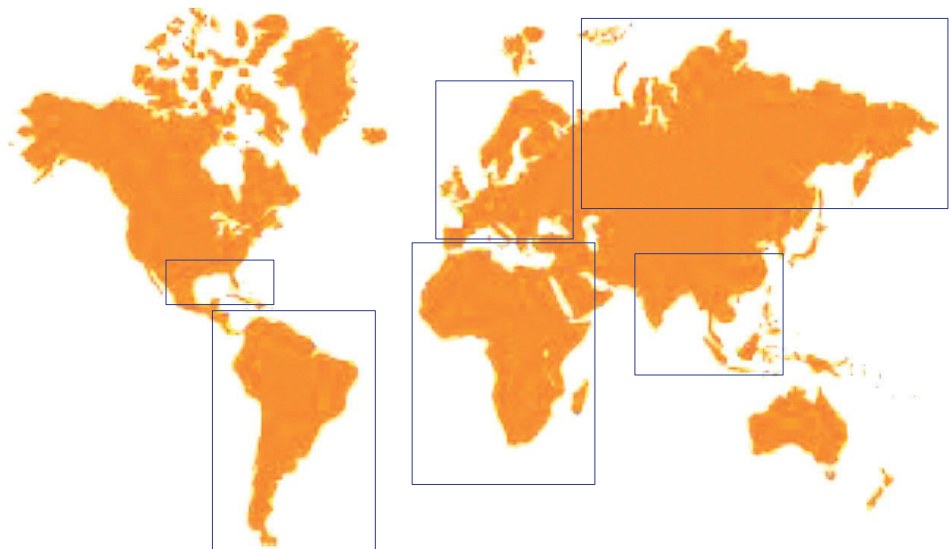




Stabilization and Waterproofing
any type soil in the World
SIMPLIFIED presentation
ROCAMIX® System





SIMPLIFIED presentation - ROCAMIX® System -
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WHY THE ROCAMIX® System?

After the Great Depression of 1929, when Roosevelt created the New Deal to revitalize the American economy, was born a huge program for the construction of transport infrastructures (285 airports, 1 million kilometers of roads, 77000 bridges). Most of the methods for soil stabilization started to emerge in the world at the same time.

Numerous studies and technical trials which were developed by the American engineering at that time have been standardized. Those standardizations are listed by the AASHTO, a recognized guide which protocols are still followed today and in the whole world without significant changes. This is quite surprising though, for everyone knows that scientific and technological knowledge has made huge progress since the nineteen thirties.

Yet, things have noticeably evolved in other fields. For example, in the nineteen thirties weather forecasts were not reliable even if they were based on science. Today those forecasts are precise and sure. We owe this incredible improvement to a new technology. Indeed, computer science has greatly improved meteorological science.

Rocamix was inspired by this model and thought of adding physics (which is the basis of the 1930's studies) to chemistry. This mixing permitted to observe and understand the chemical reactions of various additives one the particles composing the soil and measure their effects on the parameters determined by physics.

Hundreds of experiments, hundreds of observation hours end analysis permitted us to create an additive with two qualities : it makes not only the compaction of soil easier by increasing considerably its ability to support, but it also makes it waterproof and immutable.

ROCAMIX® : efficient, always!

PRACTICAL APPLICATIONS OF **ROCAMIX®** SYSTEM

Stabilization

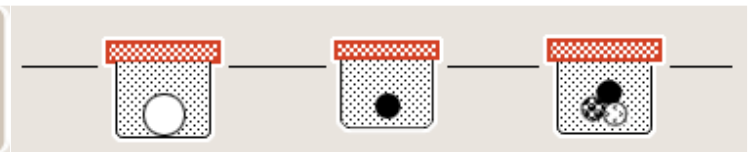
■ Bases stabilization

- Expressways
- Roads
- Street maintenance
- Side roads
- Landing strips



■ Backfill for underground networks

- Sewerage
- Aqueducts
- Power line networks
- Gas, phone



■ Railway embankment

- New railways
- Rehabilitation existing railways
- Modifications



■ Industrial platform

- open sky storage
- Platforms
- Parkings
- Garbage dumps



■ Sport areas – leisure places

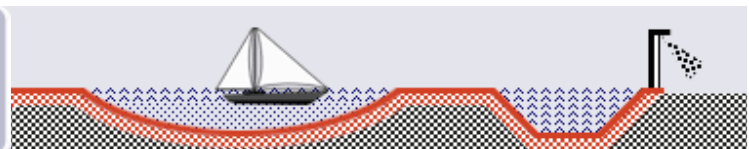
- Sport area
- Camping platform
- Leisure areas
- Golf



Waterproofing

■ Waterproofing

- Dams – Lakes - Channels
- Aqueducts
- Farming of fish
- Others...



*Manufacture of building blocks with the same ground location. *Laboratory studies in progress*

THE PRODUCT : ROCAMIX

- **The product Rocamix®**

is a semi-viscous liquid formed by the mixture of monomers and polymers with penetration accelerator catalysts.

**THE DOSES****VERY IMPORTANT**

1 dose of Rocamix® concentrated + 20 doses water

MÉLANGE

en grande quantité

Preparation directly in the place of the work, for example using a water tanker. The principle is the same one: 1 dose of Rocamix *concentrated* with 20 doses of water + to mix with care = prepared product

**DOSE liquid product****ROCAMIX® concentrated**

With the same soil of the place mix with the product Rocamix *concentrate*.

Soil classified **R1** **0,40 L** Rocamix® *concentrated* for 1 **m3** of soil

Soil classified **R2** **0,50 L** Rocamix® *concentrated* for 1 **m3** of soil

STANDARD DOSE

Soil classified **R3** **0,60 L** Rocamix® *concentrated* for 1 **m3** of soil

DOSE additive solid product**CEMENT or LIME or MIXTURE**

According to the own and exclusive classification of Rocamix - call **R1, R2, R3 and R4** - a cement can be added in the mixture with the product. **In a proportion of 0,5% to 1% of the weight**

Soil classified **R1** **05/15 kg** cement or lime or mix for 1 **m3** of soil

STANDARD DOSE

Soil classified **R2** **15/20 kg** cement or lime or mix for 1 **m3** of soil

Soil classified **R3** **20/30 kg** cement or lime or mix for 1 **m3** of soil

THE TECHNICAL EFFECTS OF ROCAMIX® SYSTEM

The Rocamix® System is high-tech soil stabilization and soil water sealing that is different from the traditional methods as it makes soil compaction **totally irreversible**.

- 1 The Rocamix® System** allows the improvement of the bearing capacity of any type of cohesive or lightly cohesive soil from **3 to 5 times**, with over 50% of the cases with much more than five times. The required bearing capacity can be obtained **with 75% up to 100% of the in-situ available soil** and you save on the collection and transportation to controlled dumps and on the borrowed materials. **Savings are very important.**
- Economies ▶
Resistance ▶
- 2) The improvement of properties** as well as the soil bearing values is permanent and an upgrading can be observed in a short time with the effects of traffic. The increasing firmness and stability of the treated soil will bring about longer durability and thus **bigger savings** due to **less maintenance**.
- Economical ▶
- 3) The Rocamix® System works the same with any type of soil**, as it activates the cohesive forces of the soil and substantially and lastingly reduces the influence of water. The Rocamix® System modifies the soil in its own permanently and **thus can be used in-situ or in a premixing procedure at a plant**. Once added to the soil, it maintains the effect of the system.
- Resistance ▶
- 4) The bearing values of the treated soil** allows for a notably higher bridge function in the bearing layers and thus a risk-free reduction of the **wearing course which may go from 60 mm to 20/25 mm**. Account must be taken that with the design of the upgraded soil, **new possibilities open up for savings worldwide that can amount up to 20% to 40 % of conventionally or traditionally built construction costs**. And this savings only refer to construction in its own, and do not include additional savings due to greater durability.
- Resistance ▶
Economical ▶
- 5) With the use of grounds available on foot of the work**, Rocamix® System causes an increase of the saving and productivity of the resources (human, material, power, financial and of the time) which are spent and single recover in a %; **the high price of the fuel** does that many countries and construction companies are put under superior expenses by this concept having restrained development.
- Economical ▶
- 6) As the soil takes part as a lead actor**, the application of the Rocamix® System is very simple. The same amount of additive is required for almost any soil to get the desired result. The other strong points of Rocamix® System are:
- Simplicity ▶
Ecological ▶
- Simple application made
 - Guaranteed results that are know beforehand, as they have been shown through previous_laboratory tests.
 - Environmentally friendly.

USED FOR APPLICATION OF ROCAMIX® SYSTEM MACHINERY

The Rocamix® System does not require special equipment or machinery for its application. Classic equipment from an earthwork or road building company can be used to apply the Rocamix® System.

EXAMPLES OF MACHINERY



PRÉPARATION – LEVELING

Leveling Motor

Tracto

Scraper



TRANSPORT

Truck to distribute the product

Tanker truck

Dumper



PRODUCTS DISTRIBUTION

Distribution solid and liquid



MIXTURA

Machine tools for mixing



COMPACTAGE

Pneumatic

Pneumatic roller



In the case of highway **ASPHALT**

Truck to distribute the asphalt

Tarring truck

ROCAMIX® efficient always.

LABORATORY TESTS

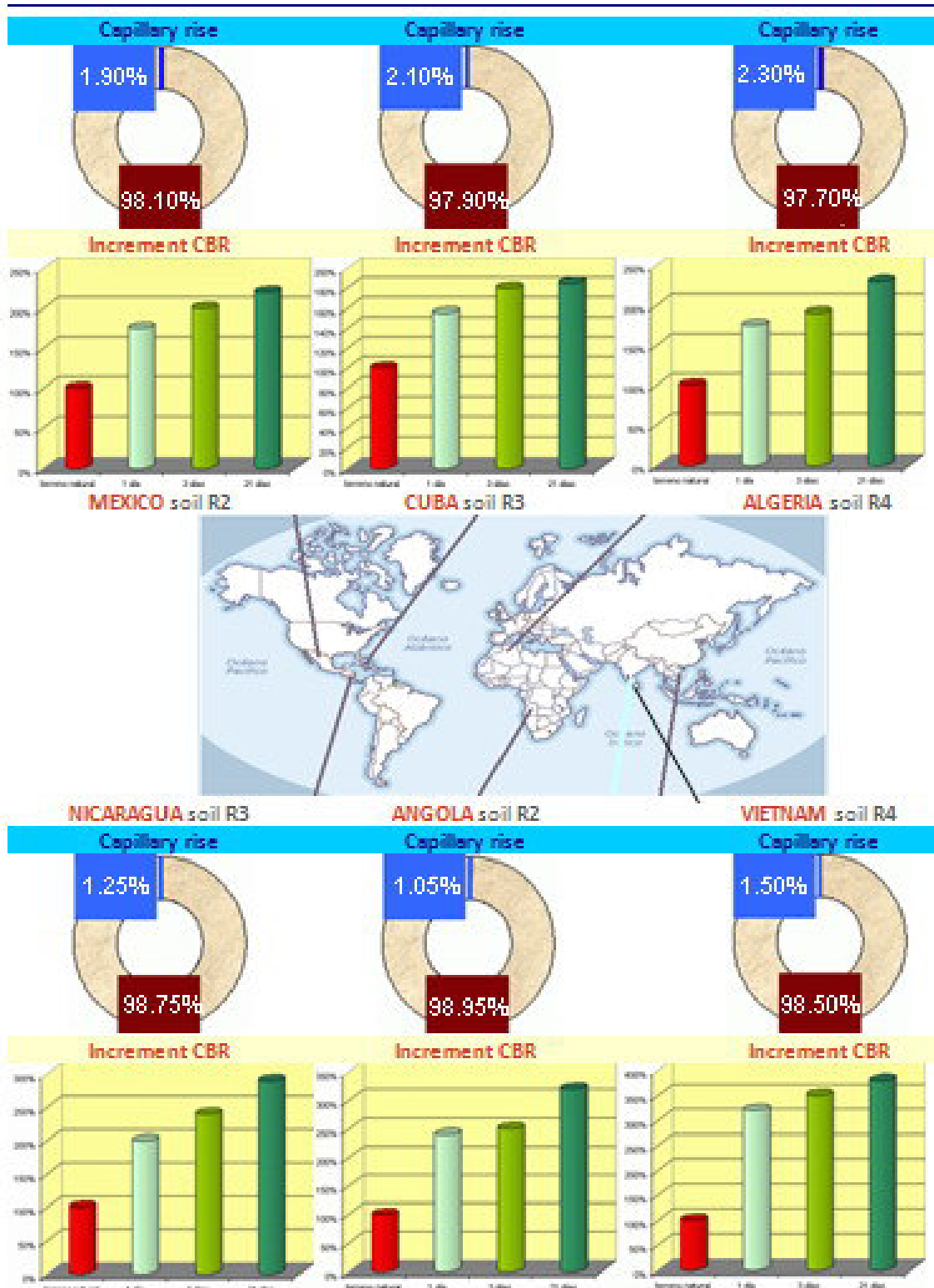
To use the Rocamix® System is required to have the following information

- 1) Classification of soil or AASHTO SUC
- 2) Atterberg limits (plasticity index is very important)
- 3) Proctor tests
- 4) Tests of capillary rise

Example shown: capillary rise test for the detection of minimal doses used for each product Rocamix® System.
This example is to study the reconstruction of a rural road

			
<p>1 Collection of 5 to 7 kg of soil from the road to be treated..</p>	<p>2 Mill and dry the soil. Sieve the soil.</p>	<p>3 Weigh 6 portions of 500 grams each, originating an equal number of soil samples.</p>	<p>4 An exact amount of Rocamix® product is added to each portion + cement.</p>
			
<p>5 Mix well the added product with the soil.</p>	<p>6 The dosage soil portion is set in the mold and the piston is put in place.</p>	<p>7 Press the samples (+ o – 5 kg pressure) until a compact block is obtained.</p>	<p>8 Right after the pressing, it should be carefully taken out of the mold. Let it dry.</p>
			
<p>9 One to two cm of water is poured into the container for soaking. Place the blocks in it</p>	<p>10 Five minutes into the test, a small but even soaking is observed in all blocks.</p>	<p>11 Three hours into the test, differences start to show in the blocks. Block No. 1 collapses.</p>	<p>12 Block No. 1 (untreated) totally collapsed.</p>
		<p>Ten days into the test, the four blocks with varying dosages of product still retain the compaction. The tube with the minimum dosage of product is to be selected.</p>	
<p>13 Five days into the test, block No. 2, treated with the minimum dosage of products, is collapsing.</p>			

**TEST AROUND THE WORD
OF APPLICATION ROCAMIX® SYSTEM**



ROCAMIX® efficient always.

HOW IS APPLIED ROCAMIX® SYSTEM

The application in any construction work of the Rocamix® System for soil stabilization or soil water sealing is always the same and it must observe

3 main principles

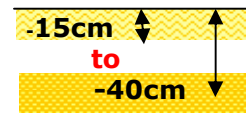
- 1 -

The analysis

of soil in a laboratory



The Treatment of the existing ground becomes - according to study - on



- 2 -

The mixture

carefully made with the products **and the in-situ soil**

liquid product



Irrigation of Rocamix® (liquid)
With Tanker truck or tractor + Tanker

solid Product



Cement (solid)
+ Mix of products
Tractor+plow or Tractor+Rotavator

- 3 -

the compaction

carried out by the standards established in the modified Proctor test



ROCAMIX® efficient always.

EXAMPLE ROAD CONSTRUCTION

1 Soil compaction with sheep foot roller if needed

2 The Rocamix[®] is sprayed

3 Distribution of cement bags according to the estimated amount Work mechanized too

4 Spreading of cement across the full width Work mechanized

5 It is carefully mixed (in this case with a disk plow)

6 Soil compaction with sheep foot roller if needed

7 Final compaction with pneumatic roller

8 Surface treatment with R-1 - type asphalt spray

9 Distribution spray across the full width

5 years after

ROCAMIX® SYSTEM EXAMPLE ROADS



ROCAMIX® SYSTEM EXAMPLE AIRPORT



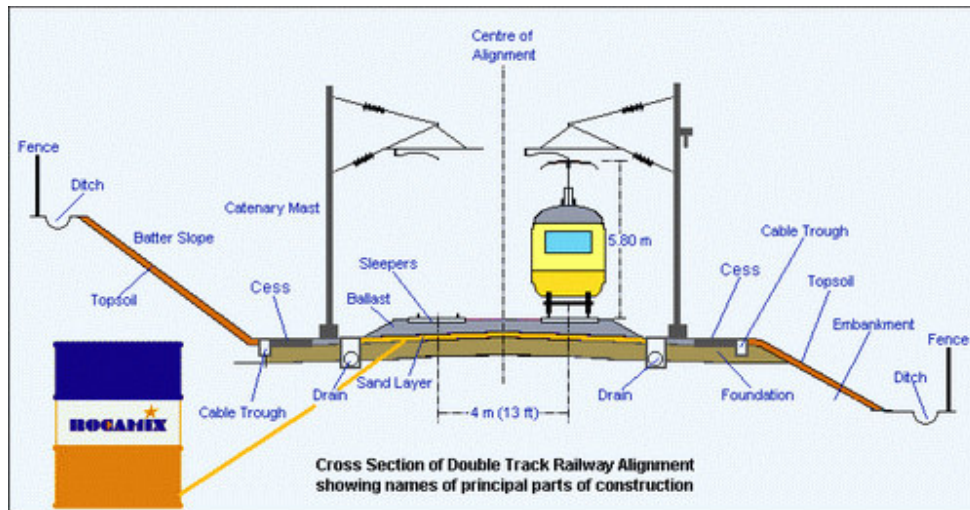
ROCAMIX® efficient always.

ROCAMIX[®] SYSTEM **EXAMPLE** WAY and FARMING WAY



ROCAMIX[®] *efficient always.*

ROCAMIX® SYSTEM EXAMPLE RAILWAYS



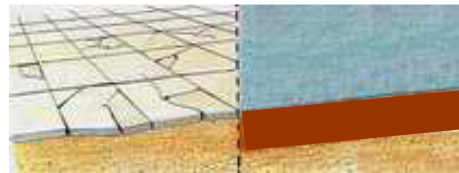
ROCAMIX® efficient always.

ROCAMIX® SYSTEM EXAMPLE PLATFORM FOR INDUSTRIALS



Type of the soil

Ground the very humid sandy slime mixed with rubbish construction recyclings.



Improvement of the values sustenation with examples

Grounds of low quality worldwide have been chosen specifically to demonstrate that this type of material can even be improved to him to him of remarkable form until the point to be able to use them. This is a very effective contribution to the protection of the nature and the environment, since the Rocamix® System can do without to a great extent selective material and abre great possibilities for the revaluation of old woman materials, rubbish of demolitions and grounds of low quality – all the available materials without no type of restrictions.



ROCAMIX[®] SYSTEM **EXAMPLE** WASTE BASKET

Under construction



Waste



ROCAMIX[®] *efficient always.*

ROCAMIX[®] SYSTEM **EXAMPLE** PARKING – SHOPPING AREA

Parking



Shopping area



ROCAMIX[®] *efficient always.*

ROCAMIX® SYSTEM EXAMPLE SPORT and LEISURE AREAS



Often the sport zones of leisure or areas are located on regular lands.
= to save of 25%/65%
Rocamix® System
is essential its application.

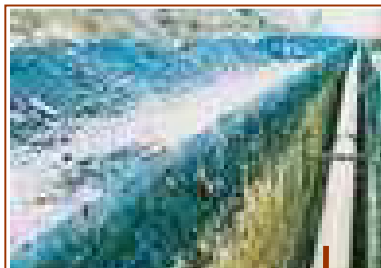
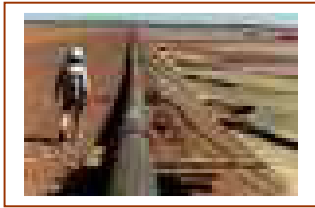
ROCAMIX® efficient always.

ROCAMIX® SYSTEM EXAMPLE WATERPROOFING



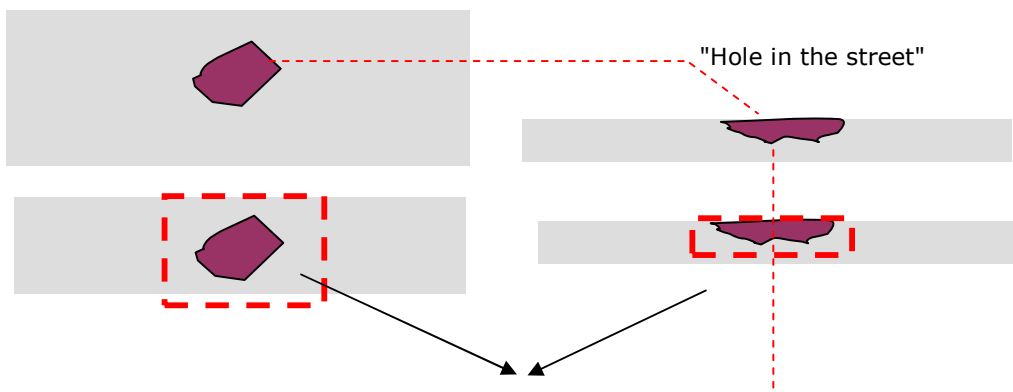
**Waterproofing of all type of grounds of
prey, lake, aqueducts
= to save of 25%/65% Rocamix®
system is essential its application.**

ROCAMIX[®] SYSTEM **EXAMPLE** BACKFILL FOR UNDERGROUND NETWORKS



Work accomplishment of underground networks use of the Rocamix[®] System to cover the trenches, without any risk of creation of pockets or another constructive disorder

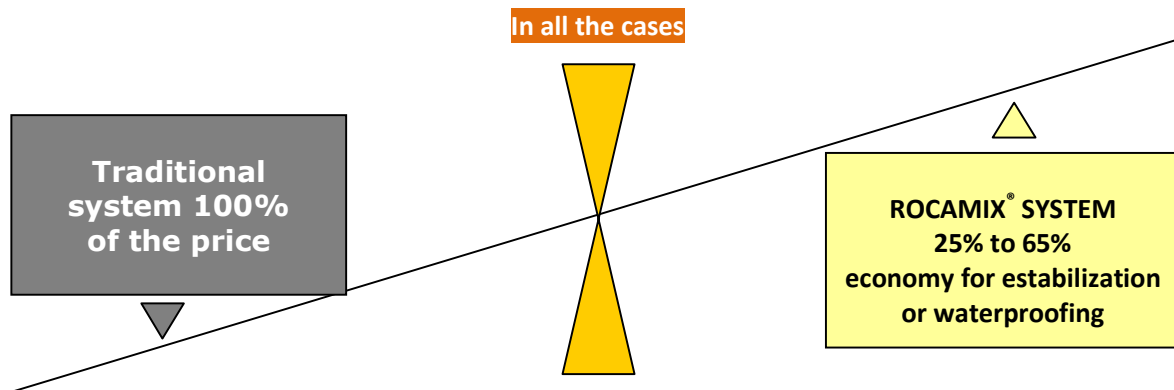
ROCAMIX® SYSTEM EXAMPLE WORKING IN THE STREET



2 methodologies to deal definitive a hole in the way with Rocamix® System

- 1**
- 1) To cut in rectangular form around the hole.
 - 2) By hand or with the aid of a pneumatic hammer to remove the matter (earth + asphalted).
 - 3) Once the crumbled matter to mix with I eliminate Rocamix® + cement in a certain proportion.
 - 4) To compact.
 - 5) To finish by a superficial treatment with asphalt irrigation R-1 type or an asphalt layer

- 2**
- 1) To cut in rectangular form around the hole.
 - 2) Remove the bad matter from the place.
 - 3) In a place where earth has been stored, with a concrete mixer to mix the Earth with I eliminate Rocamix® + cement in a certain proportion.
 - 4) With a truck to transport the mixture in the place.
 - 5) To fill in the hole and to compact
 - 6) To finish by a superficial treatment with asphalt irrigation R-1 type or an asphalt layer.



In order to calculate the pricing for the application of the Rocamix® System, account must be taken of a number of factors depending on the answers to the following questions.

- 1.** How much would it cost to build the work with conventional (or traditional) methods?
- 2.** What dosage - determined by lab tests - see below - of products from the Rocamix® System must be used for the work? -> the dosage of both products multiplied by the unit price -> equals the price of products + application -> total price of the application of the Rocamix® System
- 3.** How long will the work last without need for maintenance or rehabilitation?

Answers to questions **1** and **2** are easily comparable and you can get a first indication. Now we must also analyze the other factor **3** in order to have the real cost of the Rocamix System relative to making the work with conventional (or traditional) methods

Maintenance or rehabilitation cost

Taking into account that the application of the Rocamix® System needs no maintenance or rehabilitation for 30 years - see Chapter Warranty of the Rocamix® System - the comparison must be then made with a work built with conventional (or traditional) methods which does need maintenance or rehabilitation in those 30 years.

That is to say, a full calculation must be made to know the real cost of the Rocamix® System relative to a work with conventional (or traditional) methods,

For example

If a traditional road = 15 years before something is made

If with Rocamix® = 30 years

The following formula must be applied

Rocamix® System = Price of application of the system

Conventional systems = Price of traditional way + (Price rehabilitation/15)

Once these calculations have been completed professionally, seriously and with competence, it is noted that

**The price of the Rocamix® System is always
25 to 65%
lower than the price using the conventional methods**

ROCAMIX[®] SYSTEM WARRANTLY FOR MANY YEARS

The warranty
of the work of soil stabilized or waterproofing made using the Rocamix[®] System is
for many years



Why such warranty is possible?

Rocamix[®] System can offer warranty for many years for 3 main reasons

1. assured results that are known beforehand as they have shown in previous lab tests
2. control of the application of the Rocamix[®] System products by Rocamix[®]-certified engineers.
3. laboratory tests and efficiency tests of the System for very much sites and with very much positive laboratory tests, allows to say that the Rocamix[®] System is not only reliable but also that its effects are proved to last.

FOR THIS REASONS

THE APPLICATION OF ROCAMIX[®] SYSTEM IS

for many years



A lot years after... -> the way ... is identical!!

ROCAMIX[®] *efficient always.*



Rocamix[®] `conquer the World

Rocamix[®] system always looking for distributors
To participate in the expansion of Rocamix[®] network in the world

it is necessary to contact

Consult Company Management Know How
exclusive distributor of Rocamix[®] System in the World



ROCAMIX[®]

exclusive distributor

Consult Management Know How *Company*
Société anonyme capital 150 000 usd
Calle Elvira Méndez-Edificio Banco de Boston-Oficina 1708
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