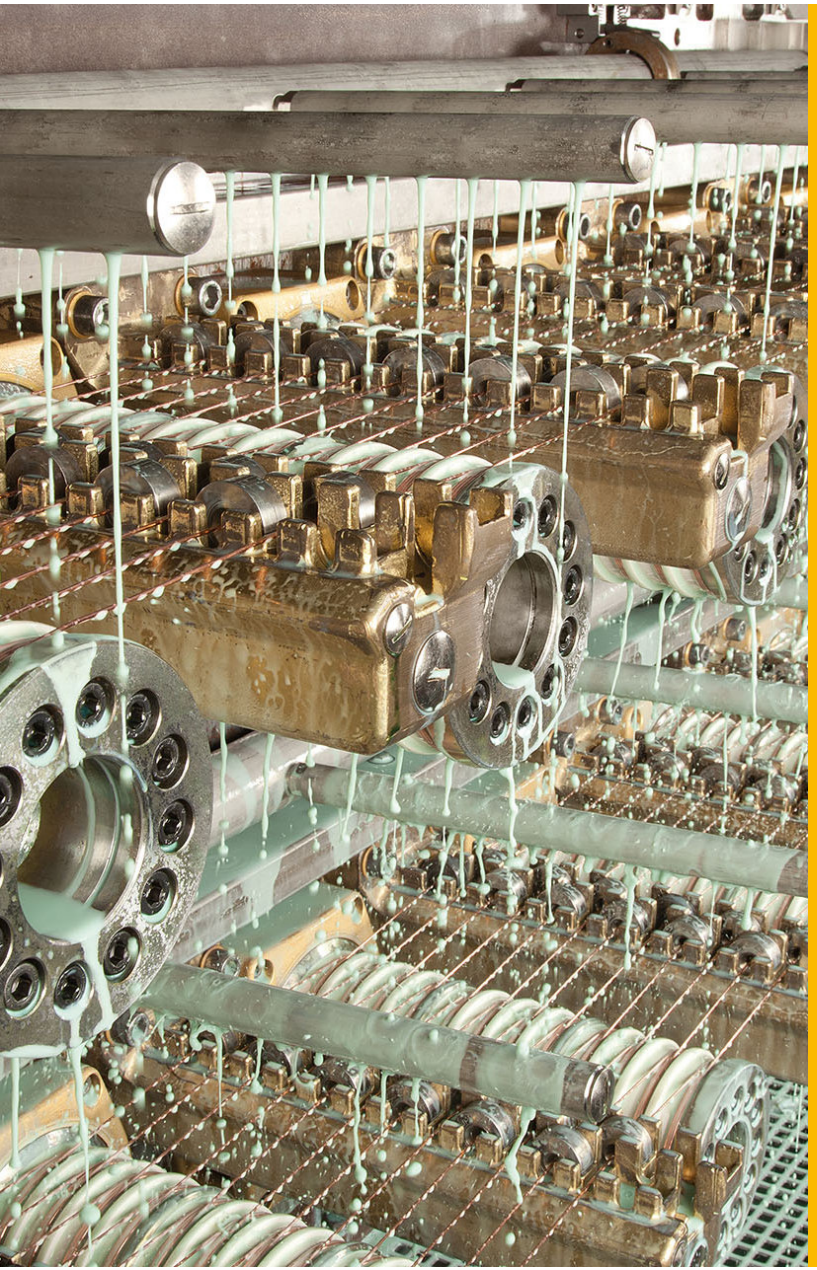


Coolant technology through the ages

The UNOPOL „X“- range of drawing lubricants

Prague
27 + 28.10.2025

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Coolant technology through the ages

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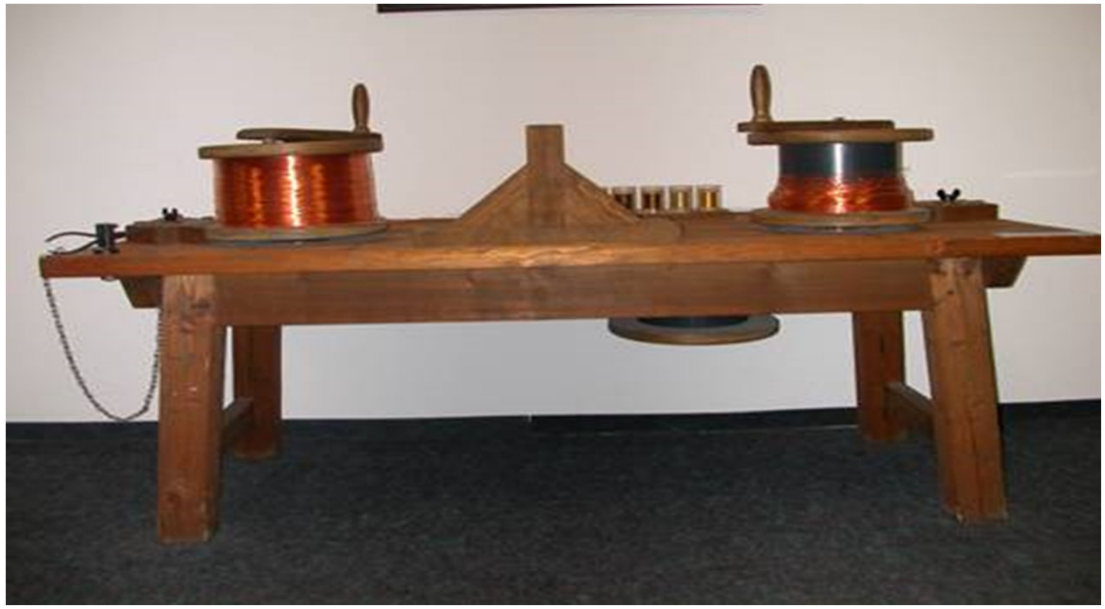
- back to the future ?



Coolant technology through the ages

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- no, first back to the past !



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Composition of drawing lubricants in the past

- animal oils like e.g. fishoil
- vegetable oils like e.g. castor oil, coconut oil, rapeseed oil
- mineral oil
- emulsifier







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Performance of drawing lubricants in the past

- very high lubricity
- clean machines for a few weeks
- fast oxidation of the additives, decreasing of the lubricity
- residues, dirt, thickening etc

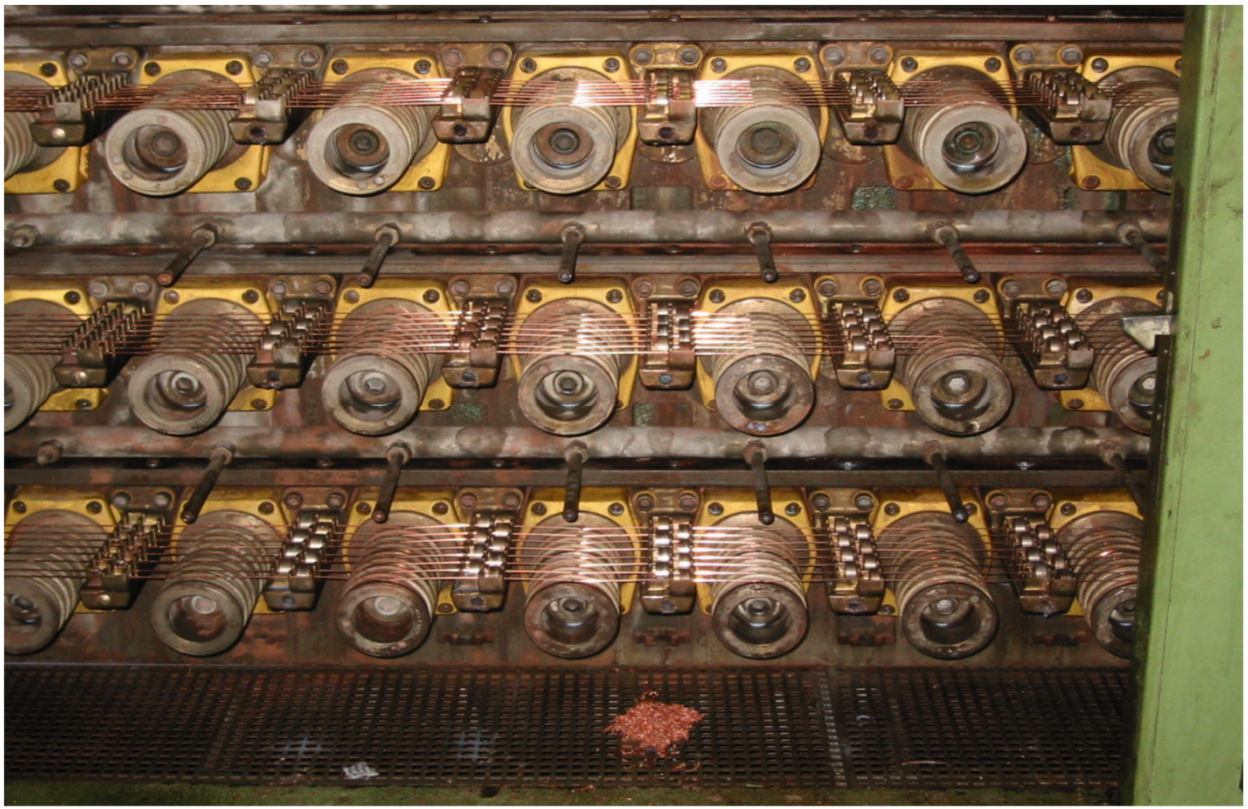
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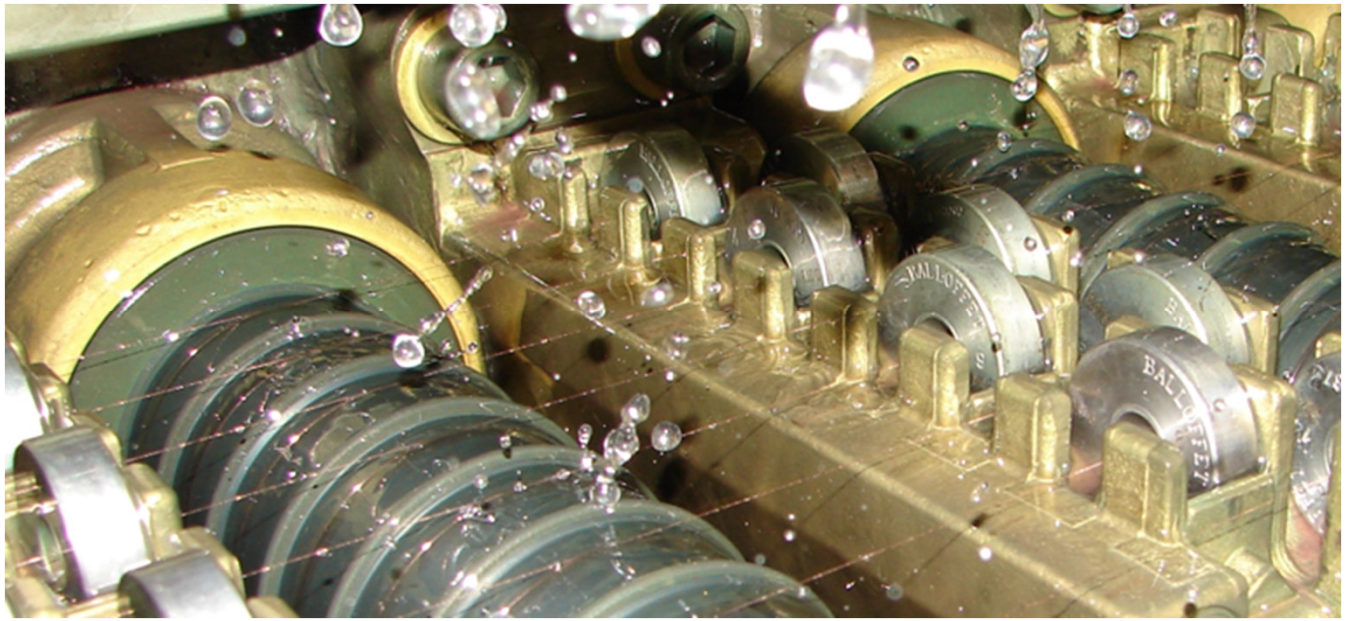
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- Synthetic (mineral oil free) lubricants



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Performance of syntetic lubricants

- high cleanliness of the systems
- often improved die life
- a different set up of the machine is needed
- steel corrosion ?

Coolant technology throug the ages

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Changing requirements in wire and cable production

- more stable and higher productivity
- higher drawing speeds
- lower tolerances
- cleaner machines and cleaner wire due to automised subsequent processes
- like e.g. ultrasonic welding
- less material during drawing and extrusion
- e.g. thinner coating

Coolant technology through the ages

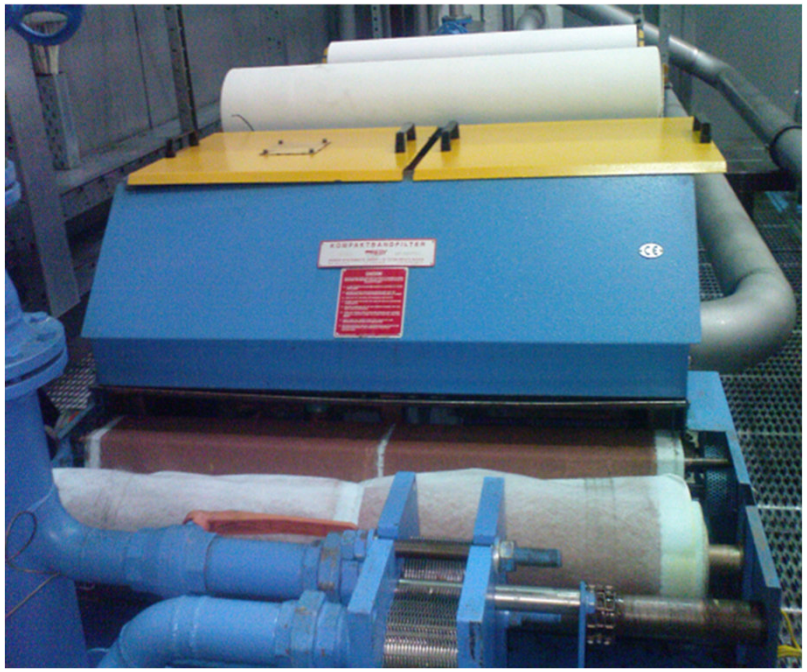
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- Filtration
- Drawing dies
- Copper
- Machinery

Coolant technology through the ages

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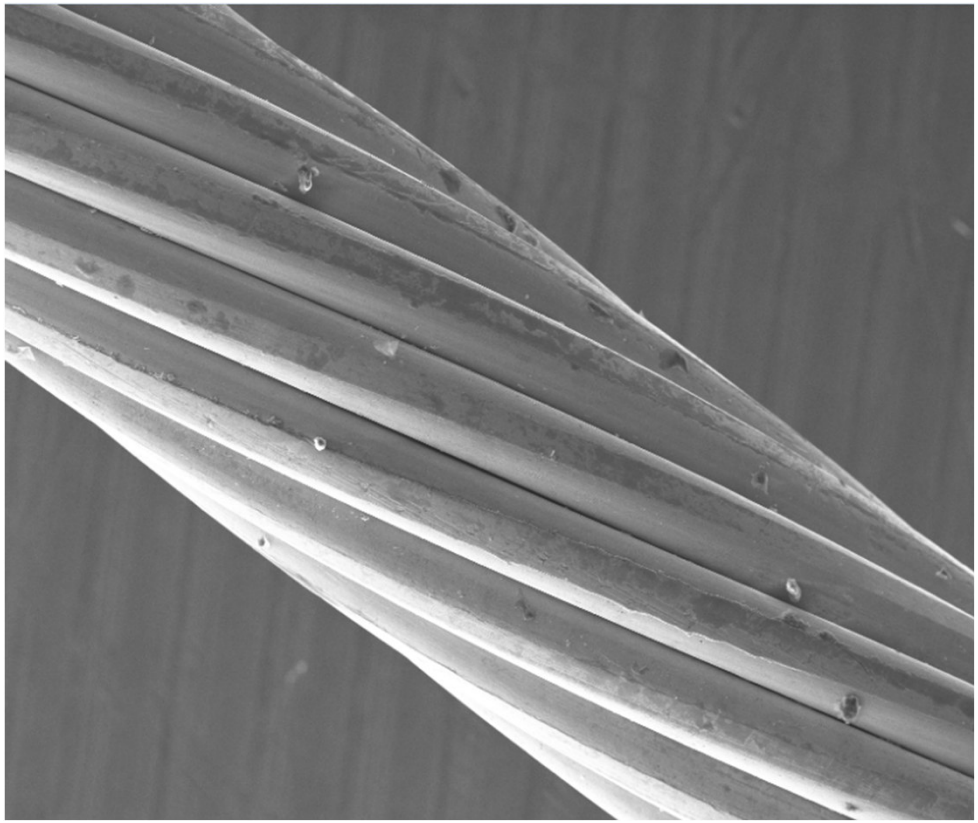
- Filtration:





Coolant technology through the ages

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- Drawing dies:

- PCD`s – Reduction in grain size, so lower wear
- higher accuracy, lower tolerances
- optimized processing of the dies (new and used)

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- Copper:

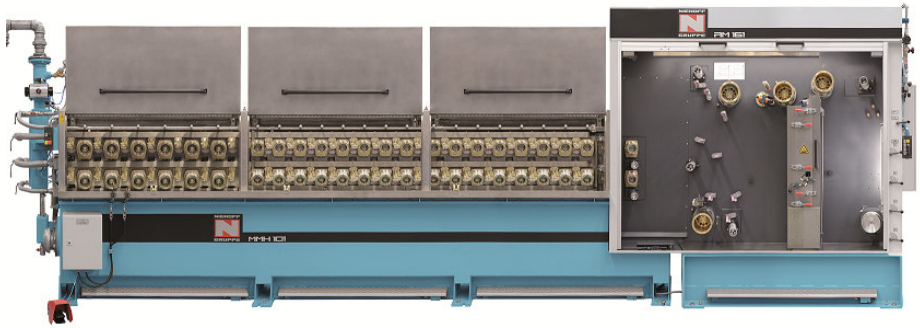
- Improved measurement and control, so
- higher and stable quality

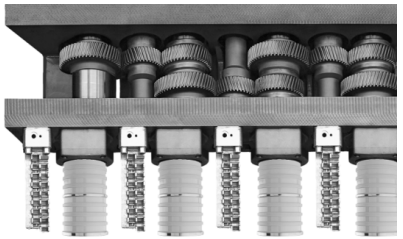
Coolant technolgy throught the ages

- Machinery

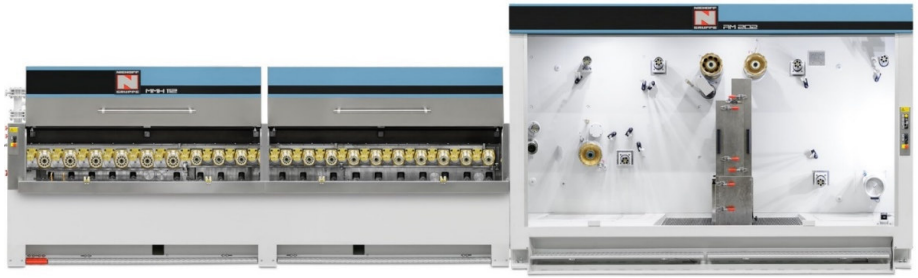
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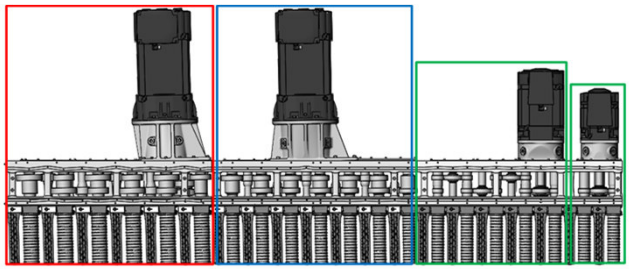
MMH 101 16 wire with 2 motors (older generation)





MMH 112 16 wire with 5 - 7 motors (latest generation)





Coolant technology through the ages

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this evolution indicate the needed changes for the coolants (emulsions, solutions and oils)

- different requirements for sliding and lubricating
- different requirements reg. cleanliness of machine and wire
- higher pressure and oxidation stability of the lubricants
- more stable coolants – longer lifespan

Coolant technology through the ages

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How to reach this ?

- changed importancy of the development specification
- new resp. novel chemicals are available and are used
- less natural raw materials, more raw materials from the chemical industry
- combination of watersoluble and emulsifiable (oily) substances

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Emulsion transperency

from here



to there



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Additional requirements:

- REACH
  Registration, Evaluation, Authorisation and Restriction of Chemicals

- GHS
  Global Harmonized System

- PCF
  Product Carbon Footprint

- LCA
  Life Cycle Assessment

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Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACh)

Registration: Manufacturers and importers must register information about chemicals they produce or import with the European Chemicals Agency (ECHA). Substances produced or imported in quantities of 1 ton or more per year are subject to registration. => done

Evaluation: ECHA and the member states review the registration dossiers submitted by companies to verify that the chemicals can be used safely. => done

Authorisation: Certain substances of very high concern (SVHC) can only be used if they have been authorized by ECHA. The goal is to eventually replace these substances with safer alternatives. => in progress

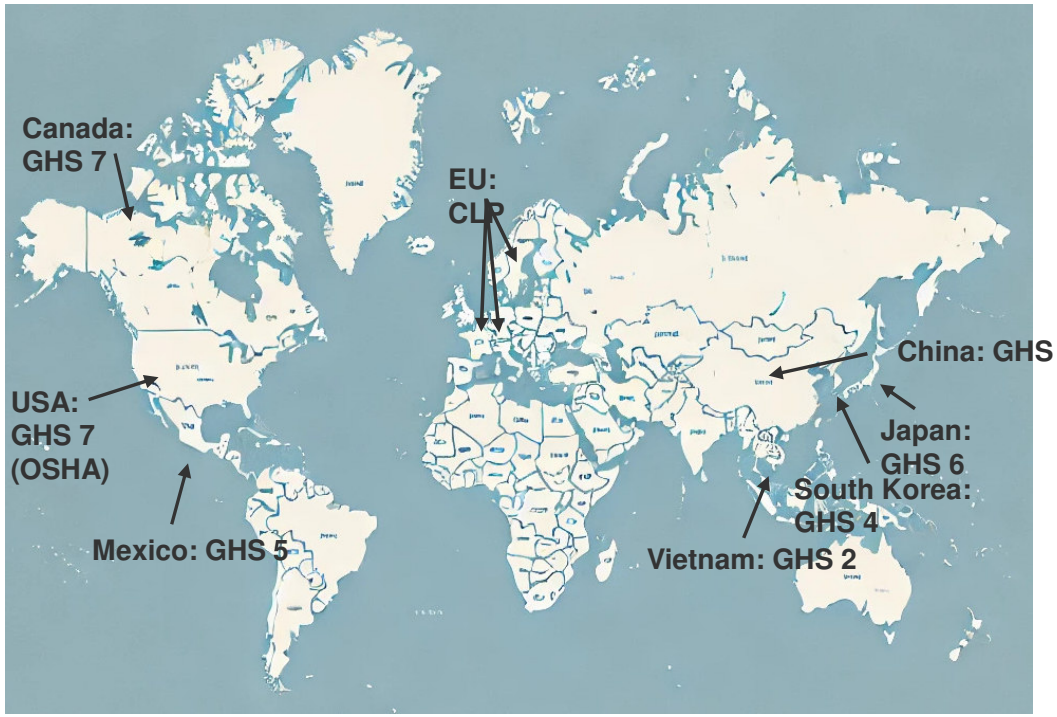
Restriction: The manufacture, marketing, and use of certain dangerous chemicals can be restricted or banned if they pose an unacceptable risk. => in progress

European **C**hemicals **A**gency (**ECHA**): Central agency that coordinates the implementation of REACH. It manages the registration dossiers and supports EU member states in the evaluation and enforcement of the regulation.

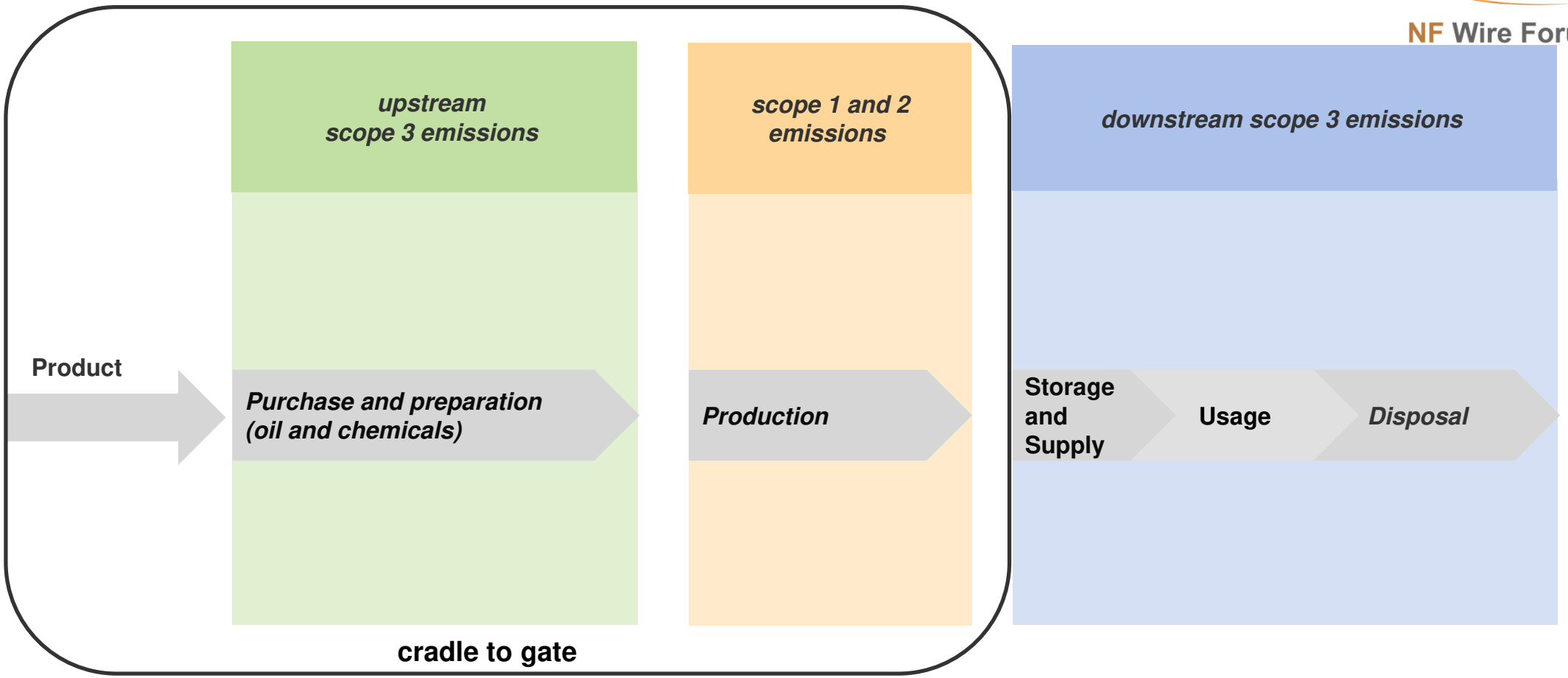
Globally **H**armonized **S**ystem (**GHS**)

- Developed by the United Nations to create a standardized system for classifying and labeling chemicals
- Designed with a 'building block approach,' allowing countries to adopt and tailor the system to their specific regulatory needs while maintaining a consistent global core framework
- GHS is updated approximately every two years by the UN to incorporate new data and address issues raised by the countries implementing it (“GHS Revisions”)
- Latest GHS Revision: GHS Rev. 10 (27.07.2023)
- Over 70 countries have adopted GHS in some form, including major economies such as the United States, the European Union, China, Japan, and Canada

Overview of some countries with their „globalized“ GHS Status



Life cycle analysis



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- but now up to the future !



UNOPOL “X”
…the new Generation…



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- Product Carbon Footprint

(kg CO2e/kg product)

Rod Breakdown:

„actual“	Unopol G 560:	2,69
new	Unopol GX 800:	2,48 (= 10% Reduction)

Multiwire:

„actual“	Unopol F 811:	3,05
new	Unopol FX 200:	2,32 (= 25% Reduction)

Fine and superfine (synthetics):

„actual“	Unopol S 803:	4,91
new	EXP 2023-009:	3,01 (= 40% Reduction)

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Unopol FX 200 – multiwire lines – available since 3 years:

- stable production
- low foaming
- lower need for maintenance
- lower refill rates
- clean machines, clean wire
- reduced PCF
- long lifespan of the emulsion, good LCA
- fulfils the legal requirements

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Unopol GX 800 – rod breakdown – available since 3 month:

- must be evaluated……

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Product line:

- Unopol GX 800 for rod wire
- Unopol FX 200 for multiwire
- Unopol SX 100 (EXP 2023-009) in first production trials
- Annealing fluid under development



Thank you so much for listening

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