

LUCA FARALLI
Vice President, Sales
Flat Products

13th AISU SUMMIT
OCTOBER 29 -30, 2023
CAIRO, EGYPT

DANIELI DUE

From SGJT to green steel and ready for automotive exposed

DANIELI / SINCE 1914
PASSION TO INNOVATE
AND PERFORM
IN THE METALS INDUSTRY



DANIELI TEAM
MORE THAN
A CENTURY
OF PARTNERSHIP
EXPERIENCE



HIGH PRODUCTIVITY

Fast cast thick slabs, in excess of 4.0 Mtpy HRC with one single strand or in excess of 5.0 Mtpy with two strand caster machines

MARKET DEMAND & FLEXIBILITY

From commodity grades with ultra-thin gauges, to added-value products, including AHSS and thick API line pipe

ENVIRONMENTAL & COST-EFFECTIVE

Best OpEx and energy efficient design for true green steel production

HIGH QUALITY PRODUCTS

Best-in-class products, with high quality and tight tolerances even for demanding applications

PROVEN PLANT CONCEPT AND PROCESS
KNOW-HOW

QSP-DUE PLANT LAYOUT FLEXIBLE + DESIGN ADVANTAGES

DANIELI

© Danieli & C. S.p.A.



FULL ENDLESS,
COIL-TO-COIL,
SEMI-ENDLESS

+

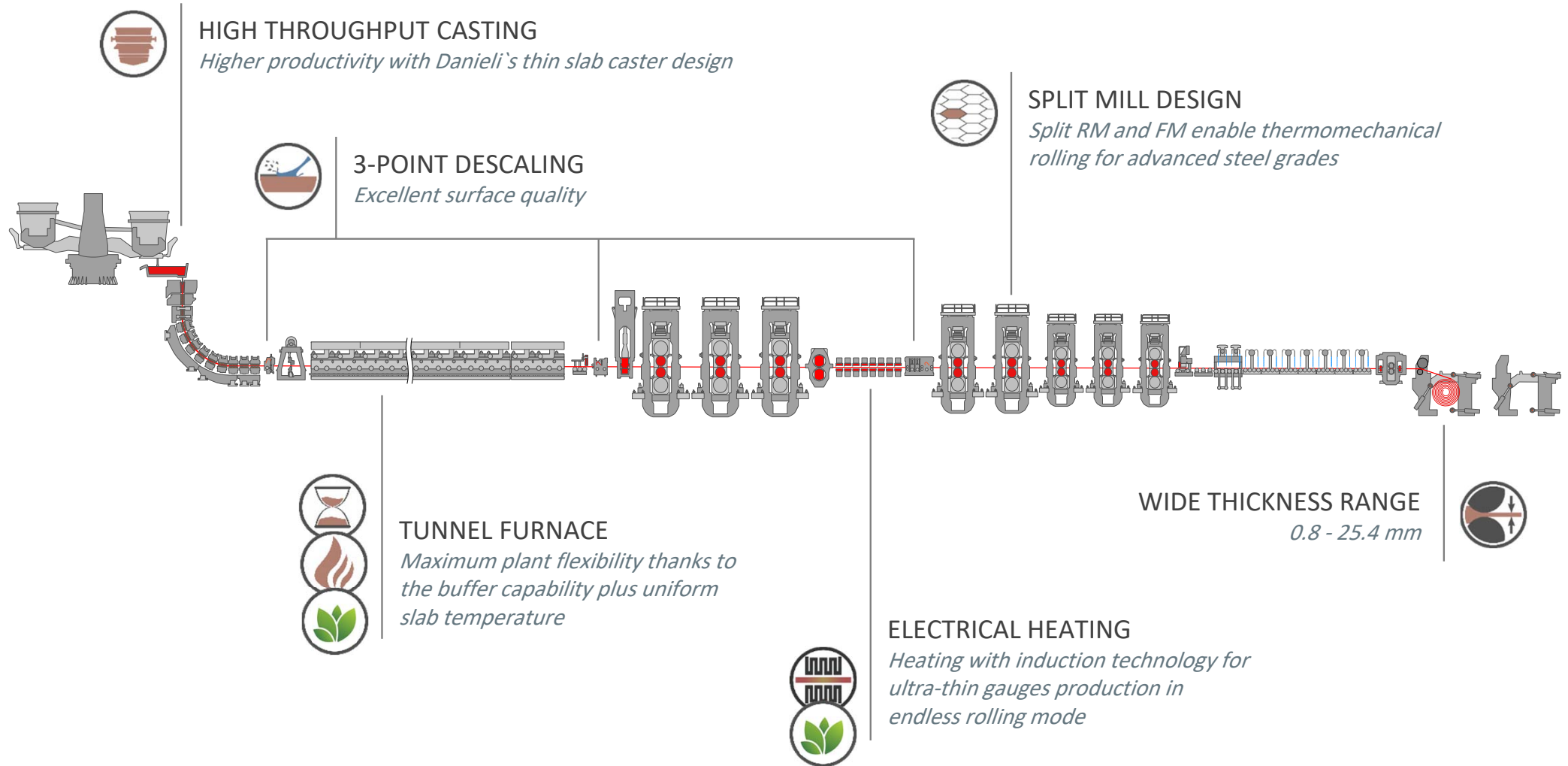
THERMO-
MECHANICAL
PROCESS

+

DYNAMIC WIDTH &
THICKNESS CHANGE

=

HIGH FLEXIBILITY
LOW OPEX
ZERO EMISSIONS



COIL-TO-COIL MODE

PENDULUM SHEAR

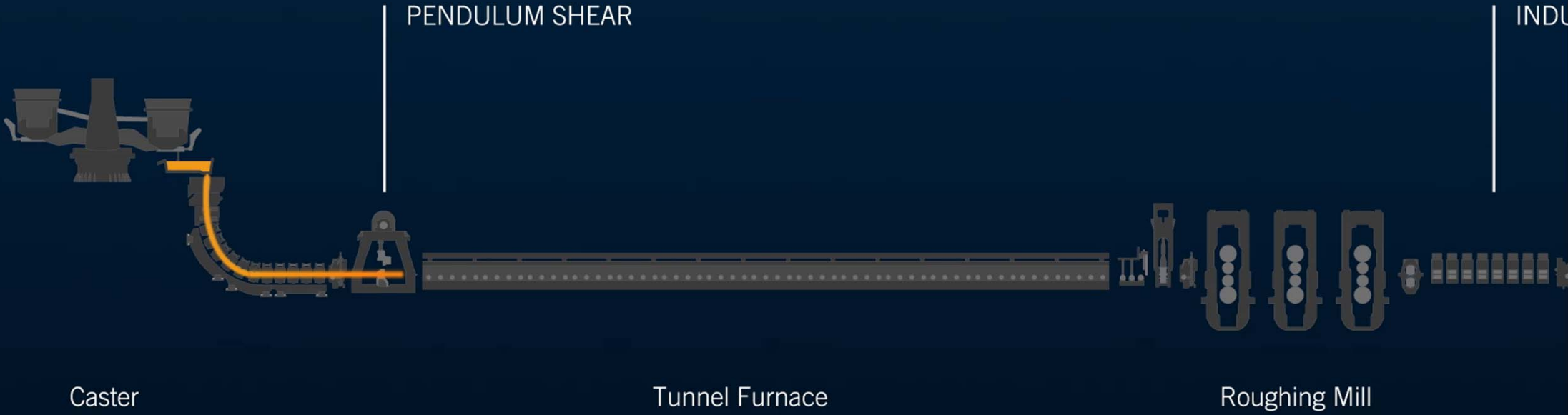


Caster

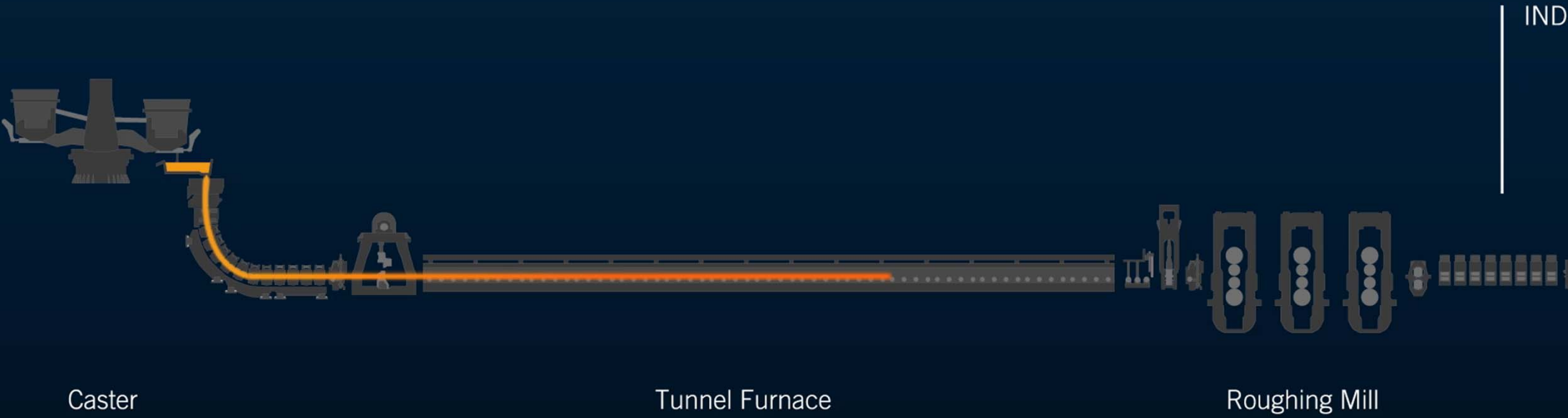
Tunnel Furnace

Roughing Mill

SEMI-ENDLESS MODE

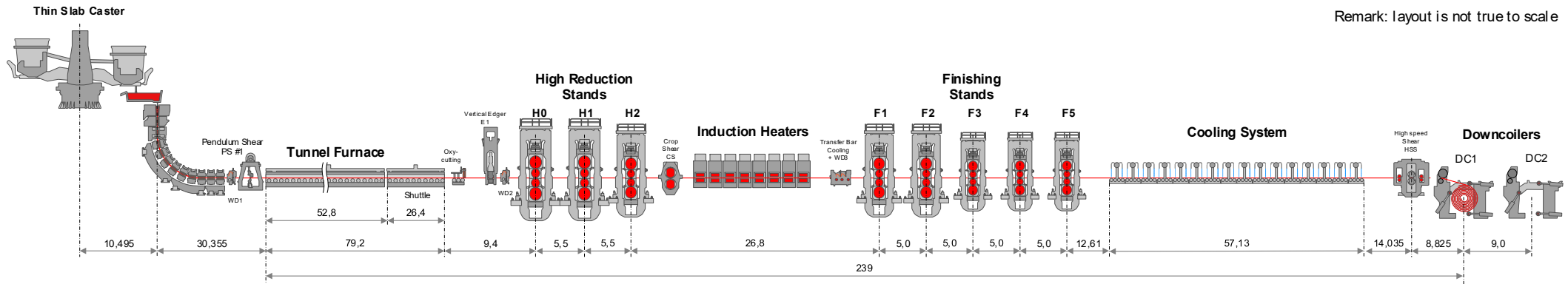


ENDLESS MODE



SGJT QSP –DUE
TECHNOLOGICAL LAYOUT

Remark: layout is not true to scale



LOCATION

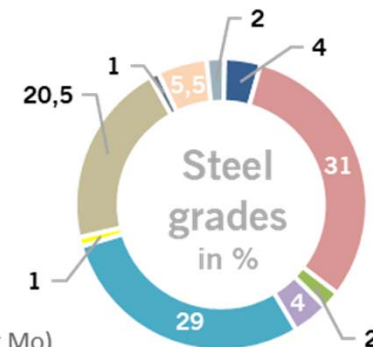


COIL DATA

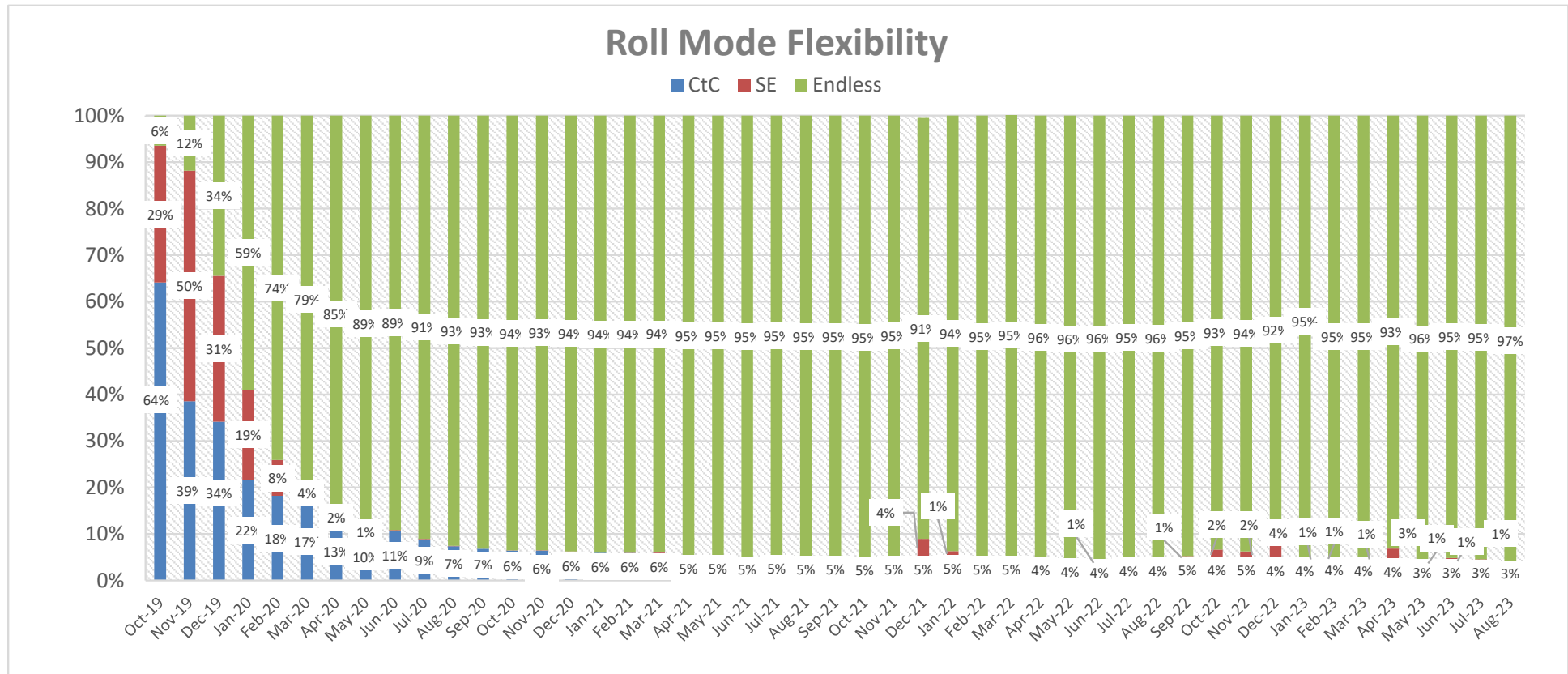
| | | |
|--|------------|----------------|
| | Thickness | 0.8 – 12.7 mm |
| | Width | 900 – 1,600 mm |
| | Production | 2,100,000 tpy |

PRODUCT MIX

- Low carbon
- Peritetic
- Medium carbon
- High Carbon
- LC MA
- PE MA
- MC MA
- Weather Resistance
- TRIP/DP
- Alloy Steels (High Cu, Cr, Ni or Mo)

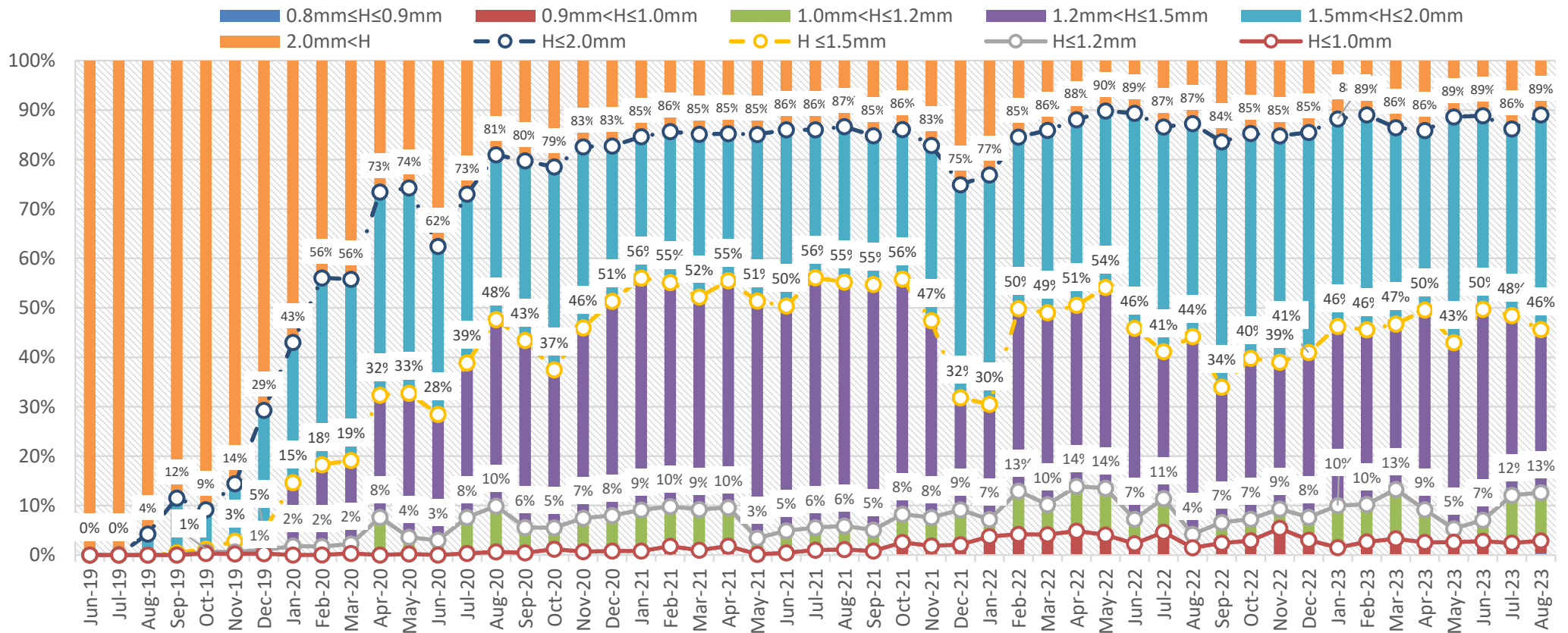


Rolling mode distribution



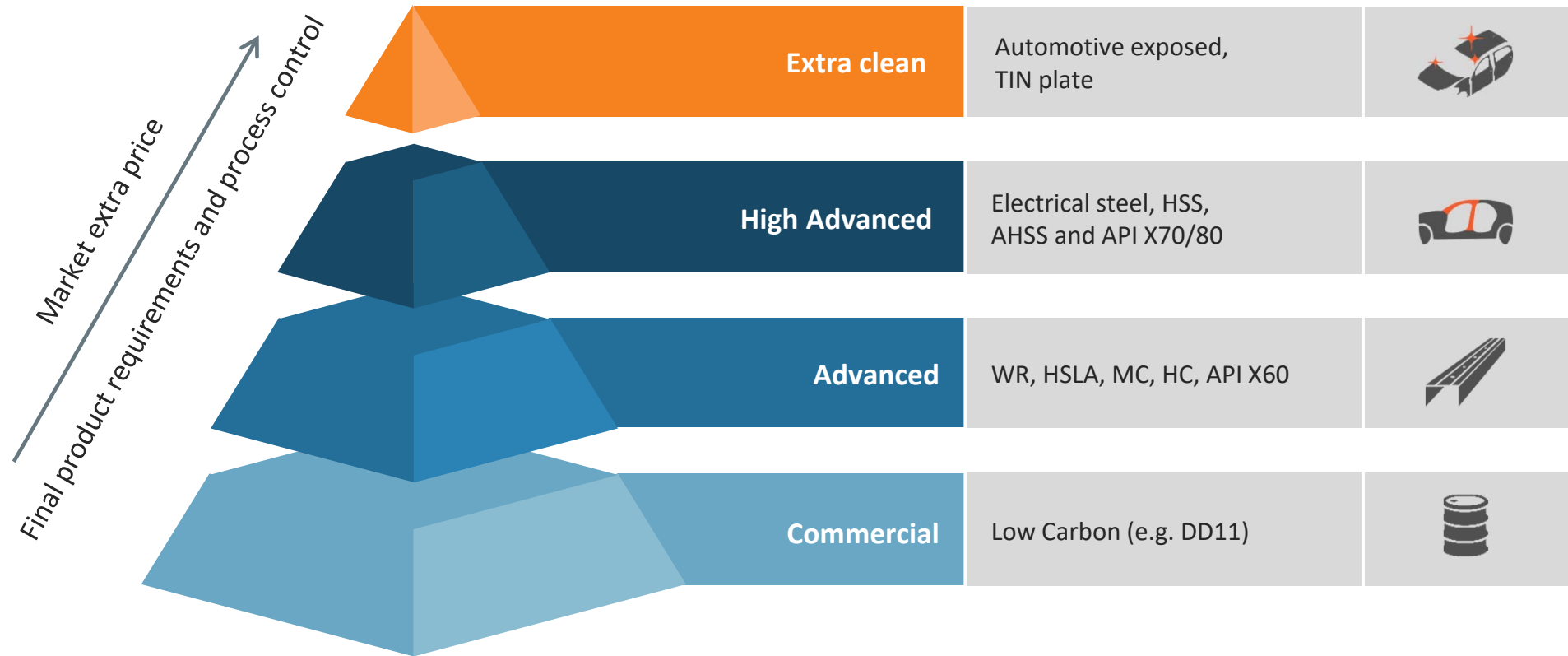
coil-to-coil, semi-endless, endless: rolling mode flexibility as consolidated production practice

Strip thickness distribution



HRC strip thickness distribution: avg. ~85% ≤ 2.0 mm

HIGHER REVENUES WITH THE PRODUCTION OF ADVANCED STEEL GRADES



MAIN TECHNOLOGICAL FEATURES

SLAB CASTER MOULD AREA

DANIELI

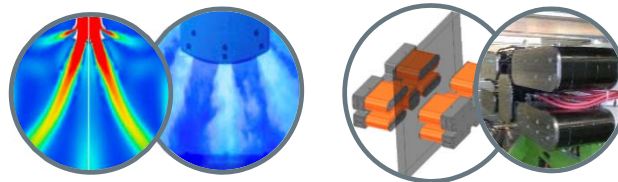
© Danieli & C. S.p.A.



DYSEN TECHNOLOGY

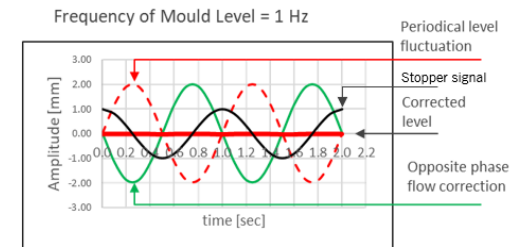
Global mould flow control

Available stirring function for Automotive exposed grades



ADVANCED LEVEL CONTROL

to stabilize mould level for:
high speed, high throughputs
stability in endless production mode



ONLINE WIDTH CHANGE

No production of undesired products

Production flexibility to accomplish and fulfill actual order book needs



FLAT MOULD

Product mix without steel grade limitation

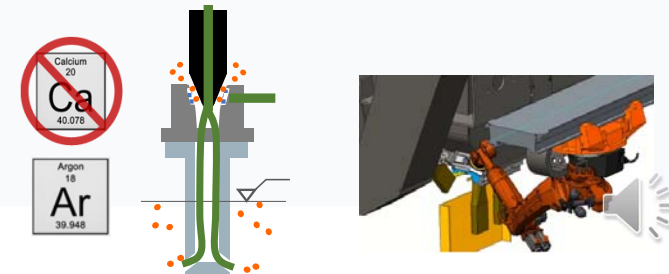
Production of Crack sensitive & Peritectic grades

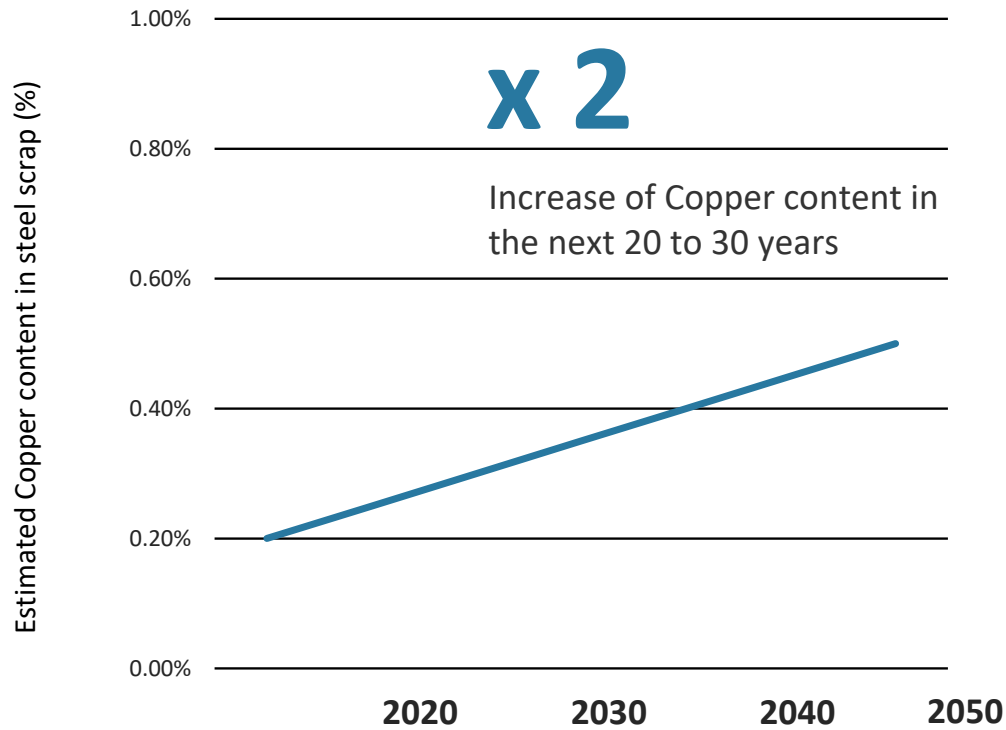


Ca-FREE + SEN EXCHANGE

Practice required for Tin plate and Automotive grades

Argon injection in SEN to avoid clogging

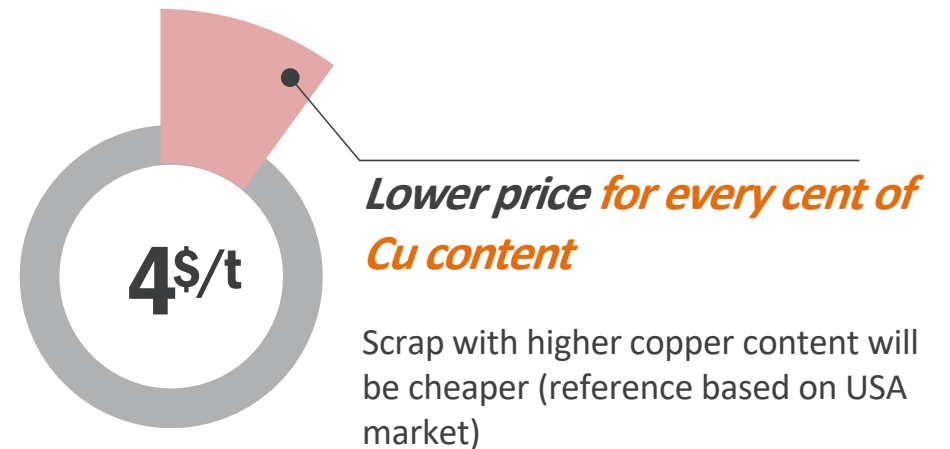




After several recycling cycles
Copper plate content in scrap
will increase over in next years



Cu up to 0.40 %



PROVEN EXPERIENCE

QSP is designed to work with any steel making process upstream.
Proven experience OMK and MMK DONGBU SGJT

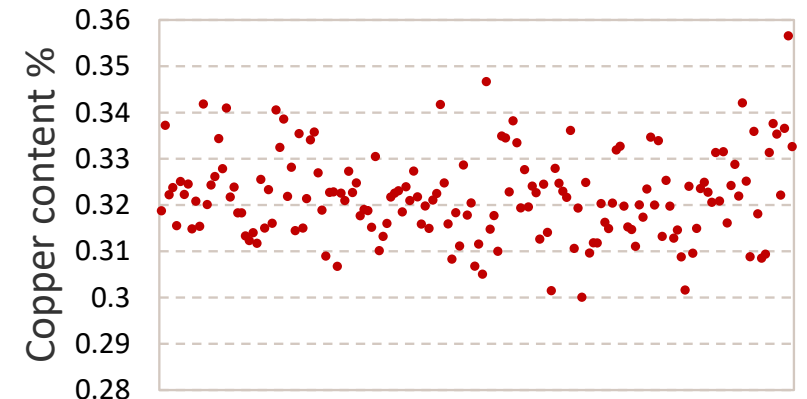
QSP can accept a large share of scrap as a charge material

QSP from Caster to HSM is designed to counteract the issue hot shortness due to tramp elements such as Copper and Tin

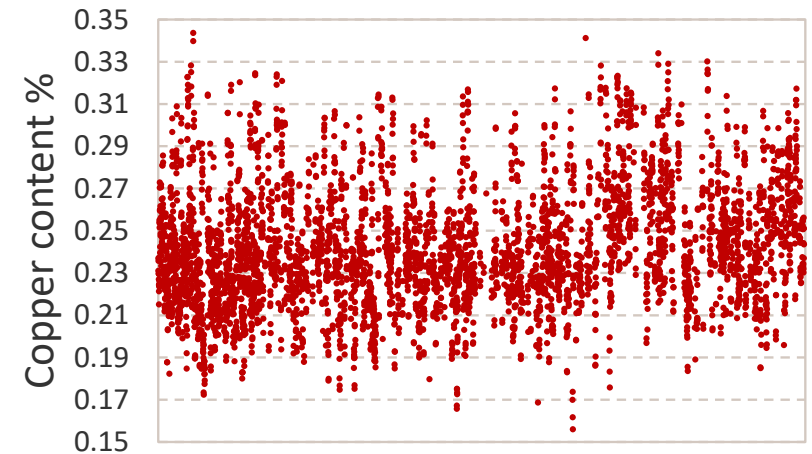
QSP final strip quality is not impaired by the use of scrap

Production of API grade via EAF since 2008
average **copper 0.20 ÷ 0.35 %** Coil to Coil

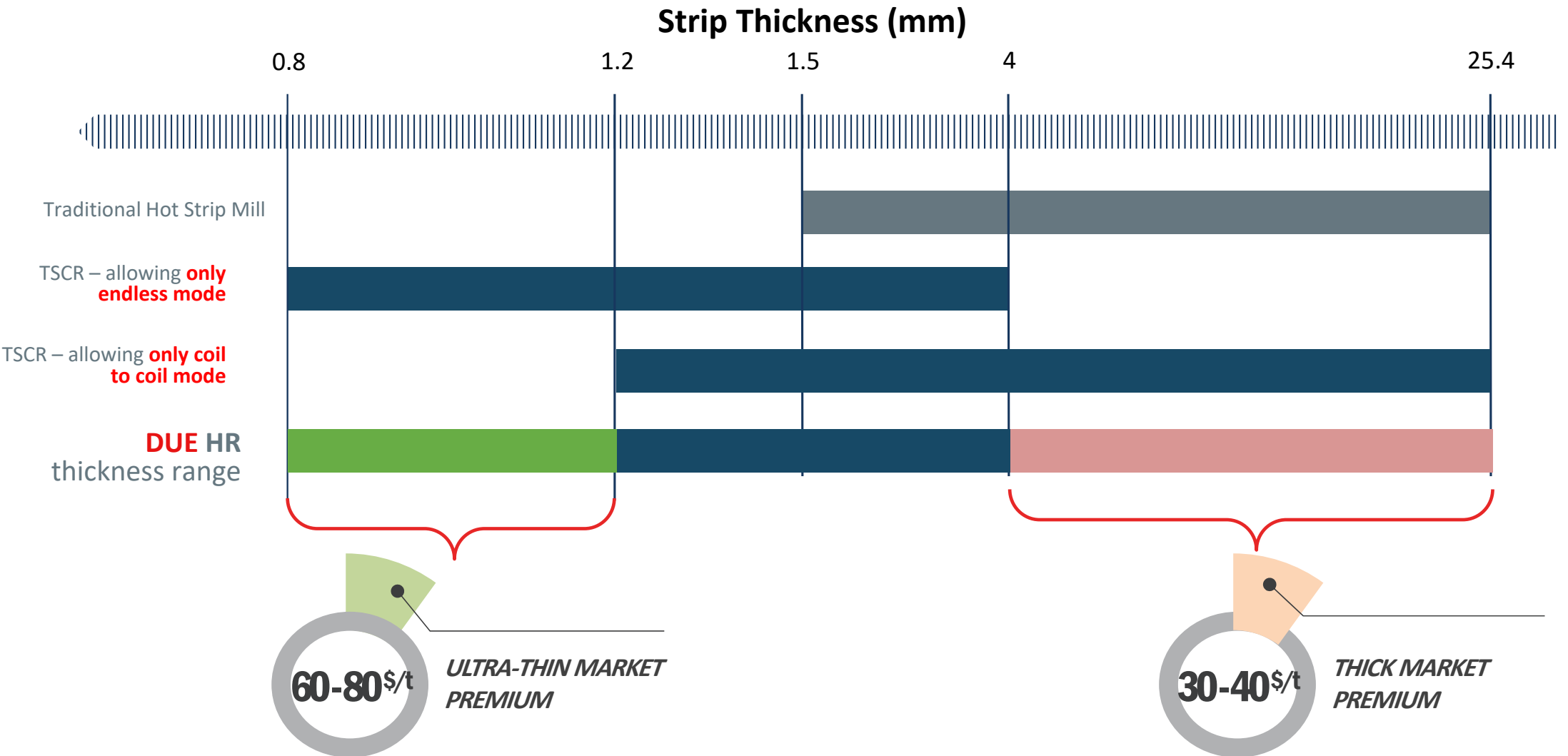
COPPER CONTENT

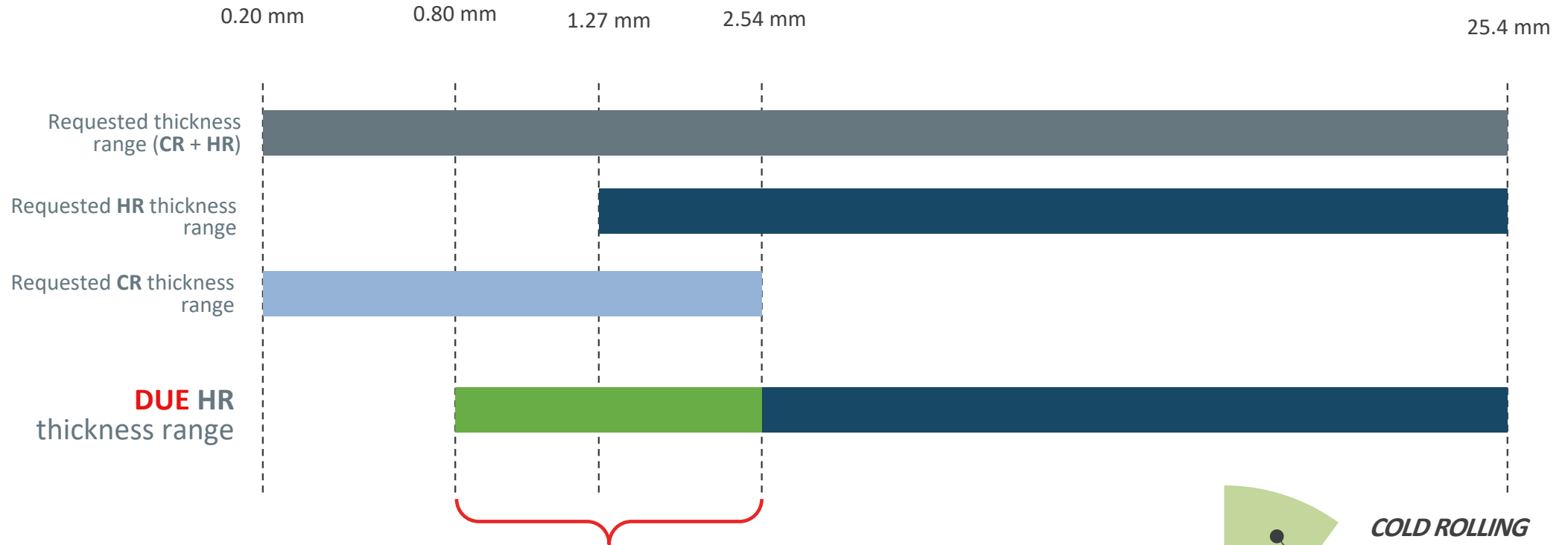


1 month of production – Plant A

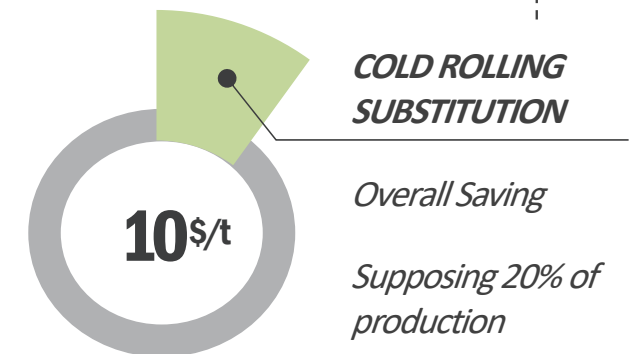


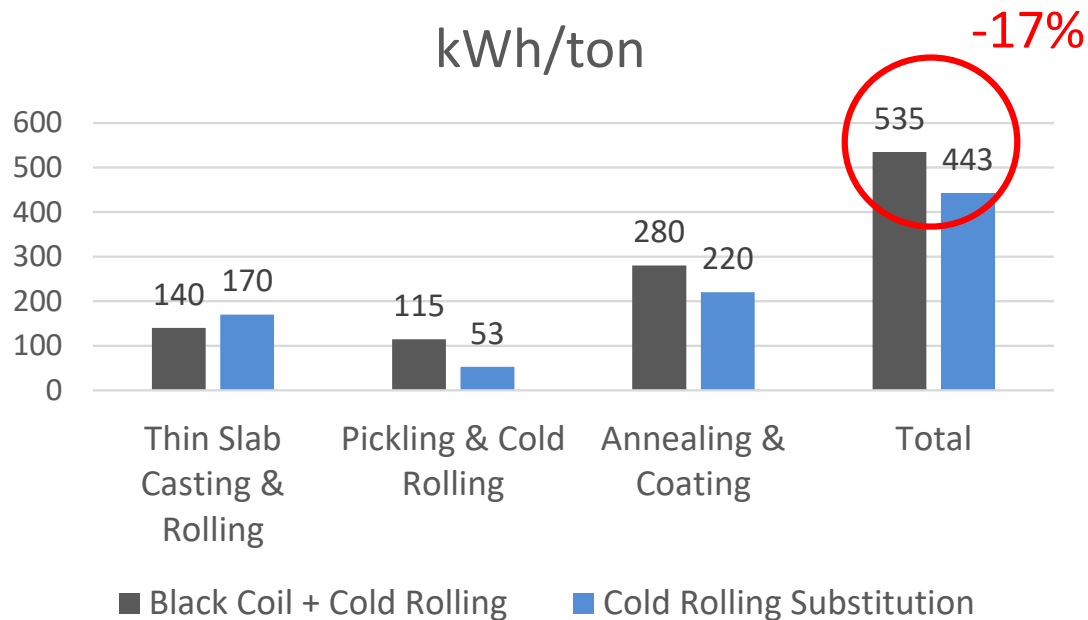
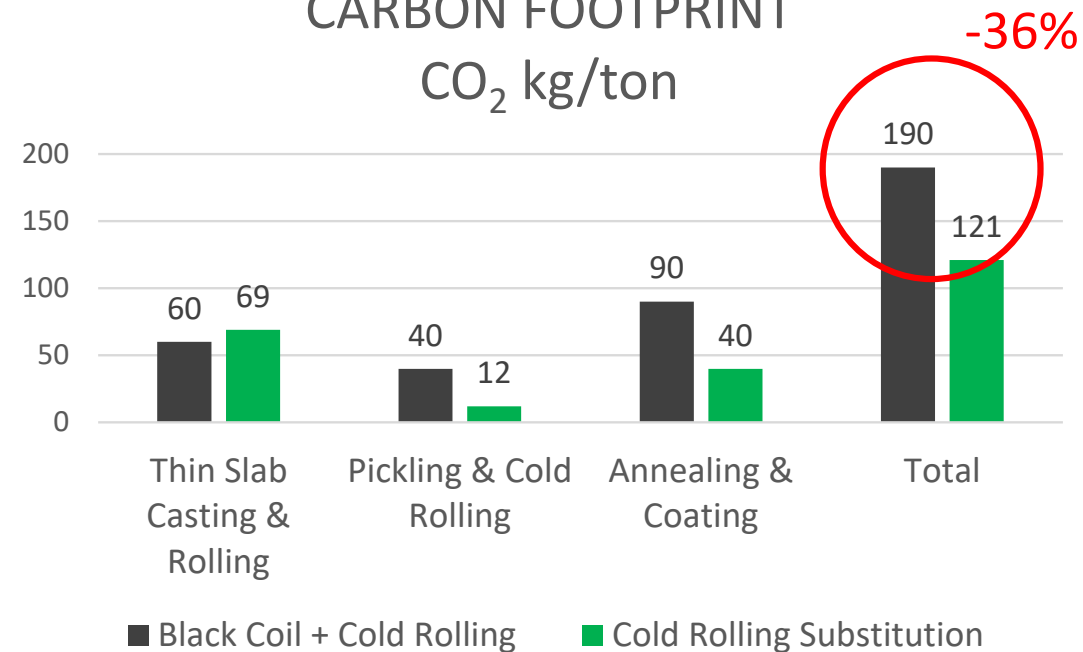
6 months of production – Plant B





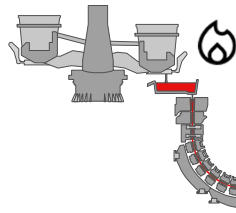
- > QSP-DUE completely covers the HR thickness range, also **substituting parts of the CR products** needs (down to 0.8 mm).
- > Thanks to **endless production**, this can be achieved with increased surface quality and tight geometrical tolerances.



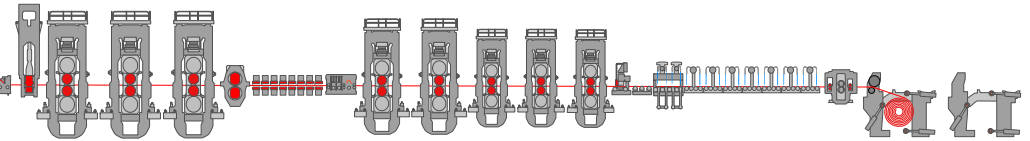
ENERGY CONSUMPTION
kWh/tonCARBON FOOTPRINT
CO₂ kg/ton

Cold Rolling Substitution resulting in Low OpEx and reduced carbon footprint

Tund. preheating
1,8 kgCO₂/ton
direct emission

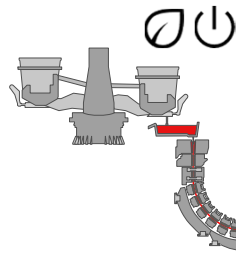


Gas-Fired Tunnel Furnace
5 kgCO₂/ton direct emission

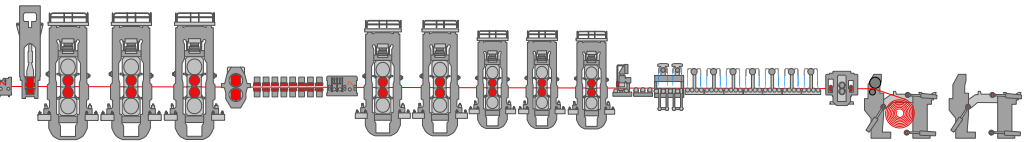


 CO₂ FOOTPRINT

Tund. preheating
0 kgCO₂/ton
direct emission



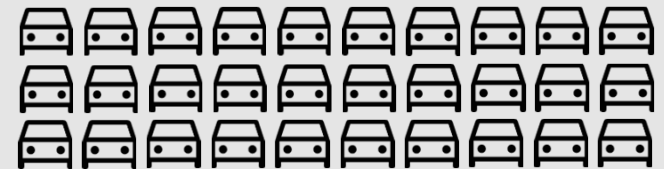
Electrical Tunnel Furnace
0 kgCO₂/ton direct emission



Production
3,000,000 tons/y

CO₂

CO₂ Energy saving
20,400 tons/y



Equivalent to 4,300 passenger vehicles

**1_
PROVEN
INDUSTRIAL
TECHNOLOGY**

4 QSP-DUE WW

out of 15 QSP
REFERENCES

+30 YEARS EXPERIENCE

VERTICAL CURVED CASTER
TECHNOLOGY

**2_
PROVEN
OPERATIONAL
SAVINGS**

LOWEST OPEX

COMPARED TO OTHER
THIN SLAB CASTING &
ROLLING TECHNOLOGIES

FLEXIBLE INPUT

CAN PROCESS Cu
CONTENT UP TO 0.40%

**3_
PLANT
FLEXIBILITY**

**ENDLESS,
SEMI-ENDLESS & C-T-C**

TO OPTIMIZE
QUALITY/PROCESS AND
COST-EFFECTIVENESS

ZERO LIMITATION

IN TERMS OF STEEL
GRADES

**4_
ENVIROMENTAL
FRIENDLY**

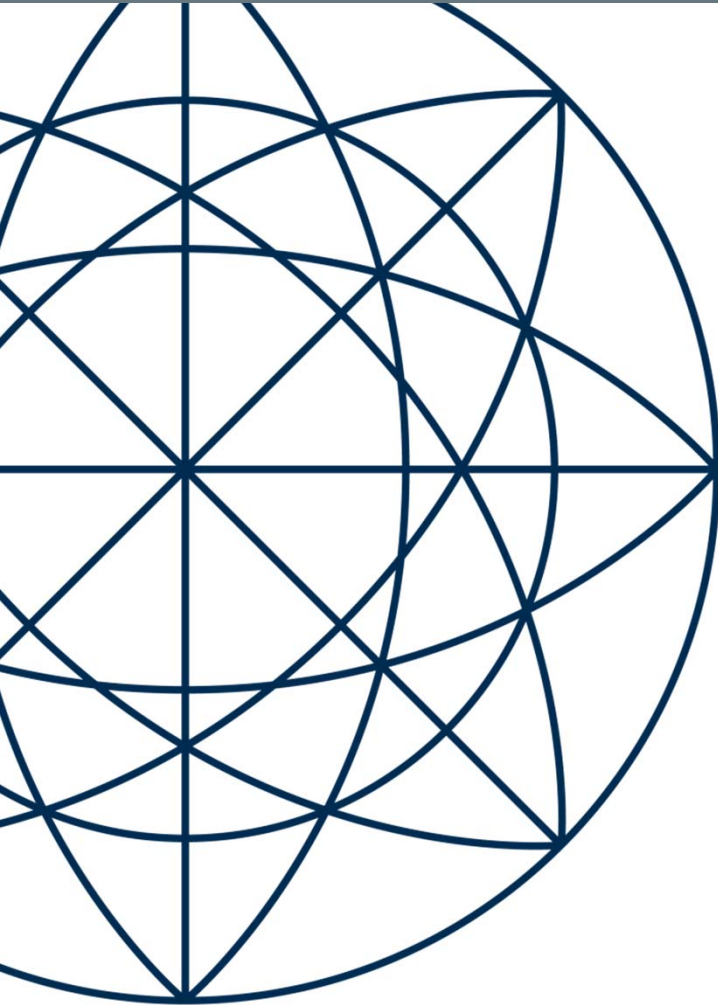
-31% ENERGY

COMPARED TO OTHER
TECHNOLOGIES

**-68% CO2 SC. 1+2
EMISSIONS**

COMPARED TO OTHER
TECHNOLGIES





DANIELI DUE[®] IS THE UNIQUE PRODUCTION LINE THAT COMBINES:

- > Ability to cover the widest possible product mix and thickness out of the reach of traditional HSM
- > Ability to handle different charge mix in the Steel Making Plant (Cu content up to **0,40%**)
- > **Quality** of the final product **exceeding** market expectations
- > **Ability to substitute CR coils** for many application with an advantage of **approx. 50 \$/t**
- > Ability to produce ultra light gauges that cannot be produced by conventional HSM with market premium of **up to 80 \$/t**
- > Lowest energy consumption and CO₂ emissions in the industry (**-75% Energy and -59% CO₂**)
- > Completely automated process from meltshop to final HRC with “**no man on the floor**” approach

LUCA FARALLI
Vice President, Sales
Flat Products

13th AISU SUMMIT
OCTOBER 29-30, 2023
CAIRO, EGYPT

DANIELI DUE

From SGJT to green steel and ready for automotive exposed

DANIELI / SINCE 1914
PASSION TO INNOVATE
AND PERFORM
IN THE METALS INDUSTRY



DANIELI TEAM
MORE THAN
A CENTURY
OF PARTNERSHIP
EXPERIENCE