

# Minimizing operational costs and maximizing flexibility for the European Concrete Industry in recession time!

**FEDERICO FURLANI**

## **Abstract**

The most predictable fact for European concrete industry future, is that it will be unpredictable! We are all very frustrated when facing the goal to draft our budgeting because the volumes reduce and the pricing dump, while most of our companies overhead costs are very difficult to be compressed.

Simem core business for the last 50 years has been focused on engineering and manufacturing equipment and machinery for producing concrete, investing a lot of resources in R&D for providing our clients with state of the art technologies to improve quality of concrete, standardise the production process and grant the maximum safety.

Nowadays we have a new additional task: design equipment which can minimise operational costs and maximise the flexibility of the production process to follow the unpredictable concrete market of these years.

The innovations which have been developed lately at Simem are really impressive and have allowed the company to recover a pace of growth despite the market for concrete equipment is generally negative all over Europe. Supermobile plants and rental services are the key-words to drive the concrete producer towards positive results despite the difficult market conditions.....

## **Keywords**

Concrete machinery, Concrete batching plants, Mobile mixing plants, Concrete Rental

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Federico Furlani, born 1963 in Verona, graduated in Economic Sciences in Firenze and later obtained an MBA in Venice. His career has combined teaching and consultancy for a while. During last 20 years he has been managing director of SIMEM, a company dealing in concrete mixing system and environmental systems for water treatment. SIMEM headquarters are based in Verona, with sales and service branch offices in San Antonio – Texas, Tocantins – Brazil, Chelyabinsk – Russia. A second factory has been started in Gujarat – India during 2010

He is also member of the board since 2010 at Crediveneto Bank – Padova

## **1. INTRODUCTION**

Concrete equipment manufacturers have been heavily suffering during last few years the tragic drop of concrete production as registered within most of the European countries. Today we are living the 4<sup>th</sup> year of recession and it seems we need to wait a little bit longer before the market will recover to a satisfactory level. Of course we are all hoping and claiming for the European Government action in order to start financing the infrastructural program that is needed for Europe's transport, energy, information and communication networks. Whatever will happen in the future, though, we need to adapt ourselves and our companies organisations into a new economic phase, which is unpredictable and very variable, especially because the main "clients for concrete" will be infrastructural projects financed by governments. What does it mean for the ready-mix production process? How could we re-organise the ready-mix companies to suit such new situation? Couldn't we find some opportunities while re-planning our strategy for the future?

## **2. The history of concrete mixing plants**

When we need to plan a strategy for the future, it is essential to study the history of the past which has led to the present situation. The evolution of the concrete equipment during last 40 years is a very interesting view to analyse the ready-mix industry and imagine the development of the future

### **2.1 On-site drum mixers**

Until the 1960's most of the concrete was produced on-site by mean of small tilting drum mixers and little bigger reversing drum mixers. The average size per batch was ranging from 100 litres up to a maximum 1 cb.mt. with raw materials loaded manually by the operators and cement normally added with bags on top of the aggregates. Water was batched through a pipe directly into the mixer according to the "sense for slump" of the operator. Once completely mixed, the concrete was discharged into crane-buckets or wheelbarrows.

During the early 70's the on-site concrete production evolved into the so called "scraping radius plants" where the aggregates loading was mechanical and automatic as well as the cement batching and discharge was operated with a storage silos and screw conveyors. The output capacity per hour with such a new system has been increasing up to 40 cubic meters, with a significant 100% increase compared to the previous manual system maximum rate.

The on-site drum mixers or scraping plants were owned and operated by the contractors themselves and these same systems are slightly re-appearing nowadays as a route to minimise costs of concrete production. Such revival could obviously represent again a challenge for ready-mix producers, despite the list of claims for quality that could be raised against such equipment

### **2.2 Dry batching plants and truck mixers**

In the early 60's the ready-mix plants started to operate all over Europe with the installation of dry batching plants nearby quarries: the business was born to provide the contractors with additional services rather than just supplying aggregates. The mix design was defined by the engineers and the contractor's project managers, thus the process for concrete preparation was mostly concentrated in batching the correct amount of aggregates, cement and water to be loaded into a truck-mixer: the phases of mixing and transporting concrete to the job-site were combined into the same truck-mixer, with the option for the driver to add a little water before the final pouring of the mix at client's request

During 70's and 80's some countries in Europe introduced quite tight regulations about mix-design and concrete batching process, taking the responsibility of concrete performance on

the ready-mix producers shoulders. This led to the obligation for the batching plants to adopt much more refined equipment and procedures for granting the concrete quality: laboratory and quality control were introduced in most plants to verify the production down to the end of the truck-mixer chute discharging into the forms at the job-site.

Unfortunately some countries, such as the one we are proud to be based, have not adopted the same regulations yet and still allow the old style dry batching plants with the obligation to trust the truck-mixer drivers a little bit too much

### 2.3 Wet mixing plants and “concrete factories”

The path of increasing quality and the obligation to take responsibility over concrete performances, have motivated most of the best ready-mix producers in Europe to invest during last thirty years more and more capital in central wet mixing plants which have become an actual industrialised process. The most important innovation has been the introduction of compulsory mixing systems into the plants, which are not anymore just batching, but deliver homogenous and consistent mix into truck-mixers (or dump trucks) which only function is transportation.

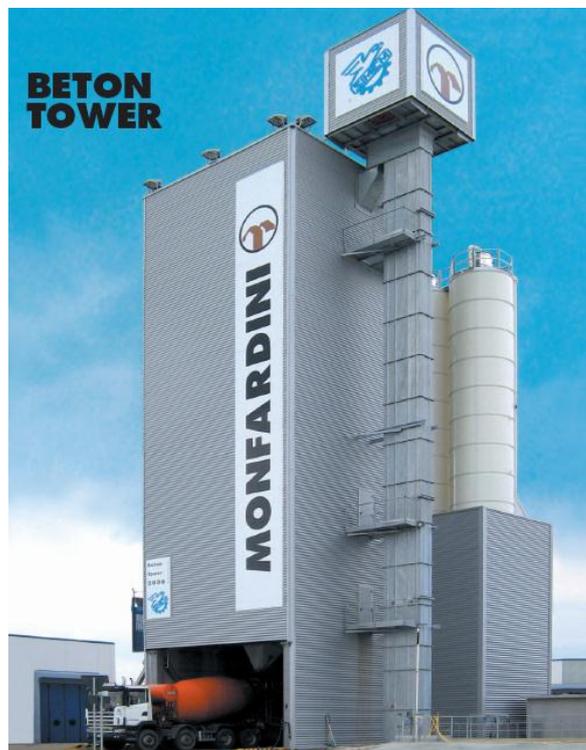


Figure 1 Beton Tower – state of the art stationary mixing plant

Environmental and safety consciousness and regulations have taken additional complication and investments within the ready-mix production system introducing the need to prevent any risk for the operators and any pollution in air, water and ground. Plants have been completed with claddings, filters, reclaimers, safety devices and control systems all along the batching, mixing and delivery systems.

In many city-areas the space constrain have also obligated the design of the plants to minimise the footprint and grow vertically the dimensions of concrete mixing plants, developing the so called “towers”.

All over Europe the years after 2000 have seen a significant increase in the population of super-plants, that we are defining “concrete factories”, integrating the state of the art

technology and automation to maximize quality, safety and environment protection without too much consideration for the capital costs per cubic meter of concrete

This industrial approach has been also acting as a barrier for new entrants, protecting the ready-mix producers in those countries where laws or common behaviour recognised priority for quality and technology

### 3. The future of concrete mixing plants

The most predictable fact for European concrete industry future, is that it will be unpredictable! Everybody is very frustrated when facing the goal to draft the budgeting for ready-mix companies, because the volumes reduce and the pricing dump, while most of overhead costs are very difficult to be compressed.

If and when the European “Government” (if they ever will share a common direction for developing our continent) will find the financial resources for funding the huge infrastructural development program for energy, transportation, communication and environment, the demand for concrete will possibly bounce to a significant volume to restore the ready-mix industry.

Concrete for infrastructures however could be located too far away from those city-plants which were designed and positioned in the right spot to serve the private (residential and industrial) demand for concrete in the past

On the other hand it is quite difficult to imagine how the financial resources of ready-mix producers in 2012, after 4 very difficult years, could cope with the need of new capital investments to move the production towards new and different locations (especially while we all realise the allergy of banking system towards the construction industry!)

Simem have invested most of R&D resources during last few years specifically for this task: design equipment which can minimise operational costs and maximise the flexibility of the production process to follow the unpredictable concrete market of our time.

The result of such program is outstanding and offer to concrete producers a new strategic approach to switch the problems of recession into an interesting opportunity!

Supermobile concrete mixing plant: this was the target of the R&D program and it has been delivered exceeding expectations. In fact the new range of Simem MMX (Mobile Mixing eXcellence) plants have achieved important major innovations (two combined international patents have been registered):

- Transportation costs are minimised
- Civil works requirements on site are zero
- Installation and dismantling time on site are insignificant
- Output production is equal, if not higher, than stationary plants
- Quality control and automation is the state of the art
- Safety and environmental protection are better than stationary plants

Thanks to all these advantages the Simem supermobile range of plants change the strategic perspective of any ready-mix producer: the territory for competition is not anymore limited!

The plants can be conveniently installed on site to produce high volume of high quality concrete for relatively short periods of time, just as the requirements for the new infrastructural projects

Highways or railways can be supplied with a frequent relocation of the plants along the territory where the construction is designed

Huge volumes concentrated into remote and limited locations, such as hydropower plants or nuclear power plants (if they ever will grow again in Europe?), biomass power plants as well as windmills, are the perfect jobsites for the installation of supermobile plants to provide contractors with the on-site ready-mix service



Figure 2 Double MMX plants installed on site for temporary production

Apart from the technical and economic advantages in terms of concrete production process, this supermobile approach is also taking to the table additional important considerations:

- a. Financial sustainability: we do not invest in capital assets and the depreciation of mobile equipment is much better than any stationary plant. Moreover the residual value of the supermobile plants is far higher than any traditional plant, offering banks and leasing companies the opportunity to come back into constructions without too much risk
- b. Environmental sustainability: we move raw materials, when it is more convenient, instead than concrete, when it is due. In many cases it is also possible to avoid transportation of concrete on site by mean of vehicles, because concrete pumps or delivery systems could be directly integrated to the plants (**start SkyCreter video**). It is easy to evaluate the huge beneficial gain in terms of carbon footprint as well as in terms of traffic reduction, that concrete produced on site would generate

#### 4. Rental concrete mixing plants

A new service concept is also arising together with the revolutionary innovations of Supermobile plants. In facts ready-mix producers need to maximize flexibility, in order to adapt and synchronise the costs of the organisation to the actual production volume.

For this target we have developed at Simem the rental service of the mobile range of concrete mixing plants which has never been possible in the past for the very simple reason that mobilization costs were exceeding by far the value of the depreciation of capital goods.

Nowadays the mixing plants could be installed on demand, just on the place and just for the time which are required on each specific project.

Wherever aggregates, cement, water and admixtures, combined with the technological know-how for ready-mix concrete can be taken, Simem can offer rental services of the mobile plants including transportation, installation, commissioning and servicing all over the schedule of the concrete production as planned into any specific jobsite.

Geography is not anymore a condition for those organisations which will be capable to be mobile and follow the opportunities wherever arising: the rental of concrete plants is conceived with the aim to offer the ready-mix producers the tools to offer the contractors with the same services that they were used to obtain at home.

In fact the main contractors are also facing the same need for flexibility and they are appreciating more and more the suppliers which could integrate a wider scope of services in order to minimise the overall costs of the projects.

We believe that on site supermobile equipment will represent for many projects the best way to make concrete more and more sustainable and competitive

That's why at Simem we are investing a lot of our resources to offer the ERMCO associates with the state of the arts mixing systems and related services



Figure 3 Highways in Italy – SIMEM Rental installation with 4 supermobile plants

