



Case Study | Fritz Stephan

The Embedded Security and Versatile Licensing Capabilities of CodeMeter

Price Responsive Business Models for the Healthcare Industry

The Challenge

Fritz Stephan was looking for a way to offer a cost-effective respiratory device that could be used both in emergency response situations and intensive care units, whose functionalities could be enabled on demand via a secure, internet-connected software licensing system. As an innovative world leader of ventilation solutions, Fritz Stephan also wanted to preserve the integrity of its technology.

The solution

CodeMeter proves to be the perfect match for EVE, Fritz Stephan's emergency ventilator unit. With CodeMeter, the company protects its own Intellectual Property against counterfeiting and reverse engineering; with a CmCard integrated directly in the unit, they protect their secrets from tampering; with CodeMeter License Central, they process license-based customer orders; and with WebDepot, they can upgrade units in the field.

The result

By implementing cutting-edge security and licensing systems, Fritz Stephan is safeguarding its many years of investments into its technology, is able to easily upsell new licenses over the Internet to its global customer base, and can conveniently modify the set of features of its devices.



Bernd Hoehne Marketing Manager, Fritz Stephan

We are excited about the success that our EVE family product is experiencing. The software and hardware-based integration of CodeMeter with EVE has allowed our business expansion to reach new global markets. Our customers appreciate the modular pricing structure we have created, the regular updates of our device software they receive online, and the possibility to upgrade anytime to new functionality.



The Company

Fritz Stephan GmbH is regarded as one of the world leaders in the development of specialized technical solutions in ventilation, anesthesiology and oxygen supply, with a special focus on neonatology and pediatrics. Clinical experience coupled with a high level of technical competence is achieved by close cooperation and an active dialogue with customers on a global scale. The development and supply of cutting-edge technology solutions for the benefit of the patient is the ultimate goal and vision of both the Fritz Stephan GmbH and its second generation majority owner Ms. Tanja Stephan.

Cyber-Security for Life-Saving Units



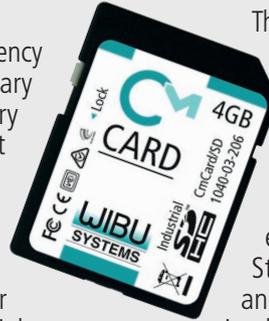
Fritz Stephan has been manufacturing ventilators for infants born prematurely since 1978. These are highly specialized ventilators developed for a very sensitive group of patients that require a gentle and non-invasive ventilation therapy.

In 2014, the company introduced its Easy Ventilator Emergency (EVE) unit. Especially in stressful situations, such as primary care for accident victims or seriously ill patients, every second counts. EVE is a mobile emergency ventilator that is extremely simple to operate. It comes with only three buttons for the immediate classification of the patient as newborn, child, or adult. This lightweight unit is equipped with a cutting-edge integrated turbine that produces air for ventilation, completely independent from oxygen cylinder tanks. With the integration of MASIMO® technology, all Rainbow Parameters are available. An innovative non-invasive SpCO measuring method for the diagnosis of carbon monoxide poisoning can also be integrated upon request. The large battery capacity guarantees treatment for the patient for up to six hours even without external power supply. Additionally, the unit can operate in environmentally adverse conditions.

The EVE ventilation family consists of three models that are assisting patients in their journey from the emergency site to the intensive care unit. **EVE_{TR}** is mainly used in emergencies and during transport, **EVE_{IN}** is a fully-fledged intensive care respirator for patients in the hospital environment, and **EVE_{NEO}** is an intensive care ventilator for the neonatal unit.

Such critical devices obviously need to implement security mechanisms for the safety of the patient, and Fritz Stephan is well aware of their responsibility. They have selected CodeMeter®, the flagship technology of Wibu-Systems for know-how protection and secure and flexible licensing. In particular, they have integrated CodeMeter Embedded, a modular runtime environment for embedded systems. Among other form factors, the technology works with secure SD cards developed by Wibu-Systems; these are specially designed mass storage units that embed the latest in technology, including Single Layer Cell (SLC) flash memory, the avant-garde SLM97 security

controller from Infineon, Hyperstone's S8 flash controller and their patented hymap® firmware, and CodeMeter API for the read and write configuration of a secure area in the memory.



These unique SD cards, called CmCards/SD, are embedded directly into all EVE devices. The operator of the ventilation device cannot access them without physically tampering with the machine, while the maintenance or sales personnel of Fritz Stephan can easily replace them. Each card holds the encryption keys along with digital signatures, certificates, and entitlement rights. By choosing CodeMeter, Fritz Stephan is able to safeguard the years of research and development that are invested in their intellectual property.

Additionally, with the Internet Edition of CodeMeter License Central, they have structured a scalable licensing model: they can remotely activate features on-demand that create new post-sales revenues and responsive pricing models for their customers. Essentially, the device that was initially purchased by the customer stays the same, but it can be upgraded in the field, no matter the country it was sold to. This is the case with **EVE_{NEO}**, for which the adult feature can be enabled at a later stage, or the neonatal mode that can be activated for **EVE_{IN}**. These are just several examples that prove the synergy between creative business modeling and modern technology advances.

The EVE product line has also been certified in accordance with DIN EN 794-3, RTCA DO160F, and DIN EN 80601-2-12 standards that respectively specify test conditions for emergency and transport of ventilators, the design of avionics electronic hardware in airborne systems, and safety in relation to critical care ventilators. This implies that CodeMeter itself is implicitly meeting Germany's most stringent regulations for medical devices.



About Wibu-Systems:

WIBU-SYSTEMS AG (WIBU®), a privately held company founded by Oliver Winzenried and Marcellus Buchheit in 1989, is an innovative security technology leader in the global software licensing market. Wibu-Systems' comprehensive and award winning solutions offer

unique and internationally patented processes for protection, licensing and security of digital assets and know-how to software publishers and industrial manufacturers who distribute their applications through PC-, embedded-, mobile- and cloud-based models.

