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Praktyka obróbki stali nierdzewnych

12 czerwca 2007

STAL NIERDZEWNA

www.stalenierdzewne.pl

Sponsor głowny:

UGINE & ALZ
Arcelor Mittal Group

Program Seminarium:

10.00 – 10.10
Otwarcie – **Andrzej Ciepiela**, Polska Unia Dystrybutorów Stali

10.10 – 10.50
Stale odporne na korozję w budownictwie: wybór gatunku i prawidłowe stosowanie – **Benoît Van Hecke**, Euro Inox

10.50 – 11.10
Przetapianie laserowe powierzchni stali odpornych na korozję – **Mirosław Bonek, Zbigniew Brytan**, Instytut Materiałów Inżynierskich i Biomedycznych

11.10 – 11.40
Stal nierdzewna w przemyśle budowlanym – **David Holland, Izabela Dors-Wolak**, Ugine & Alz Arcelor Mittal Group

11.40 – 12.00
Dachy i ściany z blach nierdzewnych- sposób wykonania dachu Sądu w Antwerpii – **Paweł Fiszer**, ME Polska

12.00 – 12.15
Przerwa kawowa

12.15 – 13.45
Obróbka powierzchni stali odpornych na korozję po procesie spawania – **Thomas Van Os**, VECOM

13.45 – 14.10
Metody spawania stali nierdzewnych i ich wpływ na jakość spoin i powierzchni złączy spawanych – **Jerzy Niagaj**, Instytut Spawalnictwa

od 14.10
Panel dyskusyjny

Poczęstunek

Partnerzy:

ACERINOX, BE Group, ITALINOX Polska, NOVA TRADING, OUTOKUMPU, Stalserwis, investa, ThyssenKrupp Energostal, ThyssenKrupp

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Stal nierdzewna w przemyśle budowlanym

METAFORUM

Poznań, Poland

12th June 2007

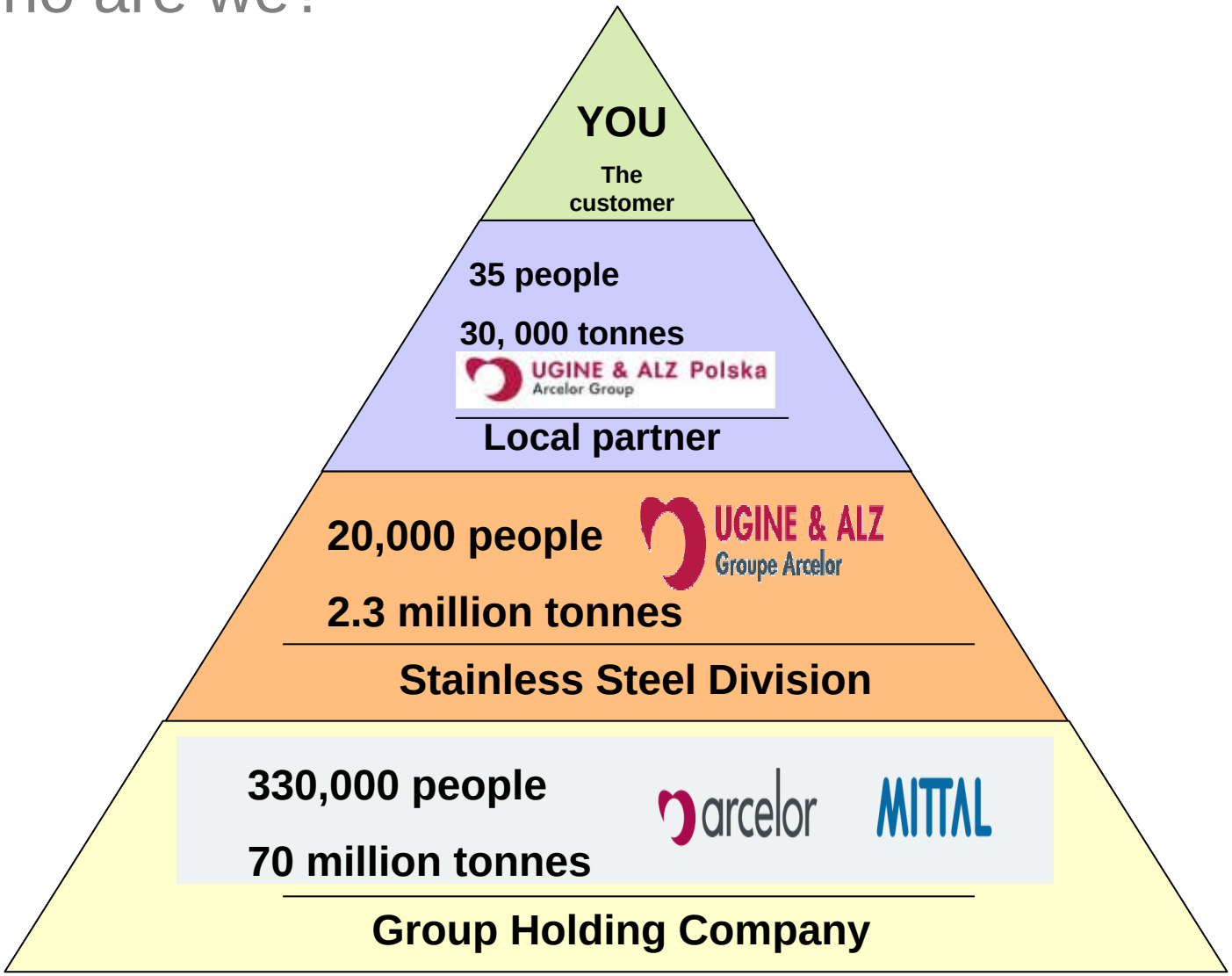
UGINE & ALZ
Groupe Arcelor

arcelor MITTAL

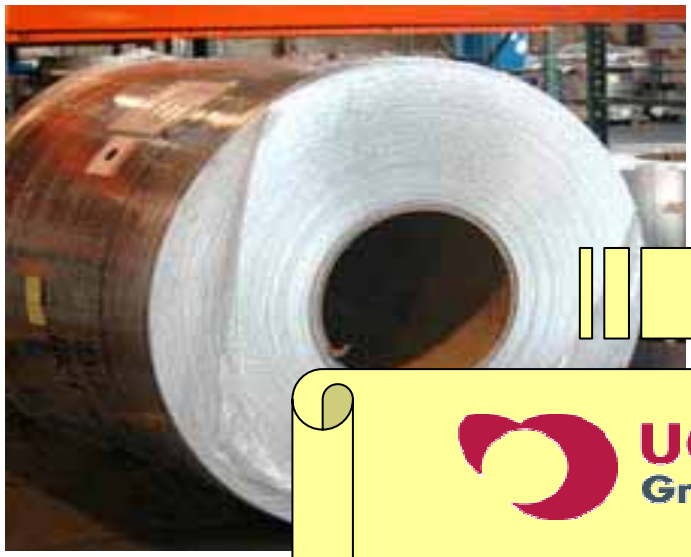
This presentation: A quick guide

- The people
- The company
- The history
- The ideas
- The problem
- The solution
- The offer
- The advantages
- The conclusion
- The questions
- The end!

Who are we?


YOU
The customer
35 people
30, 000 tonnes
UGINE & ALZ Polska
Arcelor Group
Local partner
20,000 people
2.3 million tonnes
UGINE & ALZ
Groupe Arcelor
Stainless Steel Division
330,000 people
70 million tonnes
arcelor
MITTAL
Group Holding Company

What are we going to present?



UGINE & ALZ
Groupe Arcelor

Our vision…

Integrating Stainless Steel into Building & Construction Applications

This is the historic role of stainless steel…


Petronas Twin Tower- C.Pelli- Kuala Lumpur-1998


La Géode-A.Fainsilber-Paris-1983


Chrysler Building-W.Van Alen-New York-1930


Pyramide du Louvre-I.M.Pei-Paris-1989


Walt Disney Concert Hall-F.O Gehry-Los Angeles-2003


Canary Wharf Tower- C.Pelli-London-1990


Gateway Arch-E.Saarinen-St Louis-1965


Llyods Building-R.Rogers-London-1984


Bibliothèque de France-D.PerrauLt-Paris-1995

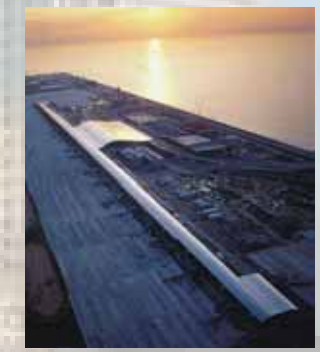

Opera Bastille-C.Ott-Paris-1989


F Weisman Museum-F.O. Gehry-Minneapolis-1993


Makuhari Messe-M.Fumihiko-Chiba -1997


Sun Life Tower-Zefara Menkes-Toronto-1985


Palais de justice-R.Rogers-Anvers-2005


Kansai Airport-R.Piano-Osaka-1994

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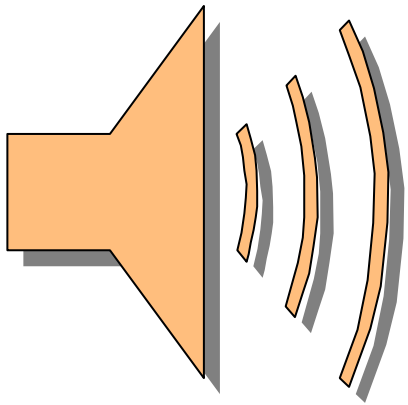
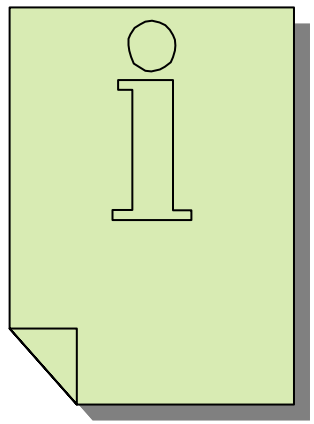
It has been very successful since the early 1900s…

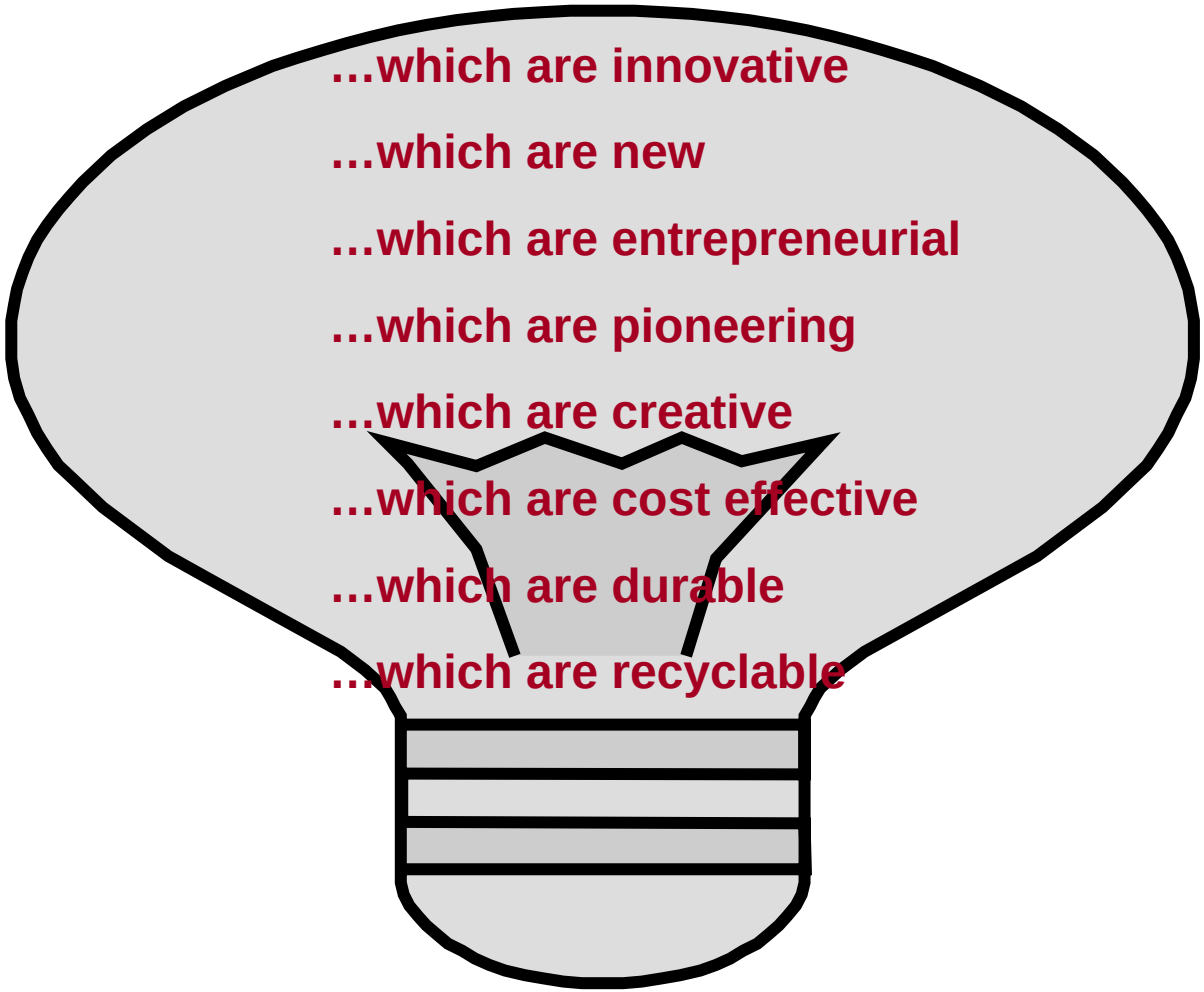
Chrysler Building-W.Van Alen-New York-1930

We would like to talk about something different…





… and share lots of ideas with you…



3 ideas are very different

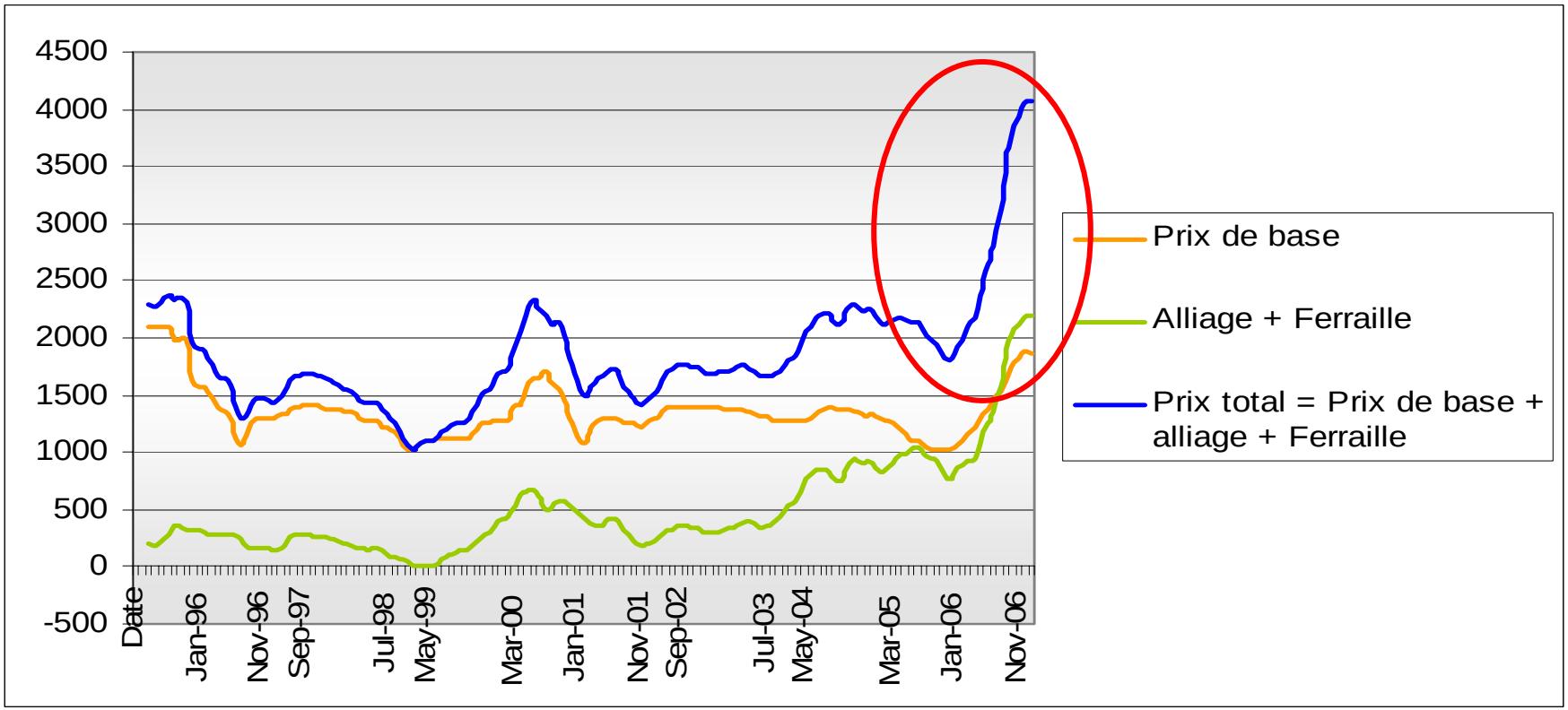
Nickel free

1. **Nickel Free**
2. 100% Ferritic
3. Available to YOU!

This is NICKEL

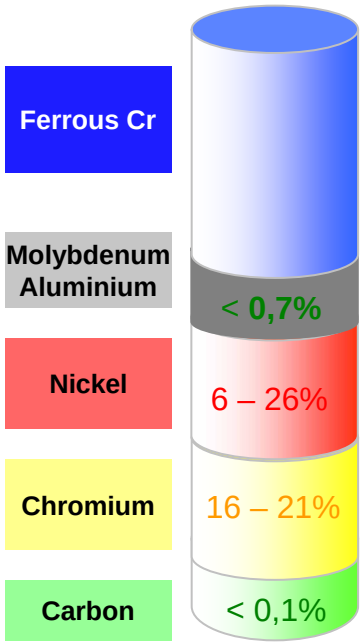
It looks innocent…but it has two secrets!

Secret No: 1 = It is very expensive…



80% raw material cost increase over recent months = >€40/m²!!!

Secret No: 2 = All stainless steel products used in construction contain it



Because they are AUSTENITIC

	% C	% Cr	% Ni	% Mo	% N
1.4301 (304)	0,07 max	18.20	8,00-10,50	-	0,11 max
1.4404 (316)	0,07 max	16.80	10,00-13,00	2,00-2,50	0,11 max

100% ferritic

1. Nickel Free
2. **100% Ferritic**
3. Available to YOU!

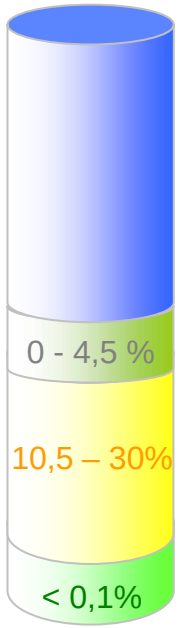
Ferrous Cr

Molybdenum
Aluminium

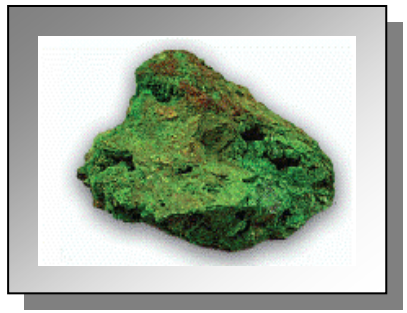
Nickel

Chromium

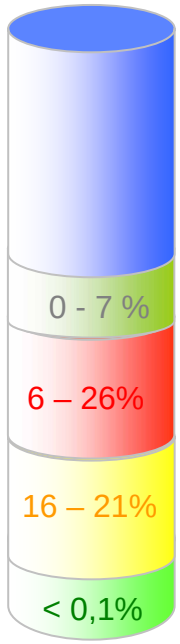
Carbon



FERRITIC



Nickel



AUSTENITIC

-

+

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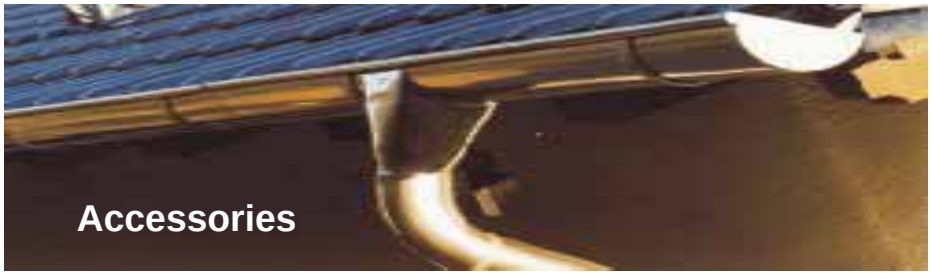
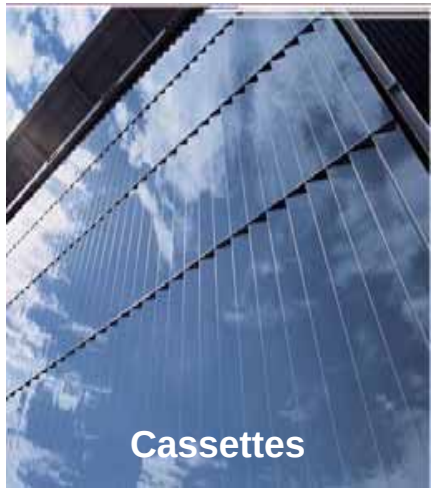
Available to **YOU**!

1. Nickel Free
2. 100% Ferritic
3. **Available to YOU!**





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Groupe Arcelor

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What are we going to present?

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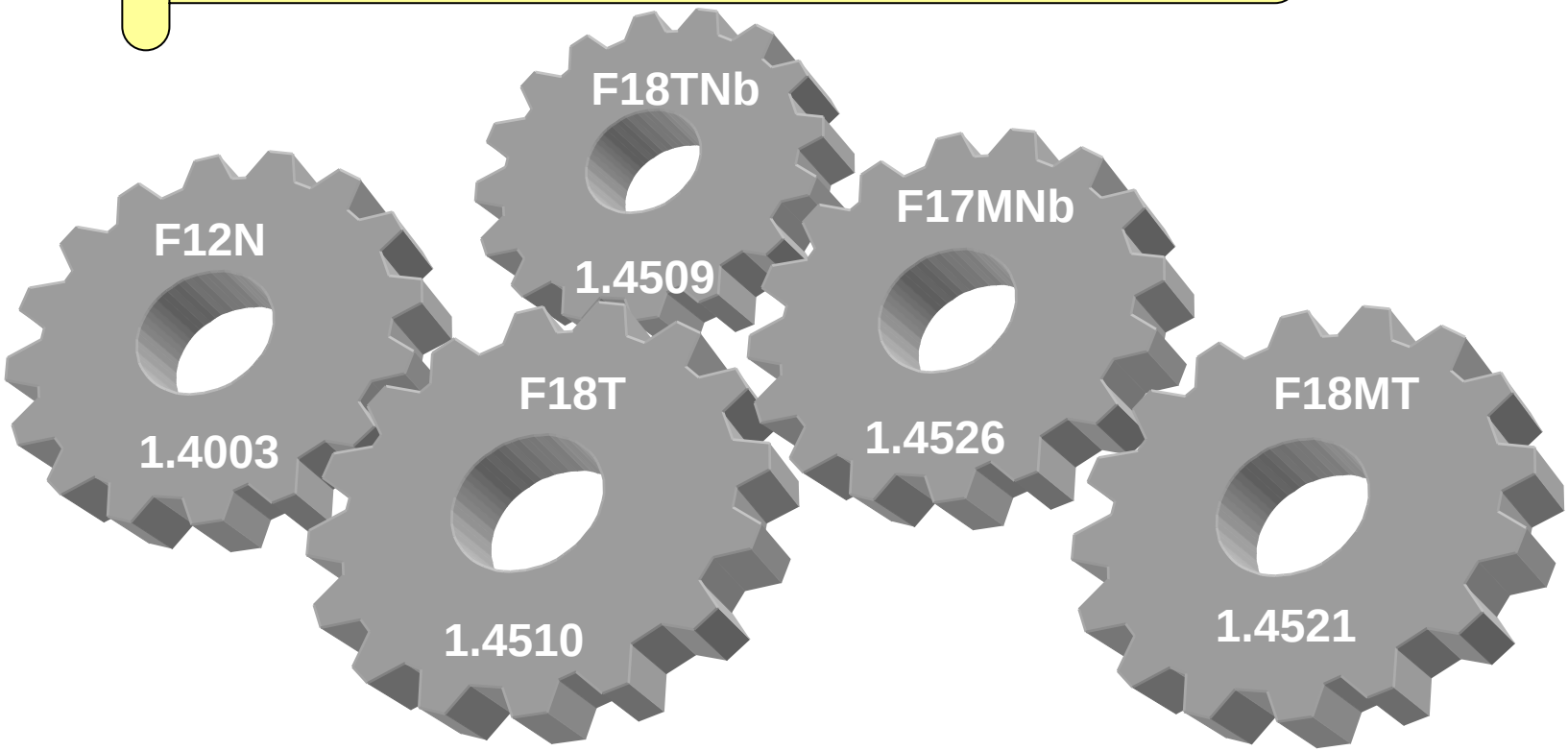
Our vision…

NICKEL FREE FERRITIC PRODUCTS



Roofing

UGINOX
F17T
F18T

Titanium stabilized
17 % chromium ferritic
stainless steel

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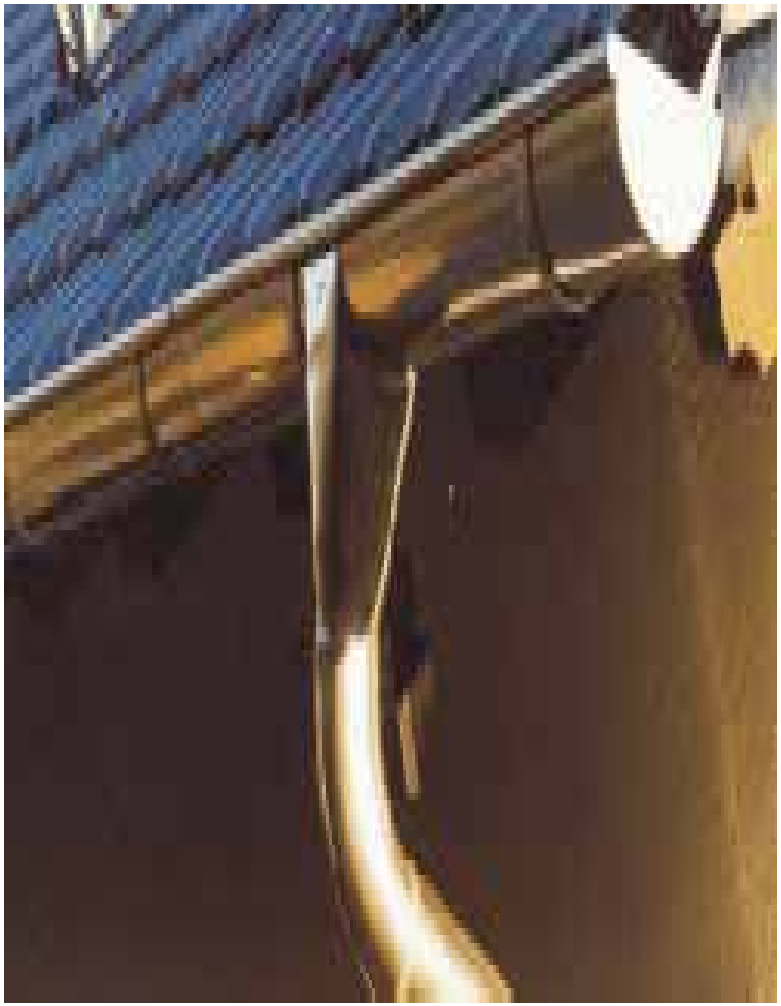
Thickness	Width
0.40mm 0.50mm	1205mm

Finishes	Advantages
UGINOX UGIPASS UGIBAT	Thermal Conductivity Weight per m²

Accessories



UGINOX
F17T
F18T

Titanium stabilized
17 % chromium ferritic
stainless steel

UGINE & ALZ
Arcelor Group

Thickness	Width
0.50mm	200-1250mm

Finishes	Advantages
UGINOX UGIBAT UGIBRIGHT	Maximum length Expansion Co-efficient

Façades
Cassettes

UGINOX F17MNb

Niobium stabilized molybdenum containing 17 % chromium ferritic stainless steel

European designation[1]
X6CrMoNb17-1
1.4526
American designation[2]
(AISI 436)

(1) According to NF EN 10088-2
(2) Approximate equivalence According to ASTM A 240

This grade is in accordance with:
- UGINE & ALZ Material Safety Data Sheet n°1: stainless steels (European Directive 2001/58/EC).
- European Commission Directive 2000/53/EC for end-of-life vehicles, and to Annex II dated 27 June 2002.
- NFA 36 711 Standard «Stainless steel intended for use in contact with foodstuffs, products and beverages for human and animal consumption» (non packaging steel).

Chemical composition Mean values

Elements	C	Si	Mn	Cr	Mo	Nb
%	0.04	0.4	0.5	17.5	1.25	0.60

General characteristics

The principal features of **UGINOX F17MNb** are:
- good resistance to pitting corrosion
- good resistance to industrial atmospheres
- good resistance to salt spray corrosion
- good formability without roping
- excellent polishability
- good mechanical properties at high temperature
- good oxidation resistance up to 950°C
- good resistance to corrosion in automobile exhaust gases.

Typical applications

- Automobile hub caps and decorative trims
- Decorative profiles for furniture
- Cooking utensiles
- Various exhaust system components (manifolds, front pipes, mufflers, catalytic converter shells)

Product range

Forms: sheets, blanks, coils, strips, circles
Thicknesses: 0.4 to 2.0 mm
Width: according to thickness, consult us
Finish: cold rolled

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UGINOX F17MNb

Thickness	Width
0.80mm to 2.00mm	1300mm

Finishes	Advantages
UGIBAT UGIBRIGHT UGISAND UGITEX	Corrosion resistance (in agressive environments) Aesthetic Properties

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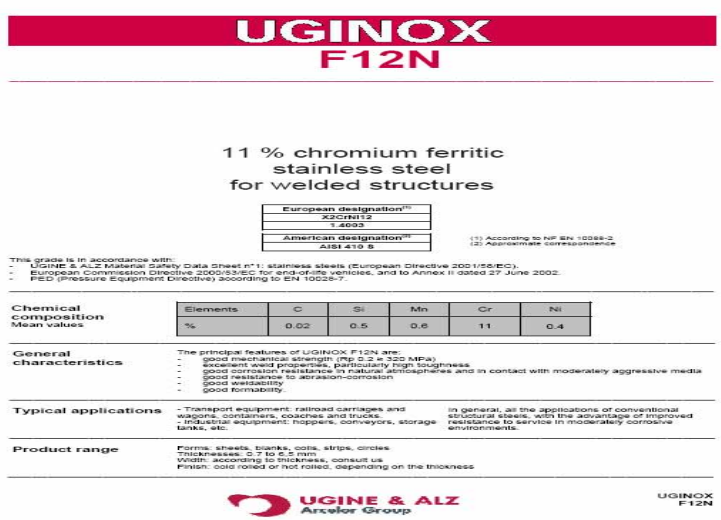
Structures



UGINOX F12N

11 % chromium ferritic stainless steel for welded structures

European designation[1]
X2CrNi12
1.4003
American designation[2]
AISI 410 S

(1) According to NF EN 10088-2
(2) Approximate correspondence

This grade is in accordance with:
- UGINE & ALZ Material safety Data Sheet n°1: stainless steels (European Directive 2001/58/EC).
- European Commission Directive 2000/53/EC for end-of-life vehicles, and to Annex II dated 27 June 2002.
- PED (Pressure Equipment Directive) according to EN 10028-7.

Chemical composition Mean values

Elements	C	Si	Mn	Cr	Ni
%	0.02	0.5	0.6	11	0.4

General characteristics

The principal features of UGINOX F12N are:
- good mechanical strength (Rp 0.2 = 320 MPa)
- excellent weld properties, particularly high toughness
- good corrosion resistance in natural atmospheres and in contact with moderately aggressive media
- good resistance to abrasion-corrosion
- good weldability
- good formability.

Typical applications

- Transport equipment: railroad carriages and wagons, containers, coaches and trucks.
- Industrial equipment: hoppers, conveyors, storage tanks, etc.

In general, all the applications of conventional structural steels, with the advantage of improved resistance to service in moderately corrosive environments.

Product range

Forms: sheets, blanks, coils, strips, circles
Thicknesses: 0.7 to 6.5 mm
Width: according to thickness, consult us
Finish: cold rolled or hot rolled, depending on the thickness

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UGINOX F12N

Thickness	Width
0.80mm	1000mm
8.00mm	1250mm
	1500mm

Finishes	Advantages
Hot-rolled	Mechanical Strength
2B cold-rolled	Low temperature performance

Composite Panels

UGINOX F18MT

Niobium-titanium stabilized molybdenum containing 18 % chromium ferritic stainless steel

European designation[1]
X2CrMoTi18-2
1.4521
American designation[2]
AISI 444

(1) According to NF EN 10088-2
(2) According to ASTM A 240

This grade is in accordance with:
- UGINE & ALZ Material Safety Data Sheet n°11: stainless steels (European Directive 2001/58/EC).
- European Commission Directive 2000/53/EC for end-of-life vehicles, and to Annex II dated 27 June 2002.
- PED (Pressure Equipment Directive) according to EN 10028-7.
- NFA 36 711 Standard «Stainless steel intended for use in contact with foodstuffs, products and beverages for human and animal consumption» (non packaging steel).

Chemical composition Mean values

Elements	C	Si	Mn	Cr	Mo	Ti + Nb
%	0.02	0.40	0.40	17.70	1.80	0.450

General characteristics

The principal features of **UGINOX F18MT** are:
- Very good resistance to pitting corrosion in chloride media, better than UGINOX 16-9L (304L) and UGINOX 16-11ML (316L) grades
- Insensitivity to stress corrosion cracking and intergranular corrosion
- Low toughness transition temperature, even in weld zones
- good drawability, very close to that of UGINOX F17T (430Ti)
- good weldability
- thermal conductivity higher than that of austenitic grades, with lower thermal expansion coefficient.

Typical applications
- Agrofood industry
- Hot water tanks
- Boilers
- Fume ducts
- Heat exchangers
- Tubes
- Solar panels

Product range

Forms: sheets, blanks, coils, foils, disks
Thicknesses: 0.30 to 4 mm
Width: according to thickness, consult us
Finish: cold rolled

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UGINOX F18MT

Thickness	Width
0.80mm	1250mm
2.00mm	1500mm

Finishes	Advantages
UGIBAT	Corrosion Resistance
UGIBRIGHT	Formability
UGITEX	

Profiles

UGINOX F18TNb

Titanium and niobium stabilized
18 % chromium ferritic stainless steel

European designation[1]
X2CrTiNb18
1.4509
American designation[2]
UNS 43932

(1) According to NF EN 10088-2
(2) According to ASTM A 240

This grade is in accordance with:
- UGINE & ALZ Material Safety Data Sheet n°1, stainless steels (European Directive 2001/58/EC).
- European Commission Directive 2000/53/EC for end-of-life vehicles, and to Annex II dated 27 June 2002.
- NF A 36 711 « Standard « Stainless steel intended for use in contact with foodstuffs, products and beverages for human and animal consumption» (non packaging steel).

Chemical composition Mean values

Elements	C	Si	Mn	Cr	Ti + Nb
%	0.02	0.5	0.5	17.8	0.7

General characteristics

The principal features of **UGINOX F18TNb** are:
- good weldability
- good formability
- good mechanical properties at high temperature, with no risk of sigma phase formation at intermediate temperatures
- good oxidation resistance up to 950°C
- good resistance to corrosion in automotive exhaust gases
- thermal conductivity higher than that of austenitic grades, with lower thermal expansion coefficient.

Typical applications

- Various exhaust system components (manifolds, front pipes, mufflers and catalytic converter shells), when UGINOX F12T is insufficient.
- Welded structures exposed to only moderately corrosive atmospheres or subjected to temperatures up to 950°C.
- Domestic fuel burners.
- Condensation boilers.

Product range

Forms: sheets, blanks, coils, strips, circles
Thicknesses: 0.4 to 2 mm (consult us for thicknesses between 2 and 6.5 mm)
Width: according to thickness, consult us
Finish: cold rolled or hot rolled, according to the thickness

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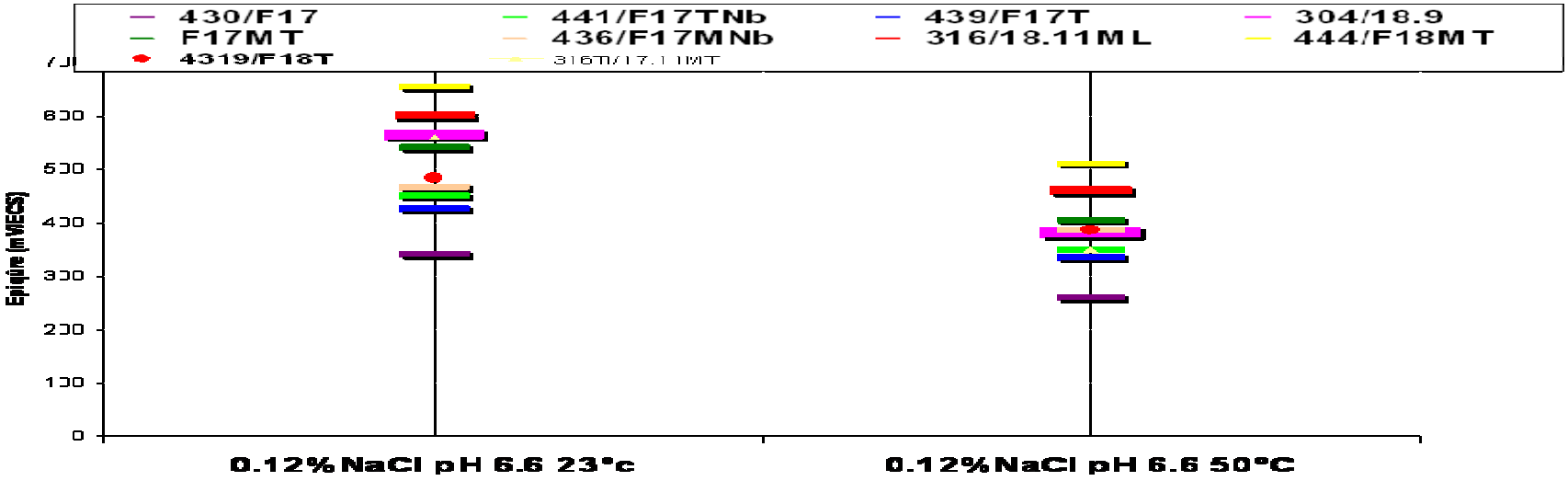
UGINOX F18TNb

Thickness	Width
0.60mm 0.80mm	1250mm

Finishes	Advantages
UGIBAT UGIBRIGHT	Oxydation Resistance Ductility

Performance

Pitting Corrosion

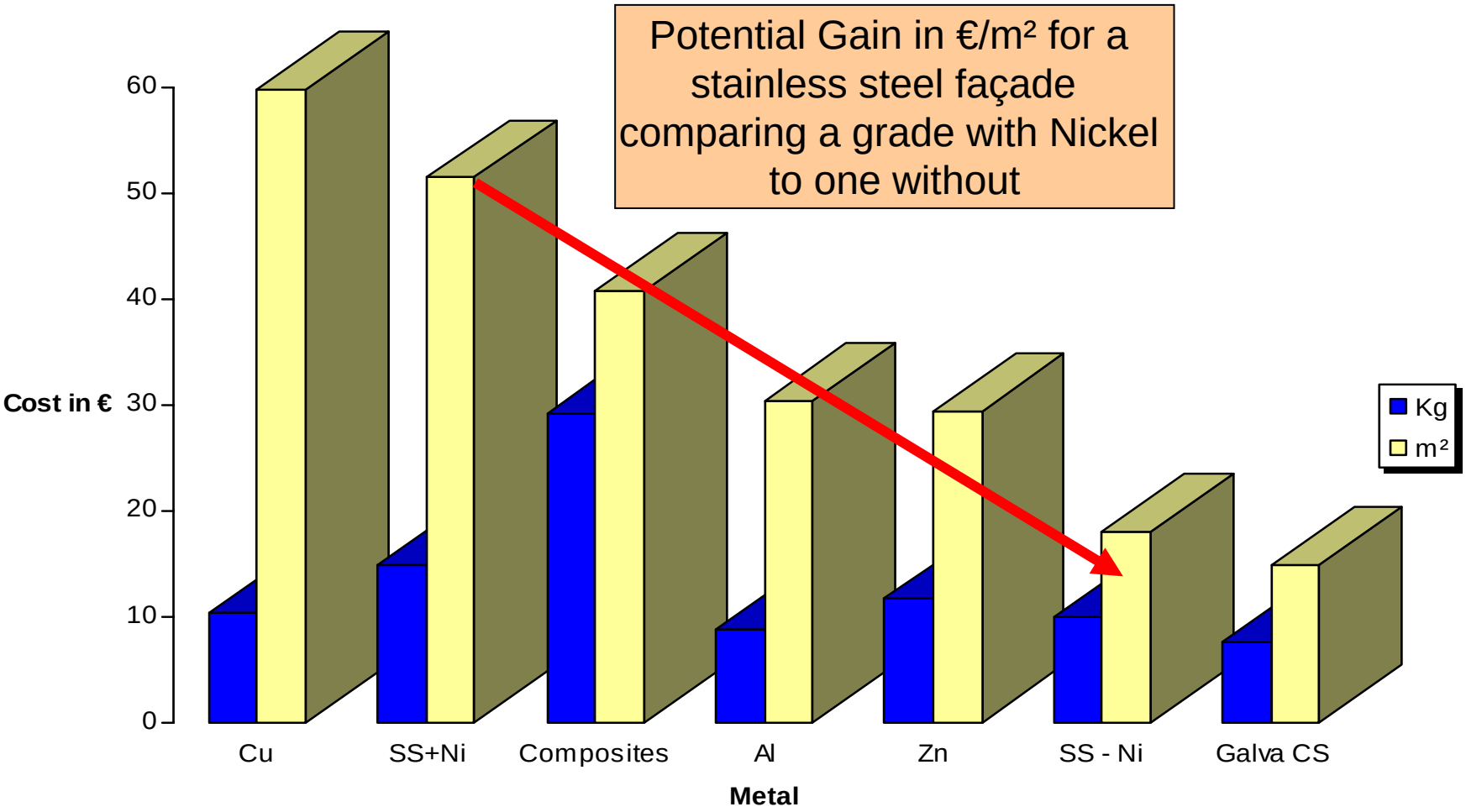


Atmospheric Corrosion

Expositions atmosphériques

Nuance	Ambiance Intérieure			Atmosphère extérieure							
					Urbaine		Industrielle				
	Saine ou Sèche	Humide	Agressive	Rurale non polluée	Normale	Sévère	Normale	Sévère	Marine	Mixte	Exposition particulière
430 - F17											
304 - 18-9E											
316L - 18-11ML											
444 - F18MT											

Cost Effective



Source: U&A European Market Study 2006 (cost of installing a 1000m² façade) metal, transformation, labour and installation benchmarked against leading competitor materials

A finished example

F17MNb Ugibright 0.80mm
profiled cladding

Conclusion

- ❑There are alternatives to Nickel containing grades
- ❑They can be cost effective solutions
- ❑They can perform as well as austenitic products
- ❑They can be used in Building & Construction
- ❑U&A, Arcelor Mittal Group, have a range which is developing
- ❑This range is tailor made to the Building & Construction market
- ❑A range of 5 grades
- ❑A selection of different finishes
- ❑It is new, different and available
- ❑Please feel free to contact us.

THE END!

Thank-you for your attention!!

We welcome your questions!!!