

Vectron International Frequency Control University

INNOVATE, IMPROVE, GROW



*Join us for a two-day
comprehensive overview of
Frequency Control Products at
our campuses in Mt Holly
Springs, PA and Hudson, NH*

Purpose

Vectron Frequency Control University (FCU) is designed to provide both commercial and technical personnel with a comprehensive overview of the manufacturing process for crystals, crystal oscillators (clocks, VCXOs, TCXOs, OCXOs, VCSOs), crystal filters, SAW filters and oscillator based modules. A technical and applications overview of frequency control products will also be presented. As the focus is product training, we will use our frequency control components for training examples where necessary, though there will be no sales pitch for Vectron products.

Registration

The training session is free and you will be provided with all reference material required. To reserve your place, or to request any additional information, please phone (717) 486-6013, or email us at dbail@vectron.com.

Accommodations

Upon registration, we will reserve a room in your name at one of the following hotels. Other accommodations may be made based on availability:

For Mt Holly Springs, PA:
Comfort Suites
10 S. Hanover St.
Carlisle, PA 17013
(717) 960-1000

For Hudson, NH
Crowne Plaza
2 Somerset Pkwy.
Nashua, NH 03063
(603) 886-1200

About Vectron International

Vectron is the preferred technology partner for Frequency Control, Sensor, and Hybrid Product Solutions. We help customers "Innovate, Improve and Grow" their businesses. Vectron International is both a product manufacturer and a solutions provider, leading with its unique technology but always prepared to design and engineer custom solutions, where required.

Locations

Vectron Frequency Control University is held at two of our facilities in Mount Holly Springs, PA and Hudson, NH. We have additional manufacturing facilities in Cincinnati, OH; Pudong, China; Neckarbischofsheim, Germany; and Teltow, Germany.

Our Technology

Vectron International is a world leader in the design, manufacture and marketing of Frequency Control, Sensor, and Hybrid Product solutions using the very latest techniques in both bulk acoustic wave (BAW) and surface acoustic wave (SAW) based designs from DC to microwave frequencies. Products include crystals and crystal oscillators; frequency translators; clock and data recovery products; SAW filters and components used in telecommunications, data communications, frequency synthesizers, timing, navigation, military, aerospace and instrumentation systems.

FCU Schedule

2009

Jan 14-15, Northern CA
March 10-11, Hudson, NH
Sept 15-16, Mt Holly, PA

FCU sessions are scheduled throughout the year. We reserve the right to add or change dates. Please call to confirm your participation and to reserve your training date.

Presenters

Bob Potter – SAW Application Engineer
Fran Boudreau – XO/VCXO Application Engineer
John Fortune – XO/VCXO Product Line Manager
Scott Murphy – Mil/Space Product Manager
Dave Shaner – OCXO Engineering Director/PLM
Dave Chandler – Precision Modules Product Line Manager
Dan Fry – XO/VCXO/TCXO Engineering Director
Debbie Bobb – XO/VCXO/TCXO Product Manager
Harry Wilson – TCXO Design Engineer
Ben Witham – VCXO/PLL Product Line Manager
Steve Downing – XO/VCXO Engineering Manager
Todd Palmer – Crystal Design/Process Engineer
Ed Smith – BAW Crystal Filter PLM

Our Markets

Applications for Vectron International's products include cellular, personal communications systems (PCS) and specialized mobile radio base stations, test instrumentation, satellite communications, military, space, and other applications where precision timing is required.

Our Products

Crystal clock oscillators (PXOs)
Voltage Controlled Crystal Oscillators (VCXOs)
Temperature Compensated Crystal Oscillators (TCXOs)
Oven Controlled Crystal Oscillators (OCXOs)
Surface Acoustic Wave Oscillators (SOs/VCXOs)
Frequency Translator Products (FXs)
SAW Filters
Quartz crystals, resonators and filters

Our Customers

Vectron International has strategic partnerships with key OEM manufacturers and offers standard products for a broad range of technologies and markets. Customers are served by regional sales offices and a world-wide network of sales representatives.

Location of the Mt Holly Springs Facility

Our Mount Holly Springs facility is located approximately 30 minutes southwest of Harrisburg, PA. The closest airports are Harrisburg International, BWI, and Washington Dulles. The address of the facility is:

Vectron International
100 Watts St.
Mt Holly Springs, PA, 17065

Location of the Hudson Facility

Our Hudson facility is located in southern New Hampshire about 45 miles northwest of Boston. The closest airports are Manchester-Boston Regional Airport and Logan International. The address of the facility is:

Vectron International
267 Lowell Road
Hudson, New Hampshire 03051

Agenda

Monday Evening

7:00 pm Informal Dinner (optional)

Tuesday

8:15 am Introductions/Overview
8:30 am Tutorials/Tours
Crystal Tutorial/Tour
Intro to Oscillators
XO/VCXO Tutorial/Tour
12:00 pm Lunch
1:00 pm Tutorials/Tours continued
TCXO Tutorial/Tour
OCXO Tutorial/Tour
4:30 pm Close of Day 1
6:00 pm Dinner

Wednesday

8:15 am Tutorials/Tours continued
SAW Filter Theory
SO/VCXO Tutorial/Tour
Translator Tutorial
Module Tutorial
11:30 am Lunch
12:00 am Tutorials/Tours continued
Sensor Tutorial
Filter Tutorial
Mil/Space Tutorial
2:30 pm Graduation

Course Outline

- I Crystal Tutorial
 - A Basic Crystal Orientation
 - Piezoelectric Effect
 - Crystal Cuts
 - C. Design and Application
 - D. Quality Considerations
- II Intro to Oscillators
 - A Basic Theory
 - B Types of oscillators
 - C Sources of Instabilities
- III Oscillator / VCXO Tutorial
 - A Definition
 - B Package Considerations
 - C Clock Oscillators
 - D VCXOs
- IV TCXO Tutorial
 - A Definitions
 - B Design and Application
- V OCXO Tutorial
 - A Definitions
 - B Design and Application
- VI SAW Filter Theory
 - A Surface Acoustic Wave Theory
- VII SO/VCXO Tutorial
 - A Definitions
 - B Design and Application
- VIII Frequency Translator Tutorial
 - A Definitions
 - B Phase Lock Loop Design
 - C Design and Application
- IX Module Tutorial
 - A Definitions
 - B Design and Application
- X Sensor Tutorial
 - A Basic Theory
 - B Sensor Applications
- XI Filter Tutorial
 - A Filter Types
 - B Design and Application
- XII Mil/Space Tutorial
 - A Commercial vs. Mil/Space requirements
 - B Environmental Considerations