

INOVANDO DESDE 1996

IMPACTO

24 PATENTES
APROVADAS

19 PEDIDOS DE
PATENTES

02 PATENTE
NOS EUA

+1 PATENTE APROVADA
SISTEMA PAVPLUS
EVOLUÇÃO DA LAJE NERVURADA

INNOVATING WITH PLASTIC IN CIVIL CONSTRUCTION

JOAQUIM CARACAS

CEO FOUNDER



Organized
by:

Instituto
SustenPlást

252 WORK IN PROGRESS 2024

98%

High-rise buildings launched in

Fortaleza us

IMPACT

SYSTEM*

Formwork

Shoring & Post-

Tensioning

(PLASTIC)



FORMWORK & SHORING

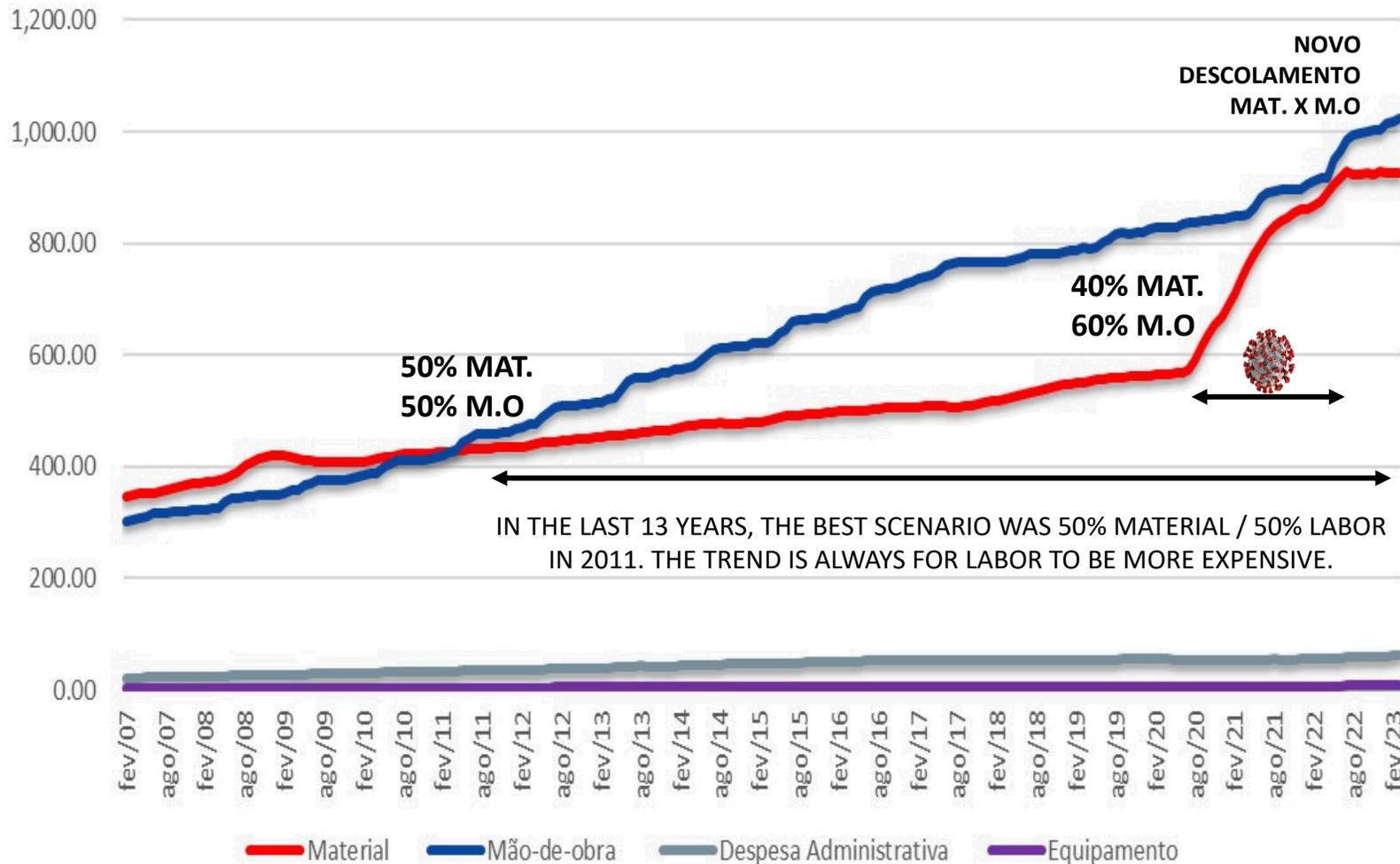


**96% REDUCTION IN WOOD
AREA IN THE SLAB, WITH
LESS SPECIALIZED LABOR**



**The formwork and shoring system
accounts for up to 45% of the costs of
building structures
(NAKAMURA, 2014)**

Evolução do Custo na Construção Civil de 2007 à 2023 (CBIC):



TEGRA INCORPORADORA

- 3050 employees in São Paulo / Rio de Janeiro
- Average age: 39 years
- Masters and supervisors: over 50 years
- Laborers: 28 years



Source: Evento Conexões: caminhos para a industrialização, realizado por C3 - O Clube da Construção Civil em 16/05/24;

SIMPLY OBSERVATION -> GREAT INNOVATION (1914)

FROM A SIMPLE OBSERVATION IN A BUTCHER SHOP, IT CHANGED AN ENTIRE PRODUCTION CHAIN THAT THE GREAT 'MINDS' OF THE TIME COULD NOT SOLVE.



Carro comum

Ford T



12h

93min



850_{US\$}

280_{US\$}

BOTTLENECKS: HIGH LABOR COST
DUE TO LOW

PRODUCTIVITY SOLUTION:
DEVELOPMENT OF PROCESSES

THE CREATION OF PROCESSES IS THE ONLY SOLUTION

**PRODUCTIVITY IS NOT
THE RESPONSIBILITY
OF LABOR, BUT OF ITS
PROCESSES**

(Joaquim Caracas)

MODULARIZAÇÃO

**FORMAS
+
ARMADURAS**



PEÇAS PRINCIPAIS



CIMBRAMENTO METÁLICO

1- LONGARINA PRINCIPAL (LP)



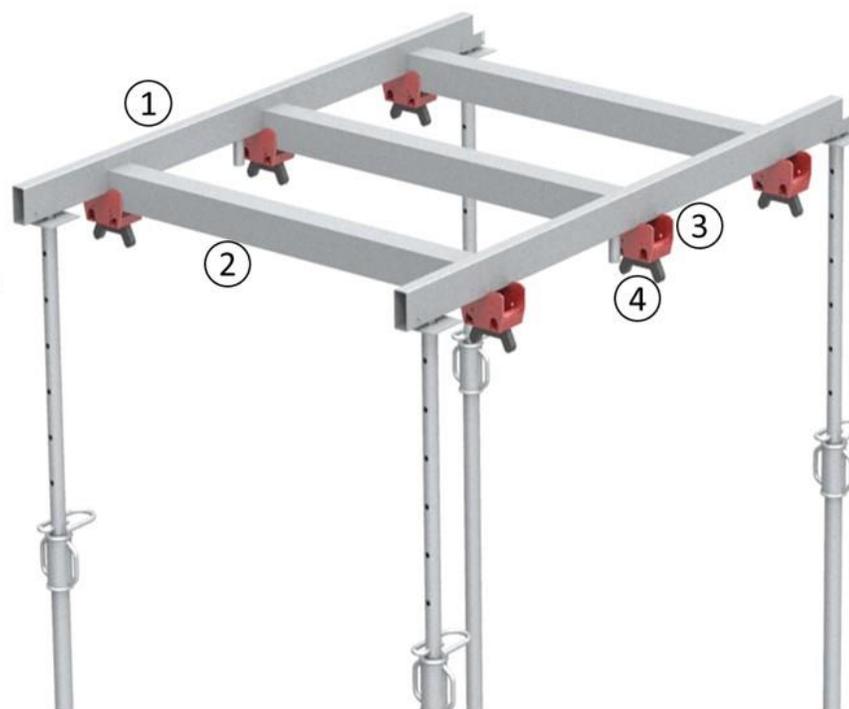
2- LONGARINA DISTRIBUIÇÃO (LD)



3- CABEÇA

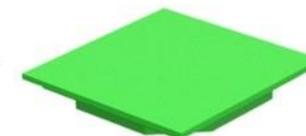


4- PINO



FÔRMAS PLÁSTICAS

PLASTERIT



CAIXA/
CUBETA



MEIA CAIXA/
MEIA CUBETA



TAPA
NERVURA



FORMWORK & SHORING SYSTEM

WOOD



↑ LABOR

|| IMPACTO →

SHORING & PLASTIC FORMWORK

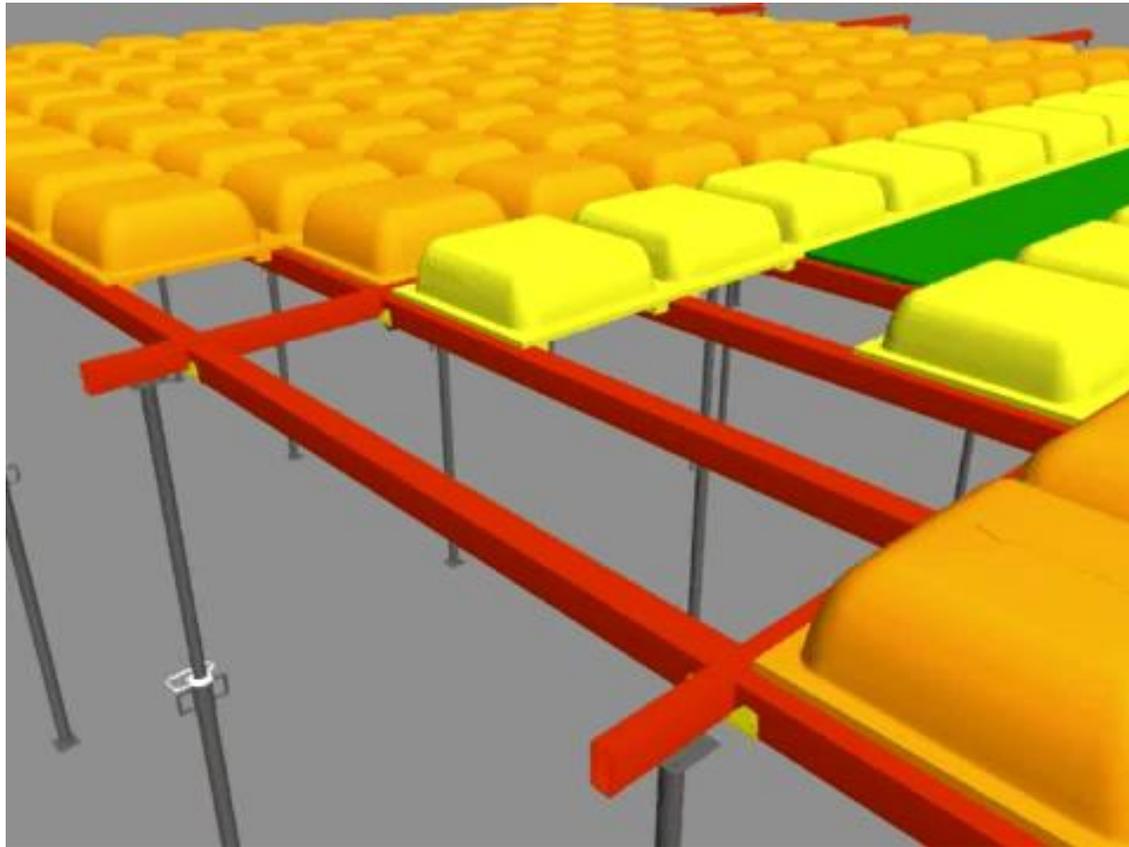


↓ LABOR

96% REDUCTION IN WOOD AREA IN THE SLAB, WITH LESS SPECIALIZED LABOR

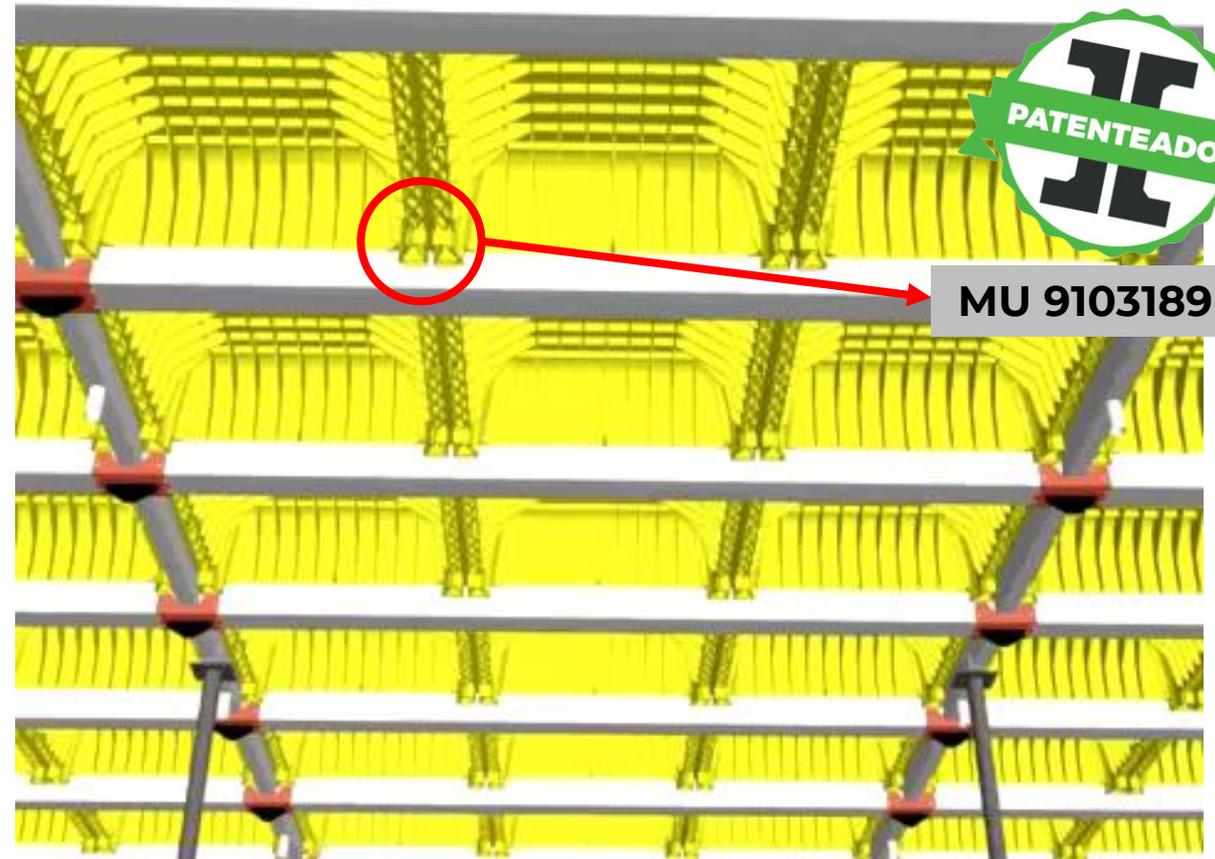
FORMWORK & SHORING SYSTEM

ASSEMBLY



<https://youtu.be/72LfHJiEzEU>

STRIPPING – 3 DAYS AFTER CONCRETING



<https://youtu.be/y9SpNsmUkw>

FORMWORK & SHORING SYSTEM



PLASTERIT (2007)
PI 0701851-7



FORMWORK & SHORING SYSTEM

EASY ASSEMBLY (ERROR-PROOF SYSTEM)



SISTEMA 80X80
NERVURA BIDIRECIONAL



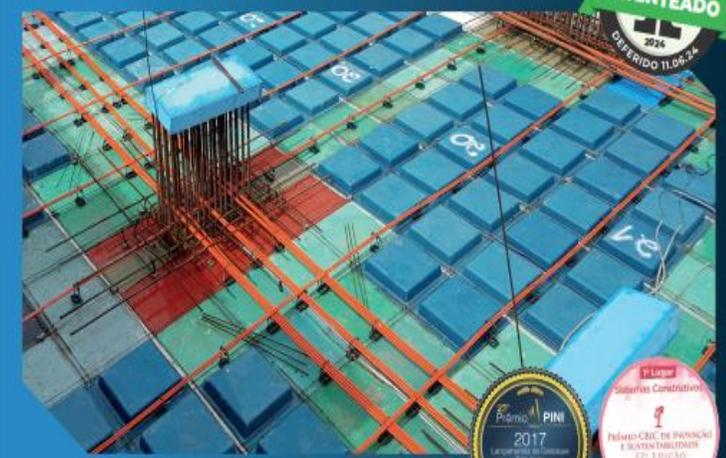
SISTEMA 80X80
NERVURA UNIDIRECIONAL



SISTEMA PAVPLAN
LAJE MACIÇA PROTENDIDA



SISTEMA PAVPLUS®



A EVOLUÇÃO DA LAJE NERVURADA

SISTEMA PAVPLUS

ESTRUTURA 4.0 MODULARIZAÇÃO + TECNOLOGIA + SUSTENTABILIDADE + PROCESSOS



MODULAR SCREEN 1

**SOLAR PORTUGUAL
FORTALEZA -CE**





PRONUTRIR
FORTALEZA -CE



SISTEMA PAVPLUS

ESTRUTURA 4.0 MODULARIZAÇÃO + TECNOLOGIA + SUSTENTABILIDADE + PROCESSOS



GRAVURA PERDIZES
SÃO PAULO -SP

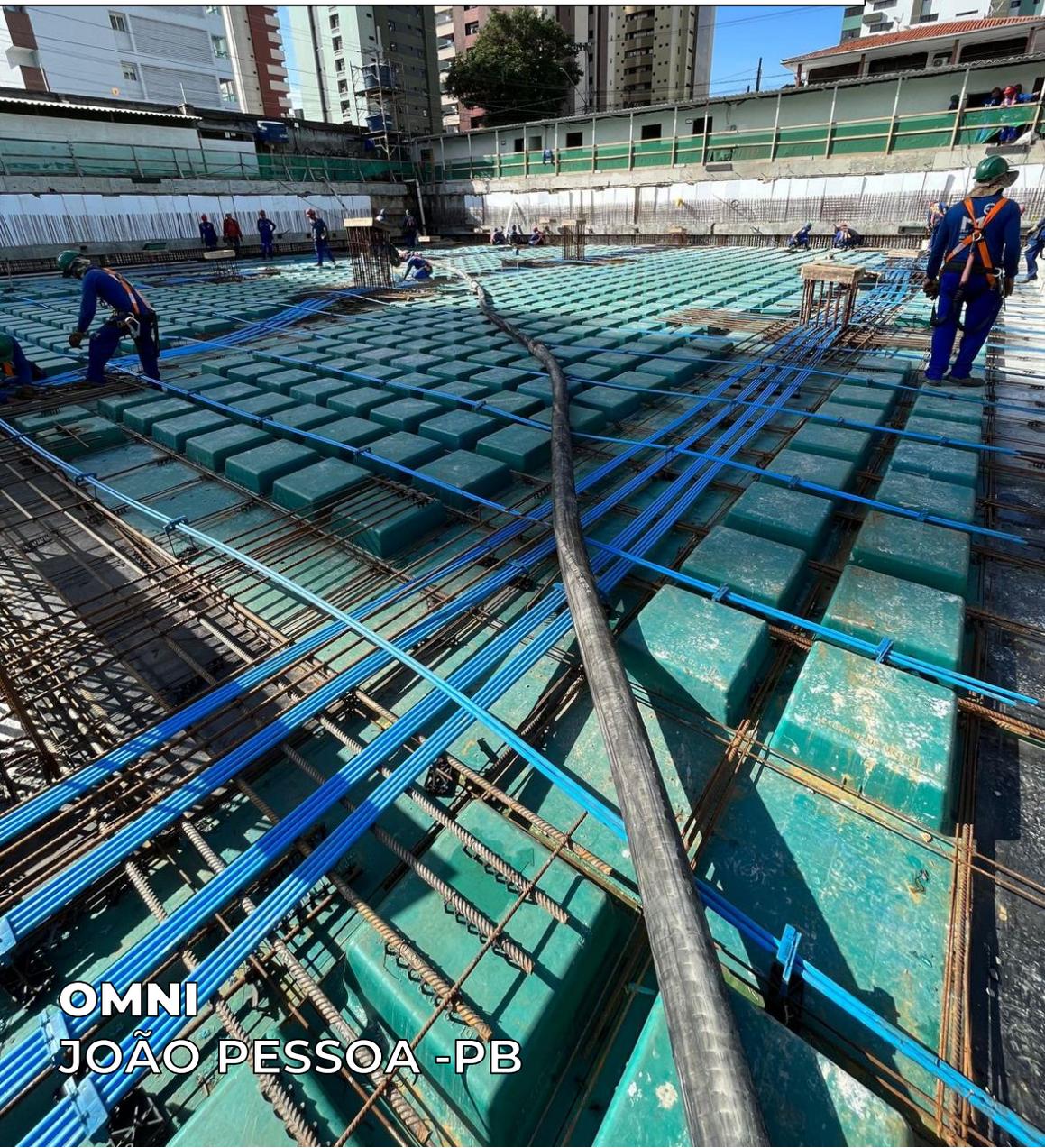
SISTEMA PAVPLUS

ESTRUTURA 4.0 MODULARIZAÇÃO + TECNOLOGIA + SUSTENTABILIDADE + PROCESSOS



IMPROTECH

PROTENSÃO



OMNI
JOÃO PESSOA - PB

LARGEST CONSTRUCTION PROJECT IN JOÃO PESSOA - 2023



SISTEMA PAVPLUS

ESTRUTURA 4.0 MODULARIZAÇÃO + TECNOLOGIA + SUSTENTABILIDADE + PROCESSOS



VERTICE
PORTO BELO - SC



SISTEMA PAVPLUS

ESTRUTURA 4.0 MODULARIZAÇÃO + TECNOLOGIA + SUSTENTABILIDADE + PROCESSOS



**SQUARE LIFE CENTER
CASCAVEL - PR**



FIRST PLACE NATIONALLY



CBIC INNOVATION AND SUSTAINABILITY AWARD

VOTED, NATIONALLY, THE BEST INNOVATIVE SYSTEM OF 2018



PROBLEM / OPPORTUNITY -> REPLACEMENT OF PLYWOOD WITH PLASTIC

EASY REPAIR



CIRCULAR ECONOMY



HOW CAN WE
INNOVATE IN
HEALTH WITH
PLASTIC?



COVID-19

Farmácias têm falta de máscaras após confirmação de coronavírus no Brasil

Associação diz que aumento da demanda e falta de insumos, retidos pela China, causam escassez do produto

27/02/2020 às 16:54

Compartilhe:     



CONSTRUCTION COMPANIES WERE REQUIRED TO PURCHASE 4 MASKS PER DAY PER EMPLOYEE

Inovando desde 1996
IMPACTO

FLIPMASK (PLASTIC)



KIT 10 MÁSCARA + 50 FILTRO LAVÁVEL
Equivalente a 50 máscaras laváveis



KIT FILTRO TNT 168und
84 pares - 4 cores - refil para 01 mês







RetinaFácil

Seu exame de retina num clique!
PATENTE: BR-202019003492-6-U2

ADAPTÁVEL PARA QUALQUER CELULAR

ENCAIXE PARA LENTE D20

CONFECCIONADA EM PLÁSTICO ATÓXICO

FÁCIL USO & PORTÁTIL/ LEVE

Paulo André Holanda
(Diretor Regional SESI/ SENAI Ceará)



COM A PUPILA DILATADA, JÁ É POSSÍVEL CAPTURAR EXCELENTE IMAGENS PARA EXAMES DE VISTA COM SEU SMARTPHONE

Fomentado por
sesitech.
SESI SENAI

Unichristus
Centro Universitário Christus

IMPACTO

TERMITE
ENGENHARIA INOVATIVA

PROMOVER

5º Congresso Brasileiro do PLÁSTICO™

Realização



EM IMPLANTAÇÃO / PROSPECÇÃO

Prefeitura de Fortaleza
Secretaria Municipal de Saúde

UPA 24h
UNIDADE DE PRONTO ATENDIMENTO

SESA | SECRETARIA DA SAÚDE
GOVERNO DO ESTADO DO CEARÁ

Unichristus
Centro Universitário Christus

SESI
Saúde Total

Initiator: Márcia Benevides Damasceno - Médica-Especialista em Oftalmologia - CRM 5983 CE - RQE 1663

HOW TO LEAVE A LEGACY IN MY HOMETOWN?

WHERE I STARTED MY
STUDIES



FIRST PLASTIC HOTEL IN THE WORLD (GUARAMIRANGA/ CE)



PLASTIC BUNGALOW

Você tem todos os motivos para relaxar nas alturas



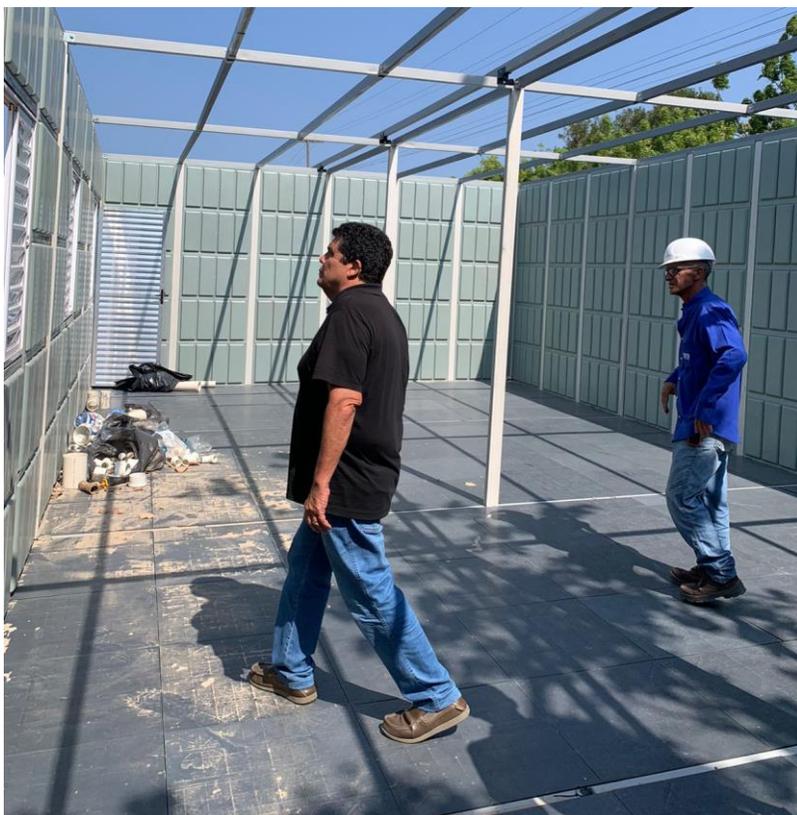
PLASTIC WOOD



PLASTIC WATERFALL



PLASTIC MODULAR CONTAINER (CONSTRUCTION SITES)



PLASTIC MODULAR CONTAINER (CONSTRUCTION SITES)

<https://www.youtube.com/watch?v=1469ul6kwdg&t=8s>

Canteiro Modular

IMPACTO

Montagem Banheiro de Plástico

COST OF USING THE RESTROOM

- Vertical construction site with 100 employees.
- **Employee travel and breaks** between the worksite and the restrooms located on the pilotis.
- **Minimum monthly cost due to travel: R\$ 5,500.0**

EPCAR MUSEUM (GUARAMIRANGA/ CE)

FORGOTTEN AND RECLAIMED PERSONALITIES OF GUARAMIRANGA REPLICA MADE WITH FIBERGLASS AND 3D PRINTING (PLASTIC)

ONE OF BRAZIL'S GREATEST SCIENTISTS, FOUNDER OF INPE, AND CONTRIBUTOR TO APOLLO 11, RECEIVING A MOON ROCK DIRECTLY FROM NEIL ARMSTRONG

FERNANDO DE MENDONÇA
GUARAMIRANGA (1924)



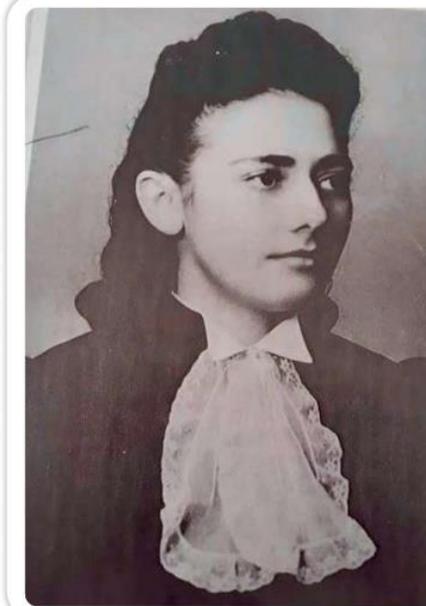
FIRST PRESIDENT OF THE CEARENSE REPUBLIC AND SIGNED THE GS-20 CREATION PLAN OF ITA/CTA

JOSÉ LINHARES
GUARAMIRANGA (1886-1957)



FIRST FEMALE PILOT FROM CEARÁ AND ONE OF THE PILOTS IN BRAZIL

RITA BARROSO DE ALBUQUERQUE
GUARAMIRANGA (1926)



- 1. DREAMING SMALL AND DREAMING BIG TAKES THE SAME EFFORT. SO, DREAM BIG**
- 2. BREAK PARADIGMS**
- 3. LUCK EXISTS FOR THOSE WHO WORK**
- 4. TRUST DIVERSE GROUPS. DON'T BE AFRAID TO BET ON A YOUNG TEAM**
- 5. DO THE "BAKER'S MATH"**
- 6. INNOVATION IS INVENTION WITH A RECEIPT**
- 7. YOU DON'T NEED TO BE AT NASA OR SILICON VALLEY TO INNOVATE**
- 8. IF YOU THINK INNOVATION IS EXPENSIVE, TRY DOING THE SAME THING ALL THE TIME**
- 9. BETTER DONE THAN PERFECT**
- 10. AS THEY SAY IN "CEARÁ," HAVE THE "LE QUECHÊ" AND THE "LE FAZER"**

IMPACTO

INOVANDO DESDE 1996

ENGENHEIRO DAS INOVAÇÕES

24 
PATENTES APROVADAS

19
PEDIDOS DE PATENTES

02 
PEDIDOS DE PATENTE NOS EUA

JOAQUIM CARACAS



IMPACTO PROTEÇÃO © 2024

INOVAÇÃO GERA PRODUTIVIDADE



A INOVAÇÃO COM DNA CEARENSE

A high-angle photograph of a construction site. In the foreground, a grid of orange rebar is laid out on a green surface. Blue plastic blocks are used as spacers between the rebar. Several workers in white and blue uniforms and hard hats are visible, some standing on the rebar grid. In the background, more construction activity is visible, including wooden formwork and additional workers. A dark blue semi-transparent box with white text is overlaid in the center of the image.

INNOVATION IS NOT ABOUT COMPLICATING THINGS.
INNOVATION IS NOT ABOUT REINVENTING THE WHEEL.
INNOVATION IS NOT ABOUT SPENDING MONEY. IT'S ABOUT
DOING THE SIMPLE... WHICH IS NOT EASY!

CEO IMPACTO
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impactoeng.com



Instituto
SustenPlást



Organized
by:
Instituto
SustenPlást

**“PRODUCTIVITY IS NOT THE RESPONSIBILITY OF
THE WORKFORCE, BUT OF YOUR PROCESSES”**

**THANK YOU VERY
MUCH!!!**

