Building a Brand
by
Making Customers’ Lives Easier

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Chemilink Technologies Group, Singapore
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Once upon a time....
Infrastructure Development Department always receive a lot of complaints about the damaged road.
Please Do not Make Our life Miserable with bad pavements
Which

Who

How

Why

Where
Dr. Wu Dong Qing
Managing Director/CEO of Chemilink Technologies Group
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1. **Introduction**

1.1 Chemilink Technologies Group

- Chemilink Technologies Group Pte Ltd is a Singapore local SME.

- We are the supplier and specialist in green and effective engineering solutions & materials incorporated with R&D and manufacture activities.

- Our systematic technologies, products and application methodologies are trademarked under the “**CHEMILINK**” series.

- Chemilink premier, unique and innovative solutions have been proven by many iconic engineering projects for past about 20 years in international market, especially in South East Asia.
1.2 Corporate Position

**Philosophy**
Towards a zero solid waste society

**Vision**
The leading standard in Zero Waste Engineering.

**Mission**
To construct environmentally friendly and sustainable infrastructure by investing in zero waste businesses, creating zero waste processes, employing and developing people with zero waste mindsets.

**Value Proposition**
Fast construction of cost effective, eco-friendly and durable infrastructure through very innovative and sustainable engineering solutions.

**Corporate Values**
Innovation & Passion, Process & Quality Driven Integrity & Honesty.
1. **Introduction**

1.3 Chemilink Product Series and Professional Services

**Product Series**
1) Chemilink **SS-100 Series** for Civil/Road/Pavement Construction
2) Chemilink **SS-200 Series** for Building Construction
3) Chemilink **SS-300 Series** for Solid Waste Management

**Professional Services**
1) Green and effective materials & products
2) Sustainable R&D / Project R&D with Customization and Localization.
3) Consultancy services including Pavement Design, Material Design and Construction Design.
4) Project Management
1. Introduction

1.4 Chemilink R&D Centre

• Research facility

R&D Activities:

• Government funded research projects
• Engineering project R&D works
• Chemilink product upgrading and development
2. Chemilink Stabilization/Rehabilitation/Recycling and Green Solutions

2.1 Difficulties of Pavement Construction in Tropical Region:

• Swampy & soft ground, and lower land.

• Reverse climate conditions like rich rainfall and high water table.

• Poor geotechnical properties of in-situ soils, such as peaty and problematic soils.

• Lack of suitable construction sites and quarry materials.

Conventional Methods

• Engaging a large quantity of quarry materials.

• Lower technical performances and durability.

* Eco & environmental issues and higher CO2 emission.
2. Chemilink Stabilization/Rehabilitation/Recycling and Green Solutions

• Soil stabilization: “To mix proper chemical or bio-chemical admixtures (or called Stabilizing Agent) with soils or solid construction wastes so as to significantly improve and increase the geotechnical properties of the stabilized materials in shallow base foundations”.

• Conventional stabilizing agents, such as cement, lime, fly-ashes and bituminous materials, have various limitations in tropical region in aspects of:
  * Technical performances
  * Application workability
  * Environmental pollutions

• A commonly used stabilizing agent --- Chemilink SS-108 sub-series products in South East Asia for past about 20 years

• Chemilink systematic green solutions for pavements
  * Designs; incorporated with project R&D
  * Materials
  * Application methodologies
2. Chemilink Stabilization/Rehabilitation/Recycling and Green Solutions

Total Green Concept ---

**Green Product**: A substantial percentage of its raw materials include recycled waste materials such as agricultural bio-mass and mining wastes.

**Green Process**: The application of the stabilizing agents is green because the process reuses in-situ soils and/or waste materials, and thus minimizes the demand on fresh quarry materials and also reduces the removal of the soil as a waste. Besides quality performances with faster construction speed and longer durability, disturbance to natural environment and public is lesser.

**Green Result**: The stabilized soil is physically and chemically stable under the specified usage and therefore creates no environmental issues, which has been proven for past years too.
2. Chemilink Stabilization/Rehabilitation/Recycling and Green Solutions

Typical Achievable Results ---

- CBR (California Bearing Ratio, %) : 30 ~ 200 or more (7-day)
- UCS (Unconfined Compressive Strength, MPa) : 0.75 ~ 6.00 (7-day)
- MR (Resilient Modulus, MPa) : 1,000 ~ 10,000 (7- to 28-day)

Installation Process ---

1) In-situ mix

a) Spreading
b) In-situ Mixing
c) Compaction

Photo. 1. Typical In-Situ Mixing Process of Soil Stabilization
(Photos source: Singapore Changi Airport Runway Widening)

2) Plant Mix
2. Chemilink Stabilization/Rehabilitation/Recycling and Green Solutions

Premier and Unique Engineering Models, such as ---

• **“Floating” Semi-Rigid Platform** over swampy and soft ground.  
  (15-year highways/roads in swampy areas without major repairing)

• **Anti-Cracking Performance** for high-grade flexible pavements.  
  (Examples: airport runways and taxiways with stabilized base & sub-base courses)

• **Excellent Workability** for quick build and repair airport infrastructures under heavy operational limitations.  
  (Iconic project: Singapore Changi International Airport runways widening, featured by Discovery Channel in “Man Made Marvels” program and broadcasted since 2008)
3. Advantages and Benefits

*Higher Technical Performances* to form the semi-rigid platform

*Longer Pavement Lifespan* as proven by numerous projects for past 20 years

*Green Approach* in recycling/rehabilitation with lower CO2 emission

*Faster Construction* to complete projects even under various limitations

*Overall Cost Effectiveness* for both direct cost and long-term maintenance cost
4. Case Studies

4.1 Airfields – Singapore Changi International Airport Runways Widening (2005)

**Background:** 1st airport widening for A380; airport on reclaimed land with various filling materials; 4 working hours per night (day); total 16km by 4.5m; completion in 60 working days; no defects reported in past 6 years.

**Key Technical Merits:** Super fast and super strong; pioneer trial; to prove workability and performances of the systematic solution under extremely heavy operational conditions.

![Fig. 1. UCS and CBR Results in Singapore Airport Runways Widening Project](image)

UCS = 0.015 CBR

UCS = 0.8e0.0063CBR

Ave. UCS = 3.1 MPa

Ave. CBR = 219.0%
4. Case Studies

4.1 Airfields – Malaysia Senai International Airport Runway & Taxiway Widening (2007 & 2008)

**Background:** airport on lower land and soft ground; 4 working hours per night/day; total 8km by 7.5m; no defects including cracking reported in past years.

**Key Technical Merits:** technical challenges on poorer soil conditions.

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<th>OMC (%)</th>
<th>MDD (Mg/m³)</th>
<th>LL (%)</th>
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**Table. 1. Typical Soil Investigation for Senai Airport Widening**

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**Fig. 2. Testing Results in Senai Airport Widening Projects**
4. Case Studies

4.2 Seaport Facilities – Indonesia Batamas Shipyard (1997)

**Background:** stabilized sub-base below reinforced concrete as the surface

**Key Technical Merits:** average construction rate - 8,000m²/day.

a) Manually Spreading  
b) In-Situ Mixing and Compaction

Photo. 4. Soil Stabilization in Progress in Shipyard
4. Case Studies

4.2 Seaport Facilities – Malaysia Port Klang Container Yard Upgrading (2010)

**Background:** the biggest port in Malaysia; serious settlements; operational capacity far below the designed.

**Key Technical Merits:** to form semi-rigid platform by in-situ rehabilitation to eliminate differential settlement and minimize the total settlement rate.

![Photo. 5. Upgrading of Port Klang Container Yard](image)

a) Before Upgrading  
b) Before and after Stabilization  
c) Upgraded Yard Operations
4. Case Studies

4.3 Highways & Roads – Brunei Jalan Tutong, Phase III (1997-1999)

**Background:** typical swampy area with peaty soils down to 30-50m deep; lower land next to a big rival; the original design with 100% pilling.

**Key Technical Merits:** to prove “Floating” Semi-Rigid Platform in both technical performances and durability; to eliminate differential settlement between non-settlement and free-settlement zones; no major repairing be done for past 12 years.

![Fig. 3. Typical Cross Sections at Free- and Non-Settlement Zones](image-url)
4. Case Studies

4.3 Highways & Roads – Brunei Jalan Tutong, Phase III (1997-1999)

a) Opened Cross Section after 2 Years  
b) Road after 12 Years

Photo.6. Jalan Tutong, Phase III
4. Case Studies

4.3 Highways & Roads – City Road Maintenance (2000)

**Key Technical Merits**: to complete road repairing by in-situ rehabilitation from middle night and to the next early morning to minimize the impacts to users.

![Photo. 7. City Road Quick Maintenance](image)

a) Road Partially Closed during Night for Maintenance  
b) Road Opened for Use in Next Morning  
c) Cored Samples with Recycled In-Situ Materials
4. Case Studies

4.3 Highways & Roads – Roads over Swampy and Soft Ground (1994 - 2011)

Photo. 8. Widening of Junjungang Road

Photo. 10. A Stabilized Road at Low-Lying Area (2004)

Photo.11. A Stabilized Oil Road Access Under Heavier Loads (2002)
5. Chemilink Branding Journey

In order to penetrate into international market and with the funding from SPRING Singapore, Chemilink has engaged StrategiCom to implement branding exercise to communicate Chemilink Brand to the stakeholders and how Chemilink can help them to solve their civil engineering problems. Hence, to make their life easier.

The branding exercise consist of:

1) Brand Identity
   - Corporate Position
   - Differentiation and Positioning Strategy
   - Brand Concept
   - Brand Communication

2) Visual Identity
   - Logo
   - Website
Chemilink Logo

The new logo is showing firm, Strong-edged and anchored, the capital font is symbolic of Chemilink’s leadership in the industry that is rooted in cutting-edge research and development methods. It illustrate the formal, enterprising and technological nature of Chemilink’s business.

Before  

After
Website

The new website consists of sophisticated images and product information for visitors to read and download.
Chemilink’s Quest for Banding

- Communicate to both internal & external audiences;
- Create awareness & recognition of Chemilink’s brand;
- A unique identity that is sustainable;
- A green technology company;
- A company with strong & various R&D capability.
Benefits derived from the Branding Exercise

- Clear corporate identity which is easily understood & remembered by staff as well as our clients;

- A clear set of business objectives, strategies and direction emerged along with the exercise;

- A strong corporate image which projects Green technology message;

- Better illustration of the company’s other technology capability.
With the Chemilink brand successfully implemented, Chemilink’s turnover and market value has increased.

**Business Growth**

![Diagram showing business growth from 1994 to 2014]
Testimonials from customers

We are proud to present our customers’ testimonial on products and services.

from Singapore Changi Airport

from Malaysia Senai Airport
6. Conclusions

1) Chemilink soil stabilization is a green and effective approach for pavement construction in tropical region so as to make the users’ lives much easier.

2) The stabilization with green product, green process and green result can maximize the usage of in-situ or local soils and some construction wastes so as to obviously minimize the impacts to natural environment and significantly reduce the CO₂ emission.

3) Based the comprehensive case studies, the systematic solution of soil stabilization introduced in the paper has been proven for past 20 years to deliver higher technical parameters and performances with fast construction and thus to provide longer pavement lifespan and overall cost effectiveness.

4) The branding has strengthened Chemilink premier, innovative and leading well-proven systems internally and externally, and thus has provided customers more comprehensive and reliable engineering solutions to settle their difficulties.

(and furthermore …)
Essences of Innovative Solutions

--- Premier, Unique & Innovative Solutions to Address Civil Engineering’s Challenges ---

• “Floating” Semi-Rigid Platform

• Anti-Cracking Performance

• Excellent Workability

• Semi-Rigid Pavement

• Reduce, Reuse & Recycle (3R)
After gone through many sessions of thorough consideration, Chemilink Stabilization Technologies is adopted to rehabilitate the roads/airport/seaport pavements.
After
Chemilink
Applications
Since then, any complaint from Public regarding pavement issue, the answer as below.

Don’t Ask Me, Ask CHEMLINK!
The power of Chemilink Technologies
Thank You for Your Attention!

Acknowledged
Lim Cheng Hui / Nancy Lim
/ Kenny Lim / Jessy Zeng