

SONAR Technology for Fish Finders

Compiled and Annotated

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Explained: SONAR Technology of Fish Finders

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Introduction

The goal of this white paper is compile authoritative papers and literature on sonar technology with focus in sonar technology as it is applied to fish finding applications. This white paper will filter out the technical jargon that normally plaques serious sonar literature without reducing the white paper to anecdotes similar to those found in manufacturer marketing literature. This white paper will distinguish between the true science and technology versus the marketing hype that is generated by well-funded marketing campaign.

We will start with a brief overview of sonar and how it works. We will then discuss the hardware components that comprise a sonar system. From there, we will move on to the various sonar technology currently being incorporated by the fish finder manufacturers , including CHIRP (compressed high intensity radar pulse) that promises dramatic gains in sonar target definition and depth penetration. Finally, we will look at the current trend in fish finder technology and what kind of products and pricing we can expect from manufacturers implementing these new technologies.

Chapter 1: Overview

The Physics of Sound in Water

“It is clear to anyone who has immersed himself or herself in a lake or ocean that sounds can be heard underwater. The sounds of waves, power boats, and other bathers can be heard with remarkable clarity, even at considerable distances. In fact, sounds move quite efficiently through water, far more easily than they do through air. As an example, whales use sound to communicate over distances of tens or even hundreds of kilometers. The ability of sound to travel over such great distances allows remote sensing in a water environment. Devices that use sounds in such an application fall under the family of instruments known as sonars. To understand sonars, you must first understand sound. In particular, you must understand how sound moves in water.

Sound travels in water in a moving series of pressure fronts known as a compressional wave. These pressure fronts move (or propagate) at a specific speed in water, the local speed of sound. The local speed of sound can change depending on the conditions of the water such as its salinity, pressure, and temperature, but it is independent of the