ Attributes:

- ◆ Two along-axis velocity profiling beams (25° off the vertical axis)
 - Measures vertical stratification of channel velocities
- ◆ Two skew velocity profiling beams (60° off the vertical axis and horizontal axis)
 - Measures the horizontal distribution of channel velocities
- ◆ Intelligent adaptive sampling via SmartPulse^{HD}
 - Dynamic selection and optimization of the acoustic pulsing scheme based on water depth, flow velocity and turbulence
- ◆ Robust water level
 - Combines data from vertical beam and integrated pressure sensor

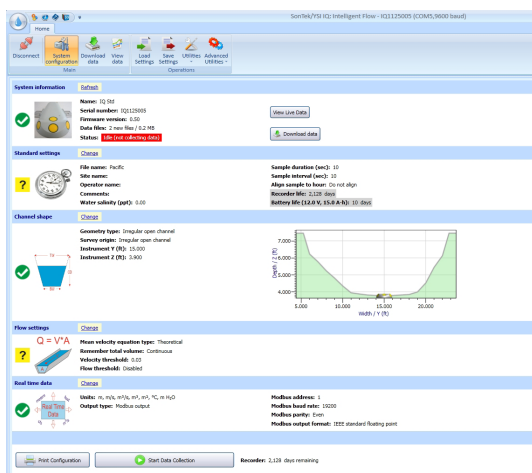


- ◆ High resolution temperature sensor
- ◆ Communicates via RS-232, SDI-12 and Modbus
- ◆ Mounting brackets allow for a quick and easy installation
- ◆ External power (7- 15 VDC) required
- ◆ 4 GB internal recorder provides data storage for years

to collect the best possible data. After configuring the IQ, data collection and downloading is easy. Simply connect to the system to download data files – the software organizes data files like a database; files can be sorted by Site name, File name, IQ Serial number and Operator name, allowing users to find and use data quickly and easily. The organized structure of icons at the top of the screen provides users quick an easy option for creating graphs and viewing tabular data. Creating reports are easy – graphs generated by the IQ software can be copied and saved and then pasted or inserted into any document. Want to run some statistics on the data?

You can do that too, with just one click.

Water users will come to the conclusion quickly that the SonTek-IQ was designed and built with the end user in mind. From installation and integration to configuration for data collection to downloading and data processing, the IQ is remarkably easy to use. In addition, water managers around the world will appreciate the accuracy of the IQ; finally an easy to use and affordable flow monitoring solution that provides flow data that can be used for decision making.



IQ Software SmartPage



Example of the SonTek-IQ installation in a small canal.

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