GC Orthodontics Europe—a new player in orthodontics

The global dental specialist GC corporation has expanded into the orthodontic market and has formed a new company, GC Orthodontics Europe GmbH. GC Corporation, which is active throughout the world, is expanding its field of expertise and adding another powerful element to its portfolio with the creation of GC Orthodontics Europe GmbH. This move supports the philosophy of the GC group in providing high quality products and excellent service in orthodontics, with the desired aim of offering the greatest possible benefit for dentistry along with optimum practitioner and patient satisfaction. The foundation of GC Orthodontics Europe GmbH (GCOE) brings the GC Corporation closer to its goal of offering comprehensive dentistry services at the highest level. As one of the world’s leading dentistry firms, GC has been providing product solutions to the entire world for over 95 years, and now will be doing the same for orthodontics. Helping improve overall human health is one of the main principles of GCOE, which is committed to the values and philosophy of GC Corporation worldwide. Combining tradition and progress are just as important as high standards in products and services.

GC Orthodontics Europe GmbH is based in the German town of Breckerfeld and will be distributing the new product range directly in Germany and France, and will be working with exclusive official dealers in the rest of Europe, the Middle East and Africa. The company will benefit from close cooperation with its distribution partners in the individual countries with superior knowledge of their own markets and experience they have accumulated over the years.

“Our goal is to offer a comprehensive package of services to orthodontics, and provide our clients with quality management, product advice and training programmes for all orthodontic personnel. We will do this by offering top-quality customised product solutions, supported by innovative ordering options and hi-tech communication”, commented Jacques Peucat, European sales manager of GC Orthodontics Europe GmbH. GC have partnered with the long-established expertise of the leading Japanese company Tomy Inc., a byword for innovation, efficiency and quality. ‘Made in Japan, assembled in Germany’; while most of the products will originate from Japan, some manufacturing and all distribution activities will take place in Germany, a great advantage for Europe. The use of the most innovative materials and technology will not only ensure that the highest processing and reliability standards are met, but will also allow patients of all ages undergoing orthodontic treatment to enjoy a comfortable and attractive outcome.

Jacques Peucat: “We offer a unique symbiosis of quality, service and know-how, and our objective is to transform the enthusiasm for orthodontics that we share with our clients into joint success. This passion is what drives us towards the global future of orthodontics.”

The product portfolio consists primarily of modern solutions for fixed orthodontics, including the self-ligating bracket systems in the Experience line. The brackets in this range include Experience Metal, Experience Ceramic and Experience Lingual, along with the Experience Mini Metal brackets, the attractive rhodium-coated versions of which are a real innovation in fixed orthodontics; scarcely higher than a conventional bracket, they are a highly effective combination of aesthetics, function and comfort.

The clients and partners of GC Orthodontics Europe GmbH will also benefit from one of GC Corporation’s key principles: the company will from the very beginning operate to the highest quality standards in all areas—products, services, environmental protection and sustainability—in this new area of activity—orthodontics.

Find your local dealer at www.gcorthodontics.eu/GC/en/content/european-organization

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diagnosis of bruxism

An easier way to detect bruxism

Bruxism is one of the most common parafunctions, commonly associated with sleep disorders. While existing home testing devices are expensive and not patient friendly, Bruxlab makes it possible to detect bruxism in a cheap and easy way. The Dutch company has developed diagnostic tools to record and quantify any grinding sounds using machine learning, mobile app technology and wearables. Clinical signs of bruxism include excessive tooth wear, sensitive teeth, headaches and fatigued jaw muscles in the morning. However, sleep bruxism can stop spontaneously and may not be chronic. A dentist can therefore not determine whether there is active sleep and chronic bruxism by using conventional ways of diagnosing sleep bruxism. Dentists can now track patients using Bruxlab’s DoiGrind app to see if there is active bruxism and if it is chronic. The so-called Bruxsticker makes it possible to measure movement of the lower jaw during sleep. An integrated nano-accelerometer and Bluetooth chip, in combination with the app, record and filter tooth-grinding sounds over multiple nights. The new idea behind Bruxlab is an algorithm that can filter any tooth-grinding sounds and tooth contact sounds. The latter often indicate the beginning of a clenching episode. The Bruxlab software validates the sounds using the gold standard, polysomnography, better known as a sleep test. This test will tell dentists if there was muscle activity at the same time that a grinding sound was detected. The device on which the app is loaded is placed next to the bed and records and filters any tooth-grinding sounds. On average, the Bruxlab technology reduces eight hours of sleep to five minutes of relevant sounds. The sounds are uploaded to the cloud, where the dentist can listen to them. Bruxism can now be easily detected thanks to Bruxlab.

Bruxlab
www.bruxlab.com

bruxism treatment

A cost-effective and custom solution for bruxism

In the U.S. alone, bruxism affects 10 per cent of people and as many as 15 per cent of children, according to the American Sleep Association. Once this oral habit has been identified, dentists usually prescribe a night guard or splint. However, many types of night guards exist on the market that do not fit perfectly owing to the hard acrylic material from which they are manufactured. Furthermore, while custom-made occlusal guards are the best permanent solution, not every patient affected by bruxism can afford such an expensive mouth guard. Insurance may cover a night guard only once in the patient’s lifetime. Therefore, many cases of bruxism go untreated, causing continued permanent damage to patients’ teeth.

U.S.-based Akervall Technologies offers an effective custom-made and cheaper solution: the SOVA Night Guard, the thinnest over-the-counter night guard on the market made of thermoplastic material. While the SOVA Night Guard is only 1.6 mm thick, it has been designed to withstand 30 per cent more impact than a conventional mouth guard. Patients have reported that within the first week of wearing the night guard, the pain caused by bruxism or temporomandibular joint dysfunction (TMD) was significantly reduced or stopped. Moreover, they have remarked on SOVA’s stability and thinness, as well as the ease of drinking and talking while wearing it. The technology behind the SOVA Night Guard is called Diffusix and it works with unique perforations and special crumple zones that prevent grinding forces from travelling to the teeth, relieving pain and reducing the risk of dental injury. When a SOVA Night Guard is properly fitted, perforations oscillate on impact to diffuse grinding forces and guide those forces into the crumple zones. The perforations also allow for a true custom fit and natural flow of air and saliva. The SOVA Night Guard is made from a tough thermoplastic polymer material with a high tensile strength that is biocompatible, biodegradable and BPA-free. The night guard starts as a flat horseshoe shape. After immersion in 130 °F (54 °C) water, the material becomes pliable. The night guard is then molded against the teeth until it hardens. Thus, rather than requiring taking an impression and sending it to the dental laboratory, the SOVA Night Guard can be molded in the office in under 5 minutes to provide the patient with an immediate solution. The appliance can be remolded up to 20 times. SOVA also works with orthodontics. As the teeth are moving, the night guard can be easily adjusted.

Akervall Technologies
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www.sovanightguard.com
clear aligner therapy

ClearCorrect clear aligner therapy discreetly improves crowding and constricted archforms

Today, there are more options available to those seeking orthodontic services than ever before thanks to advances in clear aligner therapy. The rising popularity of ClearCorrect and other clear aligner providers has spiked over the past decade, and is only expected to continue its aggressive growth trajectory. According to a recent Azoth Analytics research report, the global invisible braces market is expected to grow at an annual rate of 12.16 per cent from 2016 to 2021. Now more teens and adults are seeking orthodontic treatment for a wide variety of reasons, such as, improved aesthetics, affordability, and orthodontic relapse.

ClearCorrect aligners are more affordable than leading competing brands, allowing doctors to pass greater savings to their patients. Doctors can easily submit digital intraoral scans and manage their cases on the user-friendly website while also working with a designated customer service specialist. ClearCorrect is suitable for most treatment goals from minor cases to more advanced crowding and spacing complaints.

Dr Mark J. Bentele successfully treated a patient’s chief complaint of adolescent orthodontic relapse with ClearCorrect. The patient had a Class I right, Class I left molar relationship, with a Class I right, end-on Class II left canine relationship. Dr Bentele submitted the case to ClearCorrect and requested an improved upper and lower midline, and also requested an idealized overjet, improved overbite, and improvement of the constricted arch forms while maintaining molar relationship (Figs. 1–3). Proclination of the mandibular incisors was requested and #11 be distained into a proper Class I relationship, and all spaces were to be closed.

The ClearCorrect treatment plan estimated 24 sets of aligners. The patient was compliant wearing each set of aligners for three weeks (at least 22 hours a day). At the start of treatment, facial translation of premolars and canines occurred, and then engagers were placed on teeth Nos. 7, 10, 22 and 27 and 0.3 mm IPR was performed on the mesial/distal #27. After the engager placement, the patient received the fifth set of aligners and was also given his sixth set to take home. Next to complete the patient’s total treatment, a contact check on tooth #27 was performed to ensure patient compliance, and teeth Nos. 22 and 23 were correctly aligned. The patient progressed more quickly than originally planned, and only needed 16 sets of aligners as opposed to 24 sets. At the end of the ClearCorrect treatment, all objectives were accomplished and the patient was instructed to wear retainers at night time indefinitely (Figs. 4–6). Upon treatment completion, Dr Bentele’s patient was very happy with the results and the effectiveness of ClearCorrect clear aligner therapy.

Founded in 2006 by dentists, ClearCorrect understands the needs of both doctors and patients, and has been proven effective for more than 20,000 doctors worldwide. Doctors find that ClearCorrect is easy to implement into their practice with convenient access to online optional training with marketing kits at their fingertips. The company designs, manufactures and supports its products out of its headquarters based in Round Rock, Texas, USA.

Teens and adults can benefit from clear aligner therapy due to the aesthetic, affordability, shorter treatment period, and lasting results.

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www.clearcorrect.com
The 4th Scientific Congress for Aligner Orthodontics will take place on 18th and 19th November 2016 at the Cologne Gürzenich. With more than 500 participants and over 30 exhibitors, the DGAO Congress is the world's largest, independent aligner congress.

NEW COLLECTION

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OrthoPulse from Biolux Research shortens duration of orthodontic treatment

‘How long will it take?’ is the ever-recurring question most orthodontists hear during orthodontic treatment, especially with adults. An increasing number of patients are seeking shorter orthodontic treatment times. Various techniques exist to accelerate tooth movement and thereby shorten treatment time. Most of these approaches are invasive and require additional surgical interventions, reducing their acceptance by patients and orthodontists. One method that is gaining traction due to its convenience and effectiveness is the acceleration of orthodontic tooth movement through photobiomodulation with an OrthoPulse, a device from Canadian company Biolux Research Ltd.

What is photobiomodulation?
Photobiomodulation (PBM), also known as low-level light therapy (LLLT), is non-invasive and uses low energy lasers or light-emitting diodes (LED) to modify cellular biology by exposure to light in the red to near-infrared (NIR) wavelength range between 600 and 1,000 nm. This NIR light is almost invisible to the human eye; however it has been shown to provide a therapeutic benefit by increasing the metabolic activity of bone and soft tissues. PBM leads to a non-thermal photochemical reaction in the irradiated cells, of which the effect on the mitochondria should be particularly highlighted. Back in the 1930s, German chemist and Nobel laureate Otto Warburg discovered the effect of specific light frequencies on mitochondrial activity.

Fig. 1: Photons penetrate the bone and soft tissue around the root of the teeth and stimulate the mitochondrial enzymes, which enhances the production of ATP. The increased energy enables the acceleration of tooth movement.

After providing the patient with instructions in the practice, he uses the device once a day for 5 minutes per treated jaw. Accidental misuse by the patient is avoided thanks to the automatic start of the session once the device is in the mouth and stops once the treatment has been completed. The OrthoPulse smartphone app has been to provide doctors and patients with OrthoPulse treatment compliance at a glance, by tracking of the overall patient’s treatment consistency and percentage compliance. The continuous monitoring of the treatment by the orthodontist is ensured in the time between inspections.

In addition to shortening the duration of the treatment up to of 50% through the use of OrthoPulse, patients report significantly reduced
Pain during the first days after the wire change or adjustment, as well as change of aligner.

Leading research institutions such as The Forsyth Institute, Cambridge, USA, and Kyung Hee University, Seoul, Korea are now examining the effects of PBM.

Research by Chiari et al at Boston University, studied the effect of PBM-induced tooth movement using extraroral transcutaneous phototherapy on the rat periodontium. The results showed a 2.8–3.7 x faster tooth movement.

Clinical research on the effect of PBM during orthodontic treatments provided astonishing results.

**Treatment with fixed appliances**
- No clinically significant root resorption1
- 46 % increase in rate of space closure in adults;
- 28 % increase in rate of space closure in adolescents compared to control
- 54 % reduction in time to achieve anterior alignment1
- 2.3x faster mean alignment rate2
- No significant changes in root resorption greater than .32 mm3

**Treatment with aligners**
- 66 % reduction in the average duration per aligner during OrthoPulse, treatment as compared to the conventionally recommended aligner wear duration4
- No measurable root resorption over 6 months5

Editorial note: Complete list of references is available from the publisher and at www.orthopulse.com.

**Planmeca ProMax 3D units—Ideal for imaging patients with braces**

Planmeca ProMax 3D is a CBCT product family consisting of exceptional all-in-one imaging units.

The intelligent units support several different imaging modalities and provide all needed specialist tools. As a reflection of their suitability for orthodontics, three of the Planmeca ProMax 3D units—Classic, Mid and Max—have now been certified for use with the suresmile treatment management system.

Planmeca ProMax 3D units have been designed to meet the strictest of requirements in maxillofacial imaging. They support three different types of 3-D imaging (CBCT, 3-D face photo and 3-D model scan), and also extraoral bitewing, cephalometric and digital panoramic imaging. This flexibility between 2-D and 3-D allows clinics to optimise their imaging procedures, and select the techniques that work best with each case—at an optimal patient dose.

The Braces imaging protocol of Planmeca ProMax 3D units is tailor-made for orthodontics, as it allows users to acquire a low dose CBCT image, which accurately shows the metal brackets on braces. With powerful artefact removal algorithms used in image reconstruction, the units produce images that reveal the exact position of roots in relation to bone.

The CBCT units’ stable support system helps patients remain completely still during imaging. This is especially important when acquiring high contrast images as part of orthodontic treatments.

**Certified for use with suresmile**

The Planmeca ProMax 3D Classic, Mid, and Max CBCT units are now certified for use with the suresmile treatment management system by OraMetrix.

The suresmile system has been designed to enable orthodontists to visualise and simulate multiple diagnostic set-ups and design customised archwires for every patient.

The accuracy of patient scans plays a critical role in maximising the effectiveness of the suresmile system. Combining the system with a CBCT unit allows the efficient visualisation and virtual manipulation of teeth and their roots. The orthodontic braces protocol of Planmeca ProMax 3D units has been optimised for use with the suresmile treatment management system.

**See more at a lower dose**

The effective patient dose of CBCT imaging is closely related to the protocol used for scanning. Planmeca has established itself as the industry leader in pioneering ultra low dose imaging. The innovative Planmeca Ultra Low Dose protocol available in all Planmeca ProMax 3D X-ray units reduces the effective patient dose in CBCT imaging significantly—without a statistical reduction in diagnostic image quality.

**Fig. 1:** Traditional CBCT image.

**Fig. 2:** CBCT image with the Braces imaging protocol.

At best, this means lowering patient doses to levels below even that of traditional 2-D panoramic imaging. With suresmile-certified Planmeca ProMax 3D units and the Planmeca Ultra Low Dose protocol, patients can benefit from CBCT imaging and three-dimensional diagnostic accuracy in orthodontic treatments with a significantly lower patient dose than in traditional imaging.

**Planmeca Oy**

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www.planmeca.com
AcceleDent Aura—Vibration device for orthodontic treatment

The most common concerns that prevent some patients from commencing orthodontic treatment are the length of treatment time and pain. Orthodontists and patients alike have found a solution to these treatment barriers with AcceleDent Aura, a prescription-only, Class II medical device employing SoftPulse Technology, which has been proven to accelerate orthodontic treatment by as much as 50 per cent and reduce pain associated with treatment. AcceleDent has clearance in more than 40 countries and the body of research supporting its safety and efficacy continues to grow as more orthodontists and patients report positive results with this non-invasive, accelerated-treatment technology. Medical literature has shown that the application of low-level pulsatile forces to bone can restore balance to the bone deposition and resorption cycle. While their exact mechanisms of action are not understood, medical devices that transmit micro-pulses have been shown to prevent bone breakdown and to increase bone density in animal and human studies. Micro-pulse therapy continues to be researched as a viable treatment option for patients with osteoporosis and bone fractures. Orthodontic tooth movement is the result of controlled manipulation of the bone deposition and resorption cycle using arch wires, springs, aligners and other appliances to apply force to teeth, which in turn alters the environment of the alveolar bone. Applying micro-pulse technology, such as that used in AcceleDent, in conjunction with orthodontic appliances has been clinically shown to accelerate this process. Published in the peer-reviewed Seminars in Orthodontics, this prospective, double-blind, randomised, sham-controlled trial has demonstrated that gentle, non-invasive vibration, applied as an adjunct to treatment for 20 minutes per day, significantly increases the rate of tooth movement. The AcceleDent Aura device incorporates an activator, which generates the micro-pulses, and a mouthpiece, which comes in large- and small-arch sizes. The patient turns on the activator and bites down on the mouthpiece for 20 minutes daily during the course of orthodontic treatment. Small and lightweight, AcceleDent is designed for hands-free use and is held in place simply with bite pressure. This enables patients to engage in other activities, such as reading, driving, watching television or using a computer, which provides some convenience for patients in scheduling the daily treatment. A second common barrier to orthodontic treatment is pain. As evidenced by a randomised controlled trial published in the peer-reviewed Journal of Clinical Orthodontist, micro-pulse vibration devices, such as AcceleDent, significantly lower orthodontic treatment pain scores for overall pain and biting pain. A reduction in discomfort is highly attractive to orthodontic patients and likely aids in compliance with the daily AcceleDent regimen and contributes to patient satisfaction. Dr Kenji Ojima has treated more than 400 aligner cases with AcceleDent, including complex orthodontic cases. The Journal of Clinical Orthodontics published the results of Ojima’s treatment of a 26-year-old female patient who was diagnosed as a skeletal Class II with infra-labioversion of the maxillary canines and a steep mandibular plane angle. All four of the patient’s third molars were removed prior to aligner treatment. Ojima’s assessment of this patient called for the patient to change aligners every 14 days over 30 months; however, the patient was unwilling to undergo treatment for that length of time. To accelerate her treatment, Ojima prescribed AcceleDent with instructions to change aligners every five days, enabling the patient to complete treatment in 18 months while experiencing no discomfort. Faster orthodontic treatment results have also been demonstrated with fixed appliances, as illustrated by Dr Sharon Orton-Gibbs. Reporting on the first extensive single-centre treatment experience with delivery of pulsatile forces, Orton-Gibbs published the results of predicted and actual treatment times for 14 control patients treated with fixed appliances and 14 AcceleDent patients treated with fixed appliances. As published in the Journal of Clinical Orthodontics, Orton-Gibbs found that the AcceleDent group completed treatment 33.5 per cent faster than their predicted treatment times, saving an average of 6.23 months of treatment time.

Conclusion
AcceleDent Aura enables orthodontists to remove barriers to treatment and give patients what they want—faster orthodontic treatment with reduced discomfort—while achieving sophisticated clinical results. The peer-reviewed evidence and clinical reports prove that AcceleDent Aura accelerates orthodontic treatment by as much as 50 per cent and reduces pain. There are tens of thousands of AcceleDent patients across the world who, along with their orthodontists, have reported high satisfaction with their accelerated treatment.

Editorial note: A complete list of references is available from the publisher.

OrthoAccel Technologies, Inc. 6575 West Loop South, Suite 200 Bellaire, TX 77401 USA www.acceledent.com
Temporomandibular Disorders (TMD) and Occlusion

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12 C.E. CREDITS

Certificates will be awarded upon completion

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CA DIGITAL is your direct contact and service partner in all areas of digital orthodontics and clinical applications. We assist you with all questions relating to precise digital treatment planning, offering you individual co-operation options and product solutions. Our latest innovation is the new MEMOTAIN nitinol CAD/CAM retainer. This retainer is digitally planned and precisely machine-made, offering the highest precision, best fit and user comfort. In contrast to hand-bent, conventional lingual steel retainers, MEMOTAIN retainers are produced and computerised to fit the individual tooth shape of the patient. The teeth are fixed dynamically and perfect wearing comfort is achieved through matching to the patient’s teeth. Owing to machine manufacture, the wire is not bent and thus not weakened. Predetermined breaking points are eliminated. Therefore, CA DIGITAL provides a 24-month breakage warranty.

CA DIGITAL GmbH
Willetstraße 10
40822 Mettmann
Germany
www.ca-digit.com

The innovative and biomechanical orthodontic expansion screw POP is made of stainless steel and biomedical technopolymer. The male screw is not in contact with the orthodontic acrylic resin; the function of the screw will not be influenced by the quality of the technical procedure and a non-compliant curing time. Continuous expansion movement: the high pressure injection of the polymer allows the perfect copy of the male thread of the screw, thus ensuring a steady expansion transmission without the risk of undesired turning back in the mouth. The self-centring rectangular guides ensure a biomechanical and absolutely controlled symmetrical expansion. The flat shape of the guides and their flexibility allow the gradual release of the expansion with a physiological orthodontic movement. The flexibility of the screw allows the adjustments of any dental regress due to inconsistent use of the appliance by the patient, thus being very effective with holding devices following a rapid expansion treatment. The high adaptability of the appliance enables a comfortable application in the mouth in the days following reactivation. Two embossed arrows on the body indicate the direction of opening. When using a colour of acrylic resin similar to the polymer body, a white arrow provided with the plastic placement tab may be easily applied to make the direction of activation visible. Therefore, AquaCare is a superior tool for incognito lingual brackets as it is able to reach difficult internal surfaces in order to clean and attach the brackets.

Medivance Instruments Ltd.
Barretts Green Road
London
United Kingdom
www.velopex.com

The unit combines four powder cartridge systems with an easy-to-use multi-function handpiece – that can even double via the foot control as a 3-in-1. AquaCare is capable of delivering abrading and prophylaxis media all via the same handpiece. Among the many applications areas, orthodontists can use AquaCare for bonding orthodontic brackets. The enamel of the tooth to be treated can be ‘etched’ to the exact size of the orthodontic bracket at the place of attachment. This is achieved by holding the cutting nozzle 2 mm above the surface of the tooth and gently moving it in a circular motion over the required area. This will result in a dry ‘etched’ surface, ready to accept the bonding agent. The risk of saliva contamination is greatly reduced because the aluminium oxide dries the surrounding mucosa. The same technique can be used to clean the orthodontic brackets.

AquaCare Twin

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