Q. Can you give us an overview of Fujikura and how the UK office fits into the EU and global company?

Fujikura was founded in Japan in 1885 and the first products were cotton-insulated wires which rapidly evolved to rubber-insulated wires.

New companies evolved in various sectors, but it was the power and communications activity which became our core business in the 1960s, predominantly based in the Sakura plant (Chiba, Japan), where much of our current R&D takes place today.

The communications business moved into Optical Fibre in the 1970s, when Fujikura was a pioneer in the process for producing optical preforms and fibres. Naturally, this progressed to other special fibres and components including optical amplifiers, gratings, dispersion control and splicers.

Today Fujikura employs 55,000 and is active in power and communications, consumer electronics, automotive, materials and real estate, the European business being founded in the UK in 1988 to sell and support our Fusion Splicing business throughout Europe. Today we are the main conduit for all Fujikura’s optical and electrical products.
Q. You recently launched a new range of fibre lasers, what is the history of this product range?

The origins of our laser business really go back to the 1970s when we started making optical fibre. We naturally expanded our fibre production business and are currently one of the top 3 fibre producers in the world. We also developed a wide range of special fibres such as Polarisation Maintaining Fibres, Erbium Doped Fibres, Dispersion Compensating Fibres and the like. In addition we became one of the key optical fibre components suppliers in the 1990s when optical amplification and DWDM helped launch the rapid expansion of communications around the world. Of course, many of the optical components used in amplifiers such as couplers, gratings and active fibres, are what enabled the evolution of fibre lasers today.

Not only are we fully vertically integrated, but we make the splicers that assemble the lasers.

We first developed our fibre laser in the early 1990s and are currently a leading supplier of fibre lasers for the Japanese market. We currently offer ultra-stable pulsed fibre lasers primarily at high-end applications where performance and stability are key. We are also producing CW lasers which will be released in Europe late in 2017.

Q. Vertical integration is important to be cost competitive, how vertically integrated is your company?

Fujikura is completely vertically integrated. We produce all of the optical fibres used with the laser of course, and have been a supplier of large core delivery fibres to the EU for many years now. We produce the active doped fibres, as well as the couplers and gratings within the laser cavity. We have over 70 patents on fibre-based laser technologies including techniques to prevent photo-darkening, to unique coupler and grating technology. We even produce the high end splicers that all of the other laser manufacturers use in order to manufacture and repair their own lasers...so not only are we fully vertically integrated, but we make the splicers that produce the lasers...does that make us 110% vertically integrated?

On the active side we acquired the Japanese high power laser diode manufacturer Opto-Energy back in 2010. The key processes for the (MOCVD) epitaxial growth of the diodes, as well as the AR coating and packaging, are all carried out in our Sakura plant, the same site that produces our fibres. We have 100% control of all production for every key item within our fibre lasers.

Q. What benefits does your technology offer? How do you protect against back-reflection?

The key benefit that we offer for both our pulsed and CW lasers is extreme tolerance to high levels of back-reflected light. Some of our customers in Japan and Europe have used fibre lasers from our competitors on certain materials at high powers and the laser just cuts out. Of course, this is a safety mechanism to prevent damage to the laser, but our laser is different. The internal optics provide complete stability even at normal incidence and at high power. Our laser does not shut down because it is protected at a fundamental optical level. Our customers can machine these materials with no problem. We have many technologies which facilitate this. We have a unique optical coupler which protects the laser diodes from reflected light, our pulsed laser cavity employs a Raman frequency shifter to isolate the seed laser. We have removed photo-darkening by utilising certain fibre dopants which remove this effect. We also have developed techniques to dramatically reduce the destabilising effects of Stimulated Raman Scattering from affecting the laser stability.

On the CW side, we have developed very high power pump diodes currently producing 18 W+ per chip. These are combined to give pump modules of more that 150 W with huge amounts of redundancy at low cost. In addition we have some optical designs in the pipeline which will dramatically increase the total power output per module.

Q. How do you see the future in terms of growth and share in this crowded market?

Fujikura has a long term target to become a top 3 supplier of fibre lasers for the European market by 2020. We see many suppliers moving into the field of systems in order to move into profitability. This is not our goal at all, our business is lasers and it will stay that way. We do not want to compete with our customers in this market. Instead, we aim to use our expertise and strength in fibre technologies to improve efficiency and gradually grow market share working with a few key customers to start whilst we ramp up our support base. Our first product launch for Europe will be the pulsed lasers, followed by the CW lasers at the end of 2017. We also are not ruling out acquisitions or other partnerships in order to gain a wider footprint more quickly. However, Fujikura is a patient company and were looking for longer term stable growth rather than creating dramatic short term headlines.

AILU has given us great access to my existing contacts as well as many new ones.

Q. How has AILU Membership been helpful to your company?

I personally first heard of AILU during my employment at ZED Instruments where I was involved with product development. I’ve been out of the laser market for 15 years so AILU has given us great access to my existing contacts as well as many new ones. We have attended many AILU events which have been extremely informative for both our UK staff and our colleagues from Japan. The networking opportunities are excellent and the general level of support has been a great help in helping us to establish ourselves in the UK and EU.

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