

Elematic, 37801 Akaa, Finland

## Partition walls combine quality and speed of construction

Acotec stands for Advanced Construction Technology and is a registered trademark of Elematic. This economical wall technology was developed in Finland and still today, the only original Acotec-lines are available from Elematic. The installation of the Acotec-walls can be carried out with two workers, building with a speed of up to 6 m<sup>2</sup> in an hour.

■ Tuija Aro, Finland ■

Traditional on-site construction methods meet with efficiency problems especially in societies where labor costs are high and the demand for fast construction projects continuously grow. Complete precast lines for the manufacturing of lightweight concrete wall panels from Elematic can result in substantial savings in construction costs, when compared to conventional on-site methods.

In many countries, the climate limits to the construction period: for example, just half of the calendar year can be used efficiently for constructing a building. Acotec non-load bearing partition walls, with a thickness of 68-140 mm, can be built six times faster than traditional brick walls and twice as fast as block work with no skilled labor. The installation of the Acotec-walls can be carried out with two workers, building with a speed of up to 6 m<sup>2</sup> in an hour.



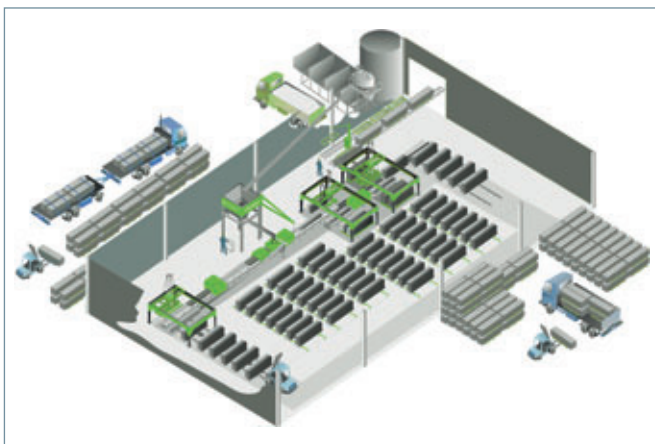
Fresh Acotec Panel stacks on their way to the overnight curing storage.

### A reasonable investment into existing facilities

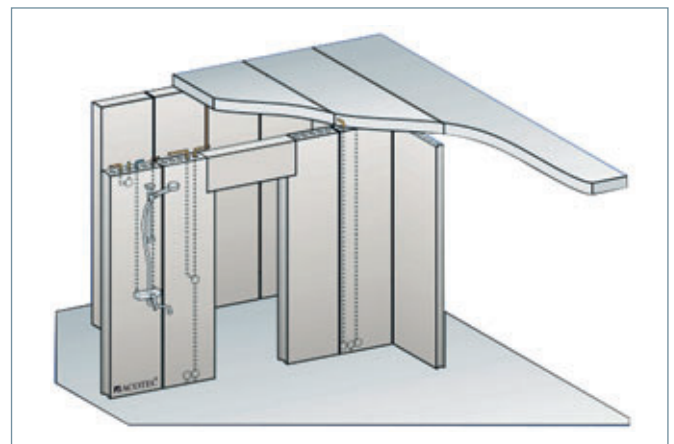
At the production site, the Acotec-line only requires approximately 900 m<sup>2</sup> of space and can be operated with 3-4 workers, so it is easily installed into existing facilities and is a reasonable investment: the typical pay back time is 1.5 to 2 years. This compact and highly automated production line

is based on a stationary extruder. It is uniquely simple to install, run, and maintain. Each line is constructed of standard components, utilizing the latest technology and covers the entire process from concrete batching all the way to storage yard management and beyond.

The process is waste-free and increases production volumes and daily productivity. The concrete used can vary from standard to



Acotec production line needs only 900 m<sup>2</sup> of regular industrial space and minimum 2-3 workers to operate it.



A typical Acotec wall structure. The hollows can be used for installing electrical cables, wires and water utilities.



Acotec panel line



The heart of an Acotec line is made of a stationary extruder and a saw that cuts the products on fly.

light weight aggregate concrete and the standard process is designed for bulk production of selected lengths, but also allows the manufacture of special lengths between 2,000-3,300 mm. The capacity of a factory in one shift operation (300 workdays a year) will be 150,000 m<sup>2</sup> a year – just enough partition walls for 1,500 dwellings.

### Partition walls as common as exterior walls

Acotec-walls can be used in a broad range of buildings from housing to commercial construction and is proven to function in countries with the strictest of requirements on seismic, moisture, and fire resistance qualities. “Often the development of non-load bearing walls is ignored although in construction, partition walls are used in just as large an amount as exterior load-bearing walls”, says Petteri Laitinen, Sales Director at Elematic Oy.

“The Acotec-line provides a quick return on investment, the production costs are economical and energy consumption is low – the process in all is environmentally friendly, silent, and non-waste. The line is capable of producing many lengths and thicknesses of product, and changing from one thickness to another only takes about 30 minutes, and the production cycles are flexible”, Laitinen continues. “This means that even short series can be manufactured easily, which provides the opportunity to adjust manufacture to the market situation.” Simple and reliable machinery means less maintenance and continuity to production. The noise level inside the factory is low and the fact that there is no need to use water for cleaning improves the working atmosphere.

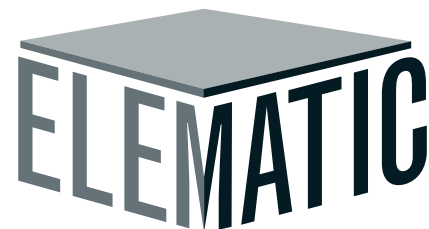
### Advantages from the builders’ viewpoint

For builders, the advantages of using Acotec-panels are many. The solid stone-based material used increases property value. The panels leave the factory with a superb finish that only requires a skim coating, bringing savings in plastering and finishing. Good sound isolation properties bring increased quality of living: 40 dB can be



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Rakennusbetoni- ja Elementti Oy, Finland, has produced Acotec Panels (ACO tm) since early 1990's.



Acotec trademark stands for "Advanced Construction Technology"

achieved even with a standard 92 mm Acotec-wall. Excellent resistance against mold and rot in wet conditions adds value and means less repairs. In Finland, for example, 50 % of all bathrooms are built with Acotec-walls.

### Well-proven new technology

The first Acotec-line was delivered to Singapore already in 1987 and in Finland, Rakennusbetoni Oy has produced Acotec-walls with the trademark ACO since 1991. In Malaysia, the precast company PJDMALTA started Acotec-wall production in 1994 and has recently ordered two more lines from Elematic. Several Acotec-lines have been delivered to Russia, as well. To meet the challenges of growing demand for housing Nantong Excel New Building Materials Co. Ltd in Jiangsu, China, also made the decision to start manufacturing Acotec-walls.

### Rakennusbetoni- ja Elementti Oy in Finland

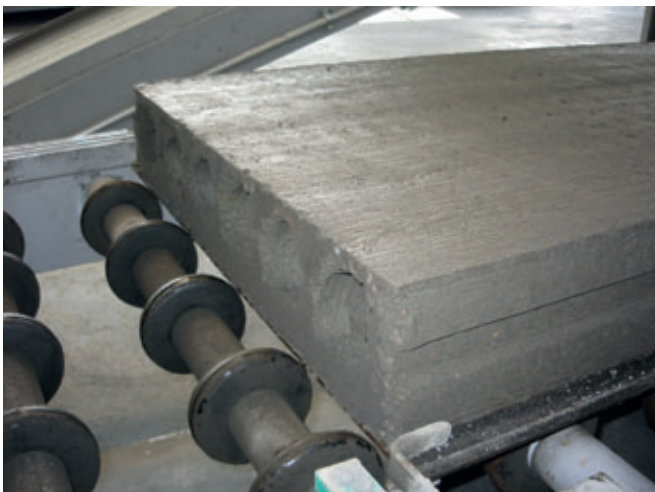
The Finnish precast company Rakennusbetoni- ja Elementti Oy was established in 1966 and manufactures high-quality concrete products and provides related services in Finland as well as abroad. The group has some 80 employees and is a pioneer in the field of manufacturing and installing Acotec-panels (ACO-partition walls™): they have been manufacturing these high quality partition walls since 1990 with two production lines.

"Perhaps the best quality of Acotec-walls is that they are easy and quick to install", says Esa Konsti, CEO of Rakennusbetoni- ja Elementti. "They are perfectly suited for areas with a high degree of moisture, such as bathrooms, as well as when good sound insulation is required. They are also proven to function in countries with the strictest of requirements on seismic, moisture, and fire resistance. In fact, Acotec-panels can be used in all situations where partition walls are required."

Competition is hard these days and the ease and speed of building is a definite advantage of using prefabricated Acotec-panels. "The feedback from our customers is that sometimes building is easy and other days it is really easy", describes Konsti. "We have over 20 years' of experience of Acotec production and cooperation with Elematic. If you are new in the business and investing in Elematic's Acotec-panel technology, we can provide you with a complete know-how-package on how to install the line, train your employees, and start up production."

### Cost-efficiency brings Acotec-lines to Russia

Redevelopment is booming in Russia, and big construction companies have the capacity to build 100,000 m<sup>2</sup> to 200,000 m<sup>2</sup> a year. Large amounts of affordable housing are needed quickly, as a great number of people are living in outdated houses that were built decades ago, originally meant to be temporary. "Today building is mainly



Fresh cut Acotec panel on its way to stacking.



At the Stacking station of the Acotec line the fresh panels with the base plate are stacked in 6-10 panel stacks for curing.



*Acotec wall installation:  
A two men team installs 40-60 m<sup>2</sup> of Acotec wall in a workday.*



*Finishing the joints.*

done with precast concrete products to minimize manual labor”, says Elematic’s Harri Lahtivesi, Area Director, Russia.

“The use of partition walls made from gypsum-concrete blocks is time consuming and inefficient. Prefabricated Acotec-panels, on the other hand, are easy and quick to install and therefore very cost-efficient. When a customer makes the decision to invest in our Acotec-wall technology, the entire installation and start-up process is always under our supervision and local workers are trained to use the line correctly.”

### **PJDCP Malta Sdn Bhd in Malaysia has five lines and two more coming**

PJDCP Malta Sdn Bhd in Malaysia was established in 1981 as a manufacturer of roof tiles, and started investing into the manufacturing of hollow-core wall panels in 1994 with their first Acotec-line from Elematic. Today, PJDCP Malta has three factories, located in the northern, central, and southern parts of Peninsular Malaysia. The factories have altogether five production lines running and two more have been ordered to fulfill the capacity requirements.



*Long straight Acotec wall ready for finishing.*

The Group’s business operation in Malaysia stretches from Kedah, Penang and Perak in the north, to Melaka and Johor in the south and Pahang in the East coast. The cosmopolitan capital city of Kuala Lumpur and the surrounding areas in the Klang Valley remains the core business areas for the company especially for development and construction of high quality residential and commercial properties.

“Acotec is the best-selling wall panel in Malaysia and Singapore. The market is growing in tandem with the booming property sectors”, says Mr. Tan Kheak Chun, CEO of PJDCP Malta. “At the moment, we produce Acotec-panels with a monthly sales capacity of 150,000 m<sup>2</sup> and supply building development projects from both government and private sectors. The advantages of Acotec are simply that it is easy, fast, and cost efficient. We are happy working with Elematic.”

### **An investment long into the future**

“Acotec-lines are an investment long into the future – lines that have been delivered to customers 20 years ago are still going strong”, says Laitinen. “As with all our technology, Acotec is developed and upgraded continuously, bringing, for example, ever more automation and flexibility.”



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