

CARGO SCANNING CUSTOM TECHNOLOGY

Teledyne e2v is a leader in cargo scanning technology, delivering products that are integrated into 90% of major systems worldwide.

Over 90% of the world's non-bulk cargo is transported by ship in standardised containers. The containerisation system was developed after World War II and its cost reduction has been a major driver of international trade and globalisation. There are well over half a billion container shipments per annum.



THE CRITICAL TECHNOLOGY AT THE HEART OF CARGO SCANNING SYSTEMS

Cargo scanning is a broad term which encompasses intelligent logistics, sniffer dogs and X-ray inspection. X-ray inspection systems offer rapid, non-invasive checking of manifests, detection of contraband, and when combined with other techniques, can be used to identify the presence of nuclear material. X-ray energies up to 10 MeV are required to penetrate fully loaded shipping containers and vehicles. These X-rays are generated through the acceleration of electrons along a linear accelerator into a target using megawatt energy microwave pulses produced by the RF sub-system.

The skills for the design, manufacture and integration of specialised components for low-cost systems reside mainly in commercial companies. There is an emerging trend for linac system companies to demand higher performance from their integrated RF sub-systems.

Currently, we intend not only to drive the innovation and development in this area, but also to offer integrated RF sub-systems to meet new requirements such as, portability, material discrimination and higher throughput.



For more security solutions, go to
teledyne-e2v.com/RF



TELEDYNE e2v
Everywhereyoulook™

CUTTING EDGE INNOVATIONS MARKET-LEADING ASSURANCES

We have continued to work closely with our customers to develop customised solutions based on their detailed requirements and the end user expectations of performance.

Our understanding of the changing technical requirements of the X-ray inspection market is driving the development of components within the RF sub-system. These products include magnetrons for pulsed RF power generation, solid-state modulators to drive the magnetron with high voltage pulses, thyratrons to provide high voltage switching in line-type modulators and RF accessories.



CUSTOMISED SOLUTIONS

High throughput is a key requirement for X-ray cargo inspection at ports and borders. This can be achieved by operating a magnetron at high pulse repetition frequencies, and therefore high average power output. We are continuing to develop magnetrons to allow higher pulse repetition rates and faster scanning of containers and vehicles - a key requirement in the market to make sure operators can scan cargo faster, therefore reducing queues at ports and border crossings.

The magnetron design has been entirely revised to reduce the magnetron missing pulse rate in order to support system OEMs to deliver improved reliability and consistency in image generation. As system requirements become less tolerant to missing pulses, development effort at Teledyne e2v is targeting reductions in the missing pulse rate by two orders of magnitude.

Other key devices in the RF sub-system include the modulator; which drives the magnetron, and the circulator through where the microwaves from the magnetron travel before entering the linear accelerator. We are also working to provide solutions to the difficulties experienced by systems designers with the integration of line type and solid state modulators, and circulators in the RF chain.



For more security solutions, email us:
rfpower@teledyne-e2v.com



TELEDYNE e2v
Everywhere you look™