

## Energy management plan 2023

| site | scope | topic                                 | detail   | target value<br>(related to site)   | unit | value (tons CO <sub>2</sub> ) | responsible                      | result                       | value | unit' | value (tons CO <sub>2</sub> )' | annotation  |
|------|-------|---------------------------------------|--|---|------|-------------------------------|----------------------------------|------------------------------|-------|-------|--------------------------------|---|
| G    | 3     | ECO Design                            | reduction of needed amount of steel and paint or substitution of aluminium                           | 750   | tons | 1500                          | engineering manager              |                              |       |       |                                |   |
| WIL  | 1     | heating: geothermal energy            | study geothermal energy Balen  | under investigation   |      |                               | director WIL                     |                              |       |       |                                | * GEBO + 3 andere: prijsvraag ondiepe geothermie (100-ish)  |
| SPB  | 2 / 3 | electricity: wind turbine             | study wind turbine Hoboken   | under investigation   |      |                               | director SPB                     |                              |       |       |                                | investigation ongoing by Eneco  |
| G    | 3     | transport of employees: electric cars | add to car policy: charge point squatting  | yes   |      |                               | Financial director               |                              |       |       |                                |   |
| SPO  | 1 + 2 | various                               | renovation plan Niemodlin: lighting, heating, insulation (wall panels, skylights)                    | yes   |      |                               | director SPO                     |                              |       |       |                                | As there is no historic data available, it is not possible to calculate savings from these actions.<br>2021: offices coal heating replaced by heat pump<br>2022: social areas coal heating to be replaced by green label pellets                          |
| G    | 1 + 2 | CO <sub>2</sub> neutral plan          | draft an energy transition plan to achieve CO <sub>2</sub> neutrality by 2035                        | 31/08/2023  |      |                               | senior MT member                 |                              |       |       |                                |   |
| G    | 3     | sustainable purchasing                | sustainable purchasing policy  | 31/12/2023  |      |                               | director PPL                     |                              |       |       |                                |   |
| WIL  | 1     | heating: insulation                   | Asbestos removal and roof insulation hall E  | yes   |      |                               | director WIL                     | 2024                         |       |       |                                | postponed to 2024<br>hall D in 2022<br>hall A + C in 2023   |
| SPO  | 2 / 3 | electricity: solar panels             | study solar panels Zary  | under investigation   |      |                               | director SPO                     |                              |       |       |                                |   |
| SPO  | 2 / 3 | electricity: solar panels             | study solar panels Niemodlin   | under investigation   |      |                               | director SPO                     |                              |       |       |                                |   |
| SPO  | 2 / 3 | electricity: solar panels             | study solar panels Leknica   | under investigation   |      |                               | director SPO                     |                              |       |       |                                |   |
| SPU  | 2 / 3 | electricity: solar panels             | study solar panels Newcastle   | under investigation   |      |                               | director SPU                     |                              |       |       |                                |   |
| WIL  | 2 / 3 | electricity: solar panels             | study solar panels Bleukens Balen  | 500   | MWp  |                               | director WIL                     |                              |       |       |                                |   |
| WIL  | 1     | electricity: efficient use            | new automated blasting machine: energy efficiency / energy monitoring                                |   |      |                               | director WIL                     | 2024                         |       |       |                                | postponed to 2024 (hall E)  |
| SPB  | 2 / 3 | electricity: efficient use            | applying lessons learned from monitoring to new ventilation system blasting and painting Albert hall | yes   |      |                               | technician electrical automation |                              |       |       |                                |   |
| SPU  | 2 / 3 | electricity: efficient use            | applying lessons learned from monitoring to new ventilation system blasting and painting hall        | yes   |      |                               | technician electrical automation |                              |       |       |                                |   |
| GR   | 3     | product development                   | Act&Sorb activated carbon filter   |   |      |                               | director QHSE                    |                              |       |       |                                |   |
| GR   | 3     | product development                   | agrisolar SolTree  |   |      |                               | director QHSE                    |                              |       |       |                                |   |
| new  | GR    | 1                                     | transport of employees: electric cars  | replacement of combustion engine vehicles with electric cars - additional emissions saved due to 2023 purchases |      | 230                           | director PPL                     |                              |       |       |                                | yearly estimated consumption due to charging, based on data March-April 2023: 255189 kWh/y / 20kWh/100km = 1275947 km x 0,180 kg CO <sub>2</sub> /km = 229,67 ton CO <sub>2</sub>   |
| new  | GR    | 1                                     | compensation   | compensating welding gasses, in anticipation of synth gasses - tree planting action 2023                        | 666  | trees                         | 8,48                             | director QHSE                |       |       |                                | Ecotree: 15€ per boom, 700kg CO <sub>2</sub> , 55 jaar > 4,24 ton/j ; 233 ton totaal<br>BOS+: 15€ per boom, gift = 45% fiscaal aftrekbaar, bedrijfsbos = 7500€/ha, 24kg/j > 8 ton/j<br>2022 - Natuurpunt, 5000€, 15€/boom = 333 boompjes<br>2023 - 10000€ |
| new  | IEM   | 3                                     | electricity: solar panels  | installation  | 2,75 | GWh                           | 1438                             | energy transition consultant |       |       |                                | 5,5 GWh x (2,5MWp / (2,5+1+1,5)MWp) = 2,75 GWh<br>x 0,523 kg CO <sub>2</sub> / kWh = 1438 tons CO <sub>2</sub><br>Us producing more green electricity = less green electricity bought = more green for others = less need for gray                        |
| new  | WIL   | 3                                     | electricity: solar panels  | installation  | 1,10 | GWh                           | 575                              | energy transition consultant |       |       |                                | 5,5 GWh x (1MWp / (2,5+1+1,5)MWp) = 1,1 GWh<br>x 0,523 kg CO <sub>2</sub> / kWh = 575 tons CO <sub>2</sub><br>Us producing more green electricity = less green electricity bought = more green for others = less need for gray                            |
| new  | SPB   | 3                                     | electricity: solar panels  | installation  | 1,65 | GWh                           | 863                              | energy transition consultant |       |       |                                | 5,5 GWh x (1,5MWp / (2,5+1+1,5)MWp) = 1,65 GWh<br>x 0,523 kg CO <sub>2</sub> / kWh = 863 tons CO <sub>2</sub><br>Us producing more green electricity = less green electricity bought = more green for others = less need for gray                         |
| new  | SPB   | 1                                     | heating: city heating network  | under investigation   | yes  |                               | site manager SPB                 |                              |       |       |                                |   |
| new  | GR    | 3                                     | welding gas  | shift to bulk with piping network, multiple locations   | yes  |                               |                                  |                              |       |       |                                | This will result in reduced delivery transport. But this is not calculated in CO <sub>2</sub> reduction.  |
| new  | SPB   | 1                                     | Regenerative Thermal Oxidizer  | optimization burning chamber + heat recovery  | yes  |                               |                                  |                              |       |       |                                | This will result in better heat usage of the installation (less pre-heat gas, more heat recovery). But this is not calculated in CO <sub>2</sub> reduction.   |
| new  | GR    | 1+2+3                                 | stakeholders   | update stakeholder analysis towards CSRD  | yes  |                               |                                  |                              |       |       |                                |   |
| new  | GR    | 1+2+3                                 | materialiteitsanalyse  | update dubbele materiality analysis towards CSRD  | yes  |                               |                                  |                              |       |       |                                |   |
| new  | GR    | 1+2+3                                 | carbon footprint   | third party certification of footprint, chain analysis and goals (SBTi)   | yes  |                               |                                  |                              |       |       |                                |   |

Reduction target scope 1/2 :

238  
2,55%  
ton CO<sub>2</sub> / year  
% of 2022

Reduction target scope 3 :

4376  
ton CO<sub>2</sub> / year

Realized reduction:

ton CO<sub>2</sub> / year  
% of 2022

ton CO<sub>2</sub> / year

## Energy management plan 2022

|                              | site | scope | topic                                 | detail   | target value<br>(related to site) | unit  | value (tons CO <sub>2</sub> ) | responsible                             | result              | value | unit'           | value (tons CO2)'                       | annotation   |
|------------------------------|------|-------|---------------------------------------|--|-----------------------------------|-------|-------------------------------|---|---------------------|-------|-----------------|---|--|
|                              | G    | 3     | ECO Design                            | reduction of needed amount of steel and paint or substitution of aluminium                           | 750                               | tons  | 1500                          | engineering manager                     |                     |       |                 |   |  |
|                              | IEM  | 2 / 3 | electricity: wind turbine             | placing of Eneco wind turbine  | yes                               |       |                               | director IEM                            | yes                 |       |                 |   | Study completed. Permit OK december 2019 > appeal december 2020 > appeal december 2021 > still no decision<br>Remark: Switch from purchase to own production, no CO2 savings as the switch is from solar to wind. But this means the total production of green energy enlarges, and thus is available for other consumers. |
|                              | WIL  | 1     | heating: geothermal energy            | study geothermal energy Balen  | under investigation               |       |                               | director WIL                            | ongoing             |       |                 |   | * GEBO + 3 andere: prijsvraag ondiepe geothermie (100-ish)   |
|                              | SPB  | 2 / 3 | electricity: wind turbine             | study wind turbine Hoboken   | under investigation               |       |                               | director SPB                            | ongoing             |       |                 |   | investigation ongoing by Eneco   |
|                              | SPB  | 2 / 3 | electricity: solar panels             | study solar panels Hoboken   | under investigation               |       |                               | director SPB                            | yes                 |       |                 |   | 2020: investigation ongoing. Not on roof as structure is not suited. Currently investigating wall mounted panels<br>2021: revamp initiative, part of SMU overall PV investigation  |
|                              | SPO  | 2     | electricity: measuring is knowing     | detailed study of energy use   | yes                               |       |                               | technician electrical automation        | yes                 |       |                 |   | Study with Siemens devices ongoing<br>Order placed, delivery time October 2022   |
|                              | G    | 3     | transport of employees: electric cars | add to car policy: charge point squatting  | yes                               |       |                               | Financial director                      | ongoing             |       |                 |   |  |
|                              | SPO  | 1 + 2 | various                               | renovation plan Niemodlin: lighting, heating, insulation (wall panels, skylights)                    | yes                               |       |                               | director SPO                            | ongoing             |       |                 |   | As there is no historic data available, it is not possible to calculate savings from these actions.<br>2021: offices coal heating replaced by heat pump<br>2022: social areas coal heating to be replaced by green label pellets   |
|                              | G    | 1 + 2 | CO <sub>2</sub> neutral plan          | draft an energy transition plan to achieve CO <sub>2</sub> neutrality by 2035                        | 31/12/2022                        |       |                               | senior MT member                        | ongoing             |       |                 |   |  |
|                              | G    | 3     | sustainable purchasing                | sustainable purchasing policy  | 31/12/2022                        |       |                               | director PPL                            | 2023                |       |                 |   |  |
|                              | SPB  | 2 / 3 | electricity: efficient use            | replace air compressors  |                                   |       |                               | director SPB                            | yes                 |       |                 |   | 2021: investment request ongoing, to be replaced before end of 2022<br>incl. heat recovery<br>postponed to 2024<br>hall D in 2022<br>hall A + C in 2023  |
|                              | WIL  | 1     | heating: insulation                   | Asbestos removal and roof insulation hall E  | yes                               |       |                               | director WIL                            | 2024                |       |                 |   |  |
| new                          | IEM  | 2 / 3 | electricity: solar panels             | study solar panels Arendonk  | under investigation               |       |                               | director IEM                            | yes                 |       |                 |   |  |
| new                          | WIL  | 2 / 3 | electricity: solar panels             | study solar panels Balen   | under investigation               |       |                               | director WIL                            | yes                 |       |                 |   |  |
| new                          | SPO  | 2 / 3 | electricity: solar panels             | study solar panels Zary  | under investigation               |       |                               | director SPO                            | ongoing             |       |                 |   |  |
| new                          | SPO  | 2 / 3 | electricity: solar panels             | study solar panels Niemodlin   | under investigation               |       |                               | director SPO                            | ongoing             |       |                 |   |  |
| new                          | SPO  | 2 / 3 | electricity: solar panels             | study solar panels Leknica   | under investigation               |       |                               | director SPO                            | ongoing             |       |                 |   |  |
| new                          | SPU  | 2 / 3 | electricity: solar panels             | study solar panels Newcastle   | under investigation               |       |                               | director SPU                            | ongoing             |       |                 |   |  |
| new                          | WIL  | 2 / 3 | electricity: solar panels             | study solar panels Bleukens Balen  | 500                               | MWp   |                               | director WIL                            | ongoing             |       |                 |   |  |
| new                          | IEM  | 1     | heating: insulation                   | new offices / storage / lab painting: low-energy label   |                                   |       |                               | director IEM                            | no go               |       |                 |   | according to legislation, no extra demands focus on expansion main office building   |
| new                          | WIL  | 1     | electricity: efficient use            | replace air compressors: energy reduction / energy monitoring  |                                   |       |                               | director WIL                            | yes                 |       |                 |   | done   |
| new                          | WIL  | 1     | electricity: efficient use            | new automated blasting machine: energy efficiency / energy monitoring                                |                                   |       |                               | director WIL                            | 2024                |       |                 |   | postponed to 2024 (hall E)   |
| new                          | WIL  | 1     | heating: insulation                   | Asbestos removal and roof & wall insulation hall D   | yes                               |       |                               | director WIL                            | yes                 |       |                 |   |  |
| new                          | SPB  | 2 / 3 | electricity: efficient use            | applying lessons learned from monitoring to new ventilation system blasting and painting Albert hall | yes                               |       |                               | technician electrical automation        | ongoing             |       |                 |   |  |
| new                          | SPU  | 2 / 3 | electricity: efficient use            | applying lessons learned from monitoring to new ventilation system blasting and painting hall        | yes                               |       |                               | technician electrical automation        | ongoing             |       |                 |   |  |
| new                          | SPO  | 2     | electricity: green electricity        | green contract Leknica   | 500.000                           | kWh   | 285                           | director SPO                            | 236,57              | tons  |                 |   | 493892kWh biomass<br>x (0,523-0,044)kg CO2 / kWh = 236,57 tons CO2<br>20% per year = 10% reduction year average  |
| new                          | GR   | 1     | transport of employees: electric cars | replacement of combustion engine vehicles with electric cars   | 25.000                            | L     | 75                            | director PPL                            | 114,84              | tons  |                 |   | yearly estimated consumption due to charging, based on data March-April 2023: 255189 kWh/y / 20kWh/100km = 1275947 km<br>x 0,180 kg CO2/km = 229,67 ton CO2<br>As we evolved from 0 to 100% over the year, tons saved in 2022 is half = 114,84 tons  |
| new                          | GR   | 1     | compensation                          | compensating welding gasses, in anticipation of synth gasses   | 333                               | trees | 4,24                          | director QHSE                           | 4,24                | tons  |                 |   | 5000€ budget for 2022<br>Ecotree: 15€ per boom, 700kg CO2, 55 jaar > 4,24 ton/j ; 233 ton totaal<br>BOS+: 15€ per boom, gift = 45% fiscaal aftrekbaar, bedrijfsbos = 7500€/ha, 24kg/j > 8 ton/j<br>Natuurpunt, 5000€, 15€/boom = 333 boompjes  |
| new                          | GR   | 3     | product development                   | solar carport  |                                   |       |                               |   | yes                 |       |                 |   |  |
| new                          | GR   | 3     | product development                   | Act&Sorb activated carbon filter   |                                   |       |                               |   | ongoing             |       |                 |   |  |
| new                          | GR   | 3     | product development                   | agrisolar SolTree  |                                   |       |                               |   |                     |       |                 |   |  |
| new                          | GR   | 1     | transport of employees: electric cars | placement of 100 charging points   | yes                               |       |                               |   | yes                 |       |                 |   |  |
|                              |      |       |                                       |  |                                   |       |                               |   |                     |       |                 |   |  |
| Reduction target scope 1/2 : |      |       |                                       |  |                                   |       | 360<br>3,75%                  | ton CO <sub>2</sub> / year<br>% of 2021 | Realized reduction: |       | 355,65<br>3,70% | ton CO <sub>2</sub> / year<br>% of 2021 |  |
| Reduction target scope 3 :   |      |       |                                       |  |                                   |       | 1500                          | ton CO <sub>2</sub> / year              |                     |       |                 | ton CO <sub>2</sub> / year              |  |
|                              |      |       |                                       |  |                                   |       |                               |   |                     |       |                 |   |  |
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## Energy management plan 2021

| site | scope     | topic                                 | detail   | target value<br>(related to site)   | unit       | value (tons CO <sub>2</sub> ) | responsible                      | result    | value | unit' | value (tons CO <sub>2</sub> )' | annotation   |
|------|-----------|---------------------------------------|--|---|------------|-------------------------------|----------------------------------|-----------|-------|-------|--------------------------------|--|
| WIL  | 3         | new quay                              | constructing new quay  | yes   |            |                               | project manager                  | yes       |       |       |                                | Works started beginning of 2019. Not completed yet. 2020 delay due to Covid-19 and unmapped gas pipe. 2021 done  |
| G    | 3         | ECO Design                            | reduction of needed amount of steel and paint or substitution of aluminium   | 750   | tons       | 1500                          | engineering manager              |           |       |       |                                |  |
| IEM  | 2         | electricity: wind turbine             | placing of Eneco wind turbine  | yes   |            |                               | director IEM                     |           |       |       |                                | Study completed. Permit OK december 2019 > appeal december 2020 > appeal december 2021 > still no decision<br>Remark: Switch from purchase to own production, no CO <sub>2</sub> savings as the switch is from solar to wind. But this means the total production of green energy enlarges, and thus is available for other consumers.           |
| WIL  | 2         | electricity: wind turbine             | study wind turbine Balen   | under investigation   |            |                               | director WIL                     | no go     |       |       |                                | investigation ongoing by Eneco<br>no go gemeente Balen   |
| WIL  | 1         | heating: geothermal energy            | study geothermal energy Balen  | under investigation   |            |                               | director WIL                     |           |       |       |                                |  |
| SPB  | 2         | electricity: wind turbine             | study wind turbine Hoboken   | under investigation   |            |                               | director SPB                     |           |       |       |                                | investigation ongoing by Eneco   |
| SPB  | 2         | electricity: solar panels             | study solar panels Hoboken   | under investigation   |            |                               | director SPB                     |           |       |       |                                | 2020: investigation ongoing. Not on roof as structure is not suited. Currently investigating wall mounted panels<br>2021: revamp initiative, part of SMU overall PV investigation  |
| SPO  | 2         | electricity: green supplier           | green supplier Poland  | 3.500.000   | kWh        | 1841                          | director SPO                     | 4.533.028 | kWh   |       | 2268                           | 100% green and local electricity contracts<br>* Zary and Niemodlin 01/01/2021<br>* Leknica 01/01/2022  |
| SPO  | 2         | electricity: measuring is knowing     | detailed study of energy use   | yes   |            |                               | technician electrical automation |           |       |       |                                | Study with Siemens devices ongoing<br>Order placed, delivery time October 2022   |
| G    | 1 + 2 + 3 | Tennet HKN/HKW project                | project with award advantage<br>* calculate project scope 1-2 emissions<br>* keep Environmental Cost Indicator under 9.000.000 € | yes   |            |                               | project ECI manager              | yes       |       |       |                                | Keeping the ECI under 9.000.000 € does not count as a "reduction". But a lot of possibilities will be ruled out to keep the cost under this threshold. A number for "avoided emissions" compared to a normal project will be recorded.<br>Further follow-up is needed, but HKN and HKWa preliminary calculation by third party are looking good. |
| G    | 3         | transport of employees: electric cars | add to car policy: charge point squatting  | yes   |            |                               | Financial director               |           |       |       |                                |  |
| SPO  | 1 + 2     | various                               | renovation plan Niemodlin: lighting, heating, insulation (wall panels, skylights)  | yes   |            |                               | director SPO                     | ongoing   |       |       |                                | As there is no historic data available, it is not possible to calculate savings from these actions.  |
| new  | G         | 1 + 2                                 | CO <sub>2</sub> neutral plan   | draft an energy transition plan to achieve CO <sub>2</sub> neutrality by 2035                   | 31/12/2022 |                               | senior MT member                 | ongoing   |       |       |                                |  |
| new  | G         | 3                                     | transport of employees: electric cars  | draft full electric car policy  | 31/12/2021 |                               | Financial director               | yes       |       |       |                                | policy 99% ready, awaiting final approval, in reality policy already in effect, electric cars bought as of 01/01/2022  |
| new  | G         | 3                                     | sustainable purchasing   | sustainable purchasing policy   | 31/12/2022 |                               | director Logistics               | ongoing   |       |       |                                |  |
| new  | G         | 3                                     | Moonshot Project   | participate in workgroups as part of the project circular offshore wind sector                  | 31/12/2022 |                               | QHSE manager                     | yes       |       |       |                                | Moonshot Project workshops completed<br>Key point of attention from Smulders is also key conclusion point of the program.  |
| new  | G         | 3                                     | SteelZero  | endorse SteelZero commitment regarding sustainable purchasing of steel                          | 31/12/2021 |                               | director Logistics               | yes       |       |       |                                | publically committed to SteelZero  |
| new  | SPB       | 2                                     | electricity: efficient use   | replace air compressors   |            |                               | director SPB                     | ongoing   |       |       |                                | 2021: investment request ongoing, to be replaced before end of 2022  |
| new  | WIL       | 2                                     | electricity: efficient use   | applying lessons learned from monitoring to new ventilation system blasting and painting hall B | yes        |                               | technician electrical automation | yes       |       |       |                                | operational October 2021   |
| new  | WIL       | 1                                     | heating: insulation  | Asbestos removal and roof insulation hall E   | yes        |                               | director WIL                     | postponed |       |       |                                | postponed to 2023<br>hall D in 2022  |

Reduction target scope 1/2 :

1841

15,47%

ton CO<sub>2</sub> / year

% of 2020

Reduction target scope 3 :

1500

ton CO<sub>2</sub> / year

Realized reduction:

ton CO<sub>2</sub> / year

% of 2020

ton CO<sub>2</sub> / year

## Energy management plan 2020

|     | site | scope     | topic                                    | detail   | target value<br>(related to site) | unit | value (ton CO <sub>2</sub> ) | responsible                      | result value  | unit' | value (ton CO <sub>2</sub> )' | annotation  |
|-----|------|-----------|--|--|-----------------------------------|------|------------------------------|----------------------------------|---------------|-------|-------------------------------|---|
|     | WIL  | 3         | new quay                                 | constructing new quay  | yes                               |      |                              | project manager                  |               |       |                               | Works started beginning of 2019. Not completed yet. 2020 delay due to Covid-19 and unmapped gas pipe.   |
|     | G    | 3         | ECO Design                               | reduction of needed amount of steel and paint or substitution of aluminium   |                                   |      | 1500                         | engineering manager              | 598,8         | tons  | 832                           | Hampered data gathering due to absence management responsible. To be updated.   |
|     | SPB  | 1         | electricity: replacing generators        | expanding electrical installation to replace generators in dock  | 50.000                            | L    | 160                          | director SPB                     | no exact data |       |                               | Shift from scope 1 fuel oil to scope 2 electricity, which is 100% green.  |
|     | IEM  | 2         | electricity: wind turbine                | placing of Eneco wind turbine  | yes                               |      |                              | director IEM                     |               |       |                               | Study completed. Permit OK december 2019 > appeal december 2020 > appeal december 2021.<br>Remark: Switch from purchase to own production, no CO <sub>2</sub> savings as the switch is from solar to wind. But this means the total production of green energy enlarges, and thus is available for other consumers. |
|     | WIL  | 2         | electricity: wind turbine                | study wind turbine Balen   | under investigation               |      |                              | director WIL                     |               |       |                               | investigation ongoing by Enenco   |
| new | WIL  | 1         | heating: geothermal energy               | study geothermal energy Balen  | under investigation               |      |                              | director WIL                     |               |       |                               |   |
|     | SPB  | 2         | electricity: wind turbine                | study wind turbine Hoboken   | under investigation               |      |                              | director SPB                     |               |       |                               | investigation ongoing by Eneco  |
|     | SPB  | 2         | electricity: solar panels                | study solar panels Hoboken   | under investigation               |      |                              | director SPB                     |               |       |                               | investigation ongoing. Not on roof as structure is not suited. Currently investigating wall mounted panels.   |
| new | SPO  | 2         | electricity: green supplier              | study possibility green supplier Poland  | 2.500.000                         | kWh  | 1315                         | director SPO                     |               |       |                               | search for 100% green and local electricity<br>* Zary and Niemodlin 01/01/2021<br>* Leknica 01/01/2022  |
|     | SPU  | 2         | electricity: green supplier              | study possibility green supplier UK  | 2.000.000                         | kWh  | 1052                         | director SPU                     | 3320546       | kWh   | 1747                          | search for 100% green and local electricity<br>* 01/03/2020   |
| new | IEM  | 2         | electricity: measuring is knowing        | detailed study of energy use   | yes                               |      |                              | technician electrical automation | yes           |       |                               | Study with Siemens devices ongoing<br>2020: system installed  |
| new | WIL  | 2         | electricity: measuring is knowing        | detailed study of energy use   | yes                               |      |                              | technician electrical automation | yes           |       |                               | Study with Siemens devices ongoing<br>2020: system installed  |
|     | SPB  | 2         | electricity: measuring is knowing        | detailed study of energy use   | yes                               |      |                              | technician electrical automation | yes           |       |                               | Sensorfact measuring devices installed October 2019. Not working properly. Only measuring current, not voltage. So no calculation of cosp. New study with Siemens devices ongoing.<br>2020: system installed  |
| new | SPO  | 2         | electricity: measuring is knowing        | detailed study of energy use   | yes                               |      |                              | technician electrical automation |               |       |                               | Study with Siemens devices ongoing  |
| new | G    | 1 + 2 + 3 | Tennet HKN/HKW project                   | project with award advantage<br>* calculate project scope 1-2 emissions<br>* keep Environmental Cost Indicator under 9.000.000 € | yes                               |      |                              | project ECI manager              |               |       |                               | Keeping the ECI under 9.000.000 € does not count as a "reduction". But a lot of possibilities will be ruled out to keep the cost under this threshold. A number for "avoided emissions" compared to a normal project will be recorded.  |
| new | WIL  | 1         | heating: insulation                      | Asbestos removal and roof insulation hall E B  | yes                               |      |                              | director WIL                     | yes           |       |                               |   |
| new | WIL  | 1 + 2     | heating + electricity                    | automated control of welding fume filtration hall E + F  | tbd                               |      |                              | technician electrical automation | 73938         | kWh   |                               | green energy savings = more green energy available for "the market"   |
| new | IEM  | 1 + 2     | heating + electricity                    | automated control of painting hall extraction system   | tbd                               |      |                              | technician electrical automation | 1260000       | kWh   |                               | green energy savings = more green energy available for "the market"   |
| new | IEM  | 2         | electricity: efficient use               | upgrade plasma cutter  | tbd                               |      |                              | director IEM                     | yes           |       |                               |   |
| new | G    | 3         | transport of employees: electric cars    | add to car policy: charge point squating   | yes                               |      |                              | Financial director               |               |       |                               |   |
| new | G    | 1         | transport of employees: electric cars    | study electric car lease program   | under investigation               |      |                              | Financial director               | yes           |       |                               | study performed, new full electric car policy by Q4 2021  |
| new | WIL  | 3         | transport of employees: electrical bikes | additional charging points for electrical bikes  | yes                               |      |                              | director WIL                     | yes           |       |                               |   |
| new | SPO  | 1 + 2     | various                                  | renovation plan Niemodlin: lighting, heating, insulation (wall panels, skylights)  | yes                               |      |                              | director SPO                     |               |       |                               | As there is no historic data available, it is not possible to calculate savings from these actions.   |

|                              |                |   |                     |                |   |
|------------------------------|----------------|---|---------------------|----------------|---|
| Reduction target scope 1/2 : | 2527<br>22,84% | ton CO <sub>2</sub> / year<br>% of 2019 | Realized reduction: | 1747<br>15,79% | ton CO <sub>2</sub> / year<br>% of 2019 |
| Reduction target scope 3 :   | 1500           | ton CO <sub>2</sub> / year              |                     | 832            | ton CO <sub>2</sub> / year              |

# Energy management plan 2019

| site | scope | topic                                | detail  | target value (related to site)   | unit                | value (ton CO <sub>2</sub> ) | responsible         | result value                | unit* | value (ton CO <sub>2</sub> ) | annotation  |
|------|-------|--------------------------------------|---|--|---------------------|------------------------------|---------------------|-----------------------------|-------|------------------------------|---|
| G    |       |                                      | educating new employees   | yes  |                     |                              | HSE dep.            | yes                         |       |                              | inbedded in new induction program.  |
| SPB  | 2+3   | Regenerative Thermal Oxidizer        | replacing AK filters by RTO for removal of solvents in guided emissions             |  |                     | 221,4                        | project manager     |                             |       | 0                            | Problems with the continuity of operations due to our type of process (short peak loads vs. long constant load) and wrong dimension (bigger load than designed). Investigations to optimize use still ongoing.<br>AK filters placed to ensure emission limits during start-up and bypass of the RTO.<br>Due to the higher gas consumption than anticipated (discontinuous process = more heating vs. self-sustaining process) and still active AK filters (although active during a far shorter time), we won't take into account a CO <sub>2</sub> benefit resulting from this action.   |
| WIL  | 3     | new quay                             | constructing new quay   | yes  |                     |                              | project manager     | ongoing                     |       |                              | Works started beginning of 2019. Phase 1 completed. Start of phase 2 in June 2020. Planned for completion end of 2020.  |
| SPB  | 1+2   | WKK                                  | installing WKK  | balance of electricity / gas   |                     | 613                          | project manager     | postponed                   |       |                              | Other expansion plans have taken up the reserved space. The earlier received permit will not be adjusted to this new situation.   |
| G    | 3     | ECO Design                           | reduction of needed amount of steel and paint or substitution of aluminium          |  |                     | 1500                         | Engineering manager | 8132 (staal)<br>17,2 (verf) | ton   | 11406                        | Input for reuse auxiliary steel expanded to input from SPO and SPU  |
| IEM  | 2     | electricity: wind turbine            | placing of Eneco wind turbine 2018-2020   | yes  |                     |                              |                     | ongoing                     |       |                              | Study completed. Permit OK december 2019. Appeal procedure ongoing, expected approval August 2020. Two new transformers to be placed (Eneco and Eandis). Placing of turbine second half 2021. Operational beginning of 2022. Remark: Switch from purchase to own production, no CO <sub>2</sub> savings as the switch is from solar to wind. But this means the total production of green energy enlarges, and thus is available for other consumers.   |
| IEM  | 3     | transport of employees: bike leasing | offering of bike lease to employees   | 120000   | km                  | 23                           |                     | 201685<br>(+56860)          | km    | 35,5<br>(+10)                | # users +53 to 122 (+77%)<br># kilometers +56860km (+39%)<br>average distance home-work from 8,86 to 10,1km   |
| WIL  | 3     | transport of employees: bike leasing | offering of bike lease to employees   | 25000  | km                  | 5                            |                     | 135853<br>(+54379)          | km    | 23,9<br>(+9,6)               | # users +17 to 51 (+50%)<br># kilometers +54379km (+67%)<br>average distance home-work from 6,1 to 8,37km   |
| add  | SPB   | 3                                    | transport of employees: bike leasing  | offering of bike lease to employees  |                     |                              |                     | 29420<br>(+5030)            | km    | 5,18<br>(+0,89)              | # users +3 to 14 (+27%)<br># kilometers +5030km (+21%)<br>average distance home-work from 5,23 to 7,29km  |
|      | SPB   | 2                                    | electricity: replacing generators   | expanding electrical installation to replace generators in dock  | under investigation |                              |                     | ongoing                     |       |                              | CAPEX approved. Adjustment works ongoing. Estimated operational in second half 2020.  |
|      | SPB   | 1                                    | fuel transport to electric<br>improving efficiency of use of fuel powered transport | replacing fuel transport to electric in halls<br>more efficient use of fuel powered transport  | under investigation |                              |                     | 231703                      | L     | 741                          | The drop in fuel consumption has two reasons:<br>* In 2019 there was less need for induction heating in the dock compared to 2018. This is project related. Electricity in the dock is provided by generators, because the electric installation in the dock is not suited. As this installation is being revamped in 2020 to eliminate all generators, we expect the fuel consumption to go down further.<br>* In 2019 the use of cherrypickers has halved because of the ongoing action to optimize internal transport. Walkways have been installed between the TP's, which limits the need for cherrypickers to get up and down the TP's.<br>As we don't have data on where the fuel is going (generators or transport), we can't split up these two factors. But the emission factor is the same, and thus the total savings is correct. |
| new  | WIL   | 2                                    | electricity: wind turbine   | study wind turbine Balen   | under investigation |                              |                     | ongoing                     |       |                              | Investigation ongoing by Eneco. One big turbine at Willems versus 3 smaller ones at Willems / quay side / third location. Option direct line from quay to Willems.  |
| new  | SPB   | 2                                    | electricity: wind turbine   | study wind turbine Hoboken   | under investigation |                              |                     | ongoing                     |       |                              | investigation ongoing by Eneco  |
| new  | SPB   | 2                                    | electricity: solar panels   | study solar panels roof offices Hoboken  | under investigation |                              |                     | ongoing                     |       |                              | Investigation ongoing. Not on roof as roof structure is not suited. Currently investigating wall mounted panels.  |
| new  | SPU   | 2                                    | electricity: green supplier   | study possibility green supplier UK  | under investigation |                              |                     | ongoing                     |       |                              | investigation moved to beginning of 2020  |
| new  | SPB   | 2                                    | electricity: measuring is knowing   | detailed study of energy use   | yes                 |                              |                     | ongoing                     |       |                              | Sensorfact measuring devices installed October 2019. Not working properly. Only measuring current, not voltage. So no calculation of cosp. New study with Siemens devices ongoing.  |
| new  | G     | 3                                    | offshore transport  | subcon data to improve offshore transport CO <sub>2</sub> calculations   | yes                 |                              |                     | yes                         |       |                              | data provided by Fabricom (who got it from offshore transport companies) with regards to Tennen tender. To be analysed and processed in to scope 3 calculation and chain analysis. Will be further detailed during Tennen execution phase.  |
| new  | G     | 1+2                                  | Environmental Cost Indicator  | * calculation of the ECI for the Tennen tender using expert software<br>* study of use of this data for CO <sub>2</sub> Performance Ladder | yes                 |                              |                     | yes                         |       |                              | ECI calculation Tennen tender finished. Project has been awarded. ECI calculations will be further detailed and updated during the project in 2020 - 2022.<br>NOTE: new steel data received, to be analysed and processed in to scope 3 calculation and chain analysis.   |
| add  | WIL   | 1+2                                  | fuel for heating + electricity  | finishing of renovation offices: HVAC and LED lighting   |                     |                              |                     |                             |       |                              | The renovation of the offices has been finalized with the revamp of the facilities. No specific data available.   |
| add  | WIL   | 1+2                                  | fuel for heating + electricity  | automated control of painting hall extraction system   |                     |                              |                     |                             |       |                              | Steering of the ventilation system based on number of active paint guns. No specific data available. Action will be repeated in Arendonk in 2020. Possibly we will have detailed measuring data then.   |
| add  | IEM   | 3                                    | transport of employees: electric cars   | 4 additional charge points for electric cars   |                     |                              |                     |                             |       |                              |   |

Reduction target scope 1/2 : 862 ton CO<sub>2</sub> / year  
7,02% % of 2018

Realized reduction: 741 ton CO<sub>2</sub> / year  
6,03% % of 2018

Reduction target scope 3 : 1500 ton CO<sub>2</sub> / year

11426,5 ton CO<sub>2</sub> / year

## Energy management plan 2018

| site | scope | topic                                | detail   | target value<br>(related to site) | unit | value (ton CO <sub>2</sub> ) | responsible         | result value | unit' | value (ton CO <sub>2</sub> )' | annotation  |
|------|-------|--------------------------------------|--|-----------------------------------|------|------------------------------|---------------------|--------------|-------|-------------------------------|---|
| G    | 1     |                                      | toolbox Defensive driving  | yes                               |      |                              | HSE dep.            | yes          |       |                               | executed 12/2018 - 03/2019  |
| G    |       |                                      | educating new employees  | yes                               |      |                              | HSE dep.            | ongoing      |       |                               | Revamp of HRM/HRA process takes longer than initially planned. Will be inbedded in new induction program in 2019.   |
| SPB  | 2+3   | Regenerative Thermal Oxidizer        | replacing AK filters by RTO for removal of solvents in guided emissions          |                                   |      | 221,4                        | project manager     | ongoing      |       |                               | * CAPEX replacement burnt rotator OK. Order placed. One year delivery time.<br>* Due to low productivity in the second half of 2018, representative measurements could not be taken in 2018. These are planned for Q2 2019. Based on these measurements a recalculation of the combustion chamber dimensions will be made.<br>* A better follow-up of the filtersystem and different types of filters have caused a steep drop in the number of alarms and automatic shutdowns. |
| WIL  | 3     | new quay                             | constructing new quay  | yes                               |      |                              | project manager     | ongoing      |       |                               | CAPEX approved. Works will start beginning of 2019.   |
| SPB  | 1+2   | WKK                                  | installing WKK   | balance of electricity / gas      |      | 613                          | project manager     | ongoing      |       |                               | * CAPEX approved. However questions were raised on the influence of a new ventilation system on the existing systems, especially the fact that the new system links both painting halls (and thus both ventilation systems).<br>* permit approved   |
| WIL  | 1     | fuel for heating                     | insulation of painting hall  | 38355L propaan + 3352L mazout     |      | 76,8                         | project manager     | yes          |       | 76,8                          | Executed summer 2018.   |
| IEM  | 2     | electricity: LED                     | general relighting   | 270000                            | kWh  | 142                          | project manager     | 270000       | kWh   | 142,02                        | Executed during 2018.<br>Remark: In reality reduction of use of green energy. But this means the green energy is available for other consumers.   |
| SPB  | 2     | electricity: LED                     | relighting remainder Albert Hall   | 248000                            | kWh  | 130                          | project manager     | 248000       | kWh   | 130,448                       | Executed during 2018.<br>Remark: In reality reduction of use of green energy. But this means the green energy is available for other consumers.   |
| WIL  | 2     | electricity: LED                     | general relighting   | 394000                            | kWh  | 207                          | project manager     | 394000       | kWh   | 207,244                       | Executed during 2018.<br>Remark: In reality reduction of use of green energy. But this means the green energy is available for other consumers.   |
| G    | 3     | ECO Design                           | reduction of needed amount of steel and paint or substitution of aluminium       |                                   |      | 2000                         | Engineering manager |              |       | 1150                          | result lower than expected, no growth but stabilization   |
| SPO  | 2     | electricity: LED                     | general relighting   | 459000                            | kWh  | 241                          | project manager     | 459000       | kWh   | 241,434                       | Executed during 2018.<br>Remark: Reduction of grey energy = real-life reduction   |
| IEM  | 2     | electricity: wind turbine            | placing of Eneco wind turbine 2018-2020  | yes                               |      |                              |                     | ongoing      |       |                               | Study completed. Permit request by Eneco ongoing.<br>Remark: Switch from purchase to own production, no CO <sub>2</sub> savings as the switch is from solar to wind. But this means the total production of green energy enlarges, and thus is available for other consumers.   |
| IEM  | 1     | gas for welding                      | maximize gas input Euromix from 24 l/min to 19 l/min                             | -10%                              |      | 7                            | QC + PRO            |              |       |                               | non-issue   |
| IEM  | 1     | transport of employees: bike leasing | offering of bike lease to employees  | 120000                            | km   | 23                           |                     |              |       |                               | current bike average Smulders = 14%, ±1000 days/month<br>Flemish average: 14,9% (+15% for Arendonk), 12,6km one way<br>improvement = up to 20% = +6% = 428 days = 10786 km/month<br><i>calculation of savings based on 2019 results</i>   |
| IEM  | 1     | transport of employees: bike leasing | expansion bike storage + solar panel roof + charging points for electrical bikes | yes                               |      |                              |                     | no           |       |                               | lost in translation... The project was found to be to expensive including a battery (to store energy from the solar panels for the charging of bikes). But it was never the intention to include a battery...   |
| WIL  | 1     | transport of employees: bike leasing | offering of bike lease to employees  | 25000                             | km   | 5                            |                     |              |       |                               | <i>calculation of savings based on 2019 results</i>   |
| SPB  | 2     | electricity: replacing generators    | expanding electrical installation to replace generators in dock                  | under investigation               |      |                              |                     | ongoing      |       |                               | * study ongoing, electricity needs to be tapped from the electrical installation in the Albert hall. The Albert hall is owned by the bank. Can electricity from "the bank" be diverted to the dock, which is owned by the site landlord?  |
| SPB  | 1     | fuel transport to electric           | replacing fuel transport to electric in halls                                    | under investigation               |      |                              |                     | ongoing      |       |                               | * inside transport has already switched from fuel to electrical (info Tom Frans)<br>* in 2019 action to optimize use of fuel powered equipment to lower consumption   |

|                                     |      |                            |                            |       |                            |
|-------------------------------------|------|----------------------------|----------------------------|-------|----------------------------|
| <b>Reduction target scope 1/2 :</b> | 1667 | ton CO <sub>2</sub> / year | <b>Realized reduction:</b> | 780   | ton CO <sub>2</sub> / year |
|                                     | 10   | % of 2017                  |                            | 4,81% | % of 2017                  |
| <b>Reduction target scope 3 :</b>   | 2000 | ton CO <sub>2</sub> / year |                            | 1150  | ton CO <sub>2</sub> / year |

## Energy management plan 2017

| site                  | scope | topic                         | detail   | target value<br>(related to site) | unit | value (ton CO <sub>2</sub> ) | responsible                 | result   | value | unit' | value (ton CO <sub>2</sub> )' | annotation   |
|-----------------------|-------|-------------------------------|--|-----------------------------------|------|------------------------------|-----------------------------|----------|-------|-------|-------------------------------|--|
| IEM / SPO             | 1     | improving inventory           | division of diesel fuel consumption into company car, collective transport and transport of goods                              | in inventory                      |      |                              | CO <sub>2</sub> responsible | OK       |       |       |                               | OK for lemans,<br>NOK for Spomasz, not possible at the moment, makes no difference to CO <sub>2</sub> calculations as it is the same conversion factor                                   |
| IEM / WIL / SPB       | 1     | improving inventory           | calculating CO <sub>2</sub> emissions from gas consumption based on the correct calorific value                                | in inventory                      |      |                              | CO <sub>2</sub> responsible | OK       |       |       |                               | valoric value not stated for every site, but if stated then used factor approximately correct so no change   |
| IEM                   | 2     | electricity: compressed air   | including the air nozzles into the preventive maintenance plan   | tbd                               |      |                              | maintenance dep.            | no       |       |       |                               | no agreement, action removed for 2018  |
| IEM / WIL / SPB       | 2     | electricity: compressed air   | introducing vacuum-cleaner in stead of blowing   | tbd                               |      |                              | production and HSE dep.     | no       |       |       |                               | no agreement, action removed for 2018  |
| G                     | 1     |                               | toolbox Defensive driving  | yes                               |      |                              | HSE dep.                    | on hold  |       |       |                               |  |
| G                     |       |                               | educating new employees  | yes                               |      |                              | HSE dep.                    | ongoing  |       |       |                               | HR department also working on new induction document   |
| SPB                   | 2+3   | Regenerative Thermal Oxidizer | replacing AK filters by RTO for removal of solvents in guided emissions  |                                   |      | 221,4                        | project manager             | ongoing  |       |       |                               | Further optimization of proper operation needed before making final conclusions and external communication   |
| IEM / WIL / SPB / SPO |       | ISO 50.001                    | management system is ISO 50.001 certified  | yes                               |      |                              | CO <sub>2</sub> responsible | partly   |       |       |                               | SPO OK in 2016<br>postponed until further notice for other sites   |
| IEM / WIL / SPB       | 2     | electricity: ICE              | real life use of ICE technique   | 15000                             | kWh  | 7,89                         | project manager             | 20732    | kWh   |       | 10,91                         | 2017: Beatrice jackets, Hohe See jacket<br>2018: Noordkasteelbruggen, Sarens   |
| WIL                   | 3     | new quay                      | constructing new quay  | yes                               |      |                              | project manager             | 2018     |       |       |                               | study and CAPEX ok, permit and execution planned for 2018  |
| SPB                   | 1+2   | WKK                           | installing WKK   | balance of electricity / gas      |      | 613                          | project manager             | 2018     |       |       |                               | no agreement on CAPEX yet  |
| WIL                   | 1     | fuel for heating              | insulation of painting hall  | 38355L propaan + 3352L mazout     |      | 76,8                         | project manager             | ongoing  |       |       |                               | CAPEX OK, execution in 2018  |
| IEM / WIL / SPB       | 1     | fuel for transport            | monthly inspection of tires on machinery   | yes                               |      |                              | maintenance dep.            | no       |       |       |                               | largest part of machinery tires are solid and not air pressurized  |
| IEM                   | 2     | electricity: LED              | general relighting   | 270000                            | kWh  | 142                          | project manager             | ongoing  |       |       |                               | CAPEX OK, ordered in November 2017, execution in 2018  |
| SPB                   | 2     | electricity: LED              | relighting rest Albert Hall  | 248000                            | kWh  | 130                          | project manager             | ongoing  |       |       |                               | CAPEX OK, ordered in November 2017, execution in 2018  |
| WIL                   | 2     | electricity: LED              | general relighting   | 394000                            | kWh  | 207                          | project manager             | ongoing  |       |       |                               | CAPEX OK, ordered in November 2017, execution in 2018  |
| G                     | 3     | ECO Design                    | evaluation of potential reduction in steel and paint or substitution of aluminium in Civil and Industrial Engineering Projects | 90                                | %    |                              | Engineering manager         | "100%"   |       |       |                               | is not tracked but is now done "everytime"   |
| G                     | 3     | ECO Design                    | reduction of needed amount of steel and paint or substitution of aluminium in Civil and Industrial Engineering Projects        | 2                                 | %    | 156                          | Engineering manager         |          |       |       | 1506                          | not only Civil, but overall number   |
| IEM / WIL / SPB       | 2     | electricity: green energy     | switch to 100% green energy  | 11657000                          | kWh  | 6131                         | PPL                         | 12373663 | kWh   |       | 6508,5                        | switch to 100% Belgian solar energy for Belgian sites<br>- x kWh = not less used but switched from gray to green, percentage gray 2016 used (71,4%), conversion factor 2017 used (0,649) |

|                                     |              |   |                            |              |   |
|-------------------------------------|--------------|---|----------------------------|--------------|---|
| <b>Reduction target scope 1/2 :</b> | 7530<br>46,7 | ton CO <sub>2</sub> / year<br>% of 2016 | <b>Realized reduction:</b> | 6520<br>40,4 | ton CO <sub>2</sub> / year<br>% of 2016 |
| <b>Reduction target scope 3 :</b>   | 156          | ton CO <sub>2</sub> / year              |                            | 1506         | ton CO <sub>2</sub> / year              |

# Energy management plan 2016

| site       | scope | topic                         | detail   | target value<br>(related to site) | unit | value (ton CO <sub>2</sub> ) | responsible                 | result                 | value | unit' | value (ton CO <sub>2</sub> )' | annotation   |
|------------|-------|-------------------------------|--|-----------------------------------|------|------------------------------|-----------------------------|------------------------|-------|-------|-------------------------------|--|
| I/Spo      | 1     | improving inventory           | division of diesel fuel consumption into company car, collective transport and transport of goods                              | in inventory                      |      |                              | CO <sub>2</sub> responsible |                        |       |       |                               |  |
| I/W/SP     | 1     | improving inventory           | calculating CO <sub>2</sub> emissions from gas consumption based on the correct calorific value                                | in inventory                      |      |                              | CO <sub>2</sub> responsible |                        |       |       |                               |  |
| I/W/SP     | 1     | improving inventory           | registration of refrigerants   | in inventory                      |      |                              | CO <sub>2</sub> responsible | not applicable anymore |       |       |                               | no longer required in handboek 3.0 due to minimal impact   |
| I/W/SP/Spo | 1     | improving inventory           | registration of private car fuel consumption for business travel   | in inventory                      |      |                              | CO <sub>2</sub> responsible | on hold                |       |       |                               |  |
| I          | 2     | electricity: compressed air   | reducing the air pressure from 9 to 7 bar (after further analysis of potential production risks)                               | tbd                               |      |                              | maintenance dep.            | no, production related |       |       |                               |  |
| I          | 2     | electricity: compressed air   | including the air nozzles into the preventive maintenance plan   | tbd                               |      |                              | maintenance dep.            |                        |       |       |                               |  |
| I/W/SP     | 2     | electricity: compressed air   | timer on air compressors (night, weekend)  | tbd                               |      |                              | maintenance dep.            | not applicable anymore |       |       |                               | due to production needs, activities have practically gone up to 24/7.                                      |
| I/W/SP     | 2     | electricity: compressed air   | switching from pneumatic to electric gear if possible  | tbd                               |      |                              | production and HSE dep.     | no, safety related     |       |       |                               |  |
| I/W/SP     | 2     | electricity: compressed air   | introducing vacuum-cleaner in stead of blowing   | tbd                               |      |                              | production and HSE dep.     |                        |       |       |                               |  |
| I          | 2     | electricity: LED              | gradually replacing old light fixtures by LED  | tbd                               |      | 50                           | site manager                |                        |       |       |                               | 2017: no agreement on CAPEX yet  |
| SP         | 2     | electricity: LED              | replacing 30 fixtures to LED in Titan Hall   | -221944                           | kWh  | 88,41                        | site manager                | -221944                | kWh   | 88,41 |                               | 2017: relighting Albert Hall = -1327306 kWh = 529 ton CO <sub>2</sub>                                      |
| W          | 2     | electricity: LED              | replacing 48 fixtures to LED in hall H (+ 9 extra)   | -23285                            | kWh  | 9,28                         | project manager             | -23285                 | kWh   | 9,28  |                               | 2017: no agreement on CAPEX yet  |
| I          | 2     | electricity: ICE              | use of new ICE welding technique in projects   | -3000                             | kWh  | 1                            | project manager             | -16520                 | kWh   | 6,58  |                               | Beatrice project, overflow from 2016 into 2017. 2017: Walney   |
| G          | 1     |                               | toolbox Defensive driving  | yes                               |      |                              | HSE dep.                    | on hold                |       |       |                               |  |
| G          |       |                               | educating new employees  | yes                               |      |                              | HSE dep.                    | ongoing                |       |       |                               | HR department also working on new induction document   |
| Spo        | 1+2   | energy audit                  | executing an energy audit on the Spomasz site  | audit executed                    |      |                              | site manager                | OK                     |       |       |                               |  |
| SP         | 2+3   | Regenerative Thermal Oxidizer | replacing AK filters by RTO for removal of solvents in guided emissions  |                                   |      | 221,4                        | project manager             | ongoing                |       |       |                               | Further optimization of proper operation needed before making final conclusions and external communication |
| I/W/SP     | 1     |                               | 3-monthly monitoring of fuel consumption by company cars   | yes                               |      |                              | bookkeeping dep.            | no                     |       |       |                               |  |
| I/W/SP/Spo |       | ISO 50.001                    | management system is ISO 50.001 certified  | yes                               |      |                              | CO <sub>2</sub> responsible | ongoing                |       |       |                               | certification audit 09/2017<br>SPO OK in 2016  |
| G          | 3     | ECO Design                    | evaluation of potential reduction in steel and paint or substitution of aluminium in Civil and Industrial Engineering Projects | 80                                | %    |                              | Engineering manager         |                        |       |       |                               | Investigating the possibilities in 80% of projects, not reducing by 80%...                                 |

Reduction scope 1/2 : 370,0856286 ton CO<sub>2</sub> / year  
2,6 % of baseyear

Reduction scope 3 : 0 ton CO<sub>2</sub> / year  
0% % of baseyear



# Energy management plan 2015

| site           | scope | topic  | detail   | target value<br>(related to site) | unit | value (ton CO <sub>2</sub> ) | responsible                 | result value                | unit' | value (ton CO <sub>2</sub> )' | annotation   |
|----------------|-------|--|--|-----------------------------------|------|------------------------------|-----------------------------|-----------------------------|-------|-------------------------------|--|
| G              | 1+2   | improving inventory  | reporting related to working hours<br>(incl. reference year 2014)  | relative to<br>working hours      |      |                              | CO <sub>2</sub> responsible | OK                          |       |                               |  |
| I/W/SP         | 2     | green energy supplier  | raise the percentage of green energy (kWh) through<br>a new supplier of electricity  | 40                                | %    | 416<br>(-11,43%)             | Purchase Manager            | 42,67                       | %     | 10                            | Relative drop of 10 tons compared to year before, due to small rise in green<br>energy. Absolute rise of 75 tons due to larger consumption.<br><br>Projected drop of 416 tons was based on Eneco (2013). This was corrected to<br>Scholt 2014. which is the same supplier as 2015. |
| I/Spo          | 1     | improving inventory  | division of diesel fuel consumption into company<br>car, collective transport and transport of goods   | in inventory                      |      |                              | CO <sub>2</sub> responsible |                             |       |                               |  |
| I/W/SP         | 1     | improving inventory  | calculating CO <sub>2</sub> emissions from gas consumption<br>based on the correct caloric value   | in inventory                      |      |                              | CO <sub>2</sub> responsible |                             |       |                               |  |
| I/W/SP         | 1     | improving inventory  | registration of refrigerants   | in inventory                      |      |                              | CO <sub>2</sub> responsible |                             |       |                               |  |
| I/W/SP/S<br>po | 1     | improving inventory  | registration of private car fuel consumption for<br>business travel  | in inventory                      |      |                              | CO <sub>2</sub> responsible |                             |       |                               |  |
| I              | 1     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of heating (gas+fuel oil), based on the<br>energy audit 2015, execution during 2016 | -10                               | %    | 86,7<br>(-2,38% in 2016)     |                             |                             |       |                               |  |
| I              | 2     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of electricity, based on the energy audit<br>2015, execution during 2016            | -5                                | %    | 81,4<br>(-2,23% in 2016)     |                             | compressed<br>air, LED, ICE |       |                               | LED: numbers available but not yet recalculated<br>ICE: estimated 3000kWh per welding machine, exact numbers available in 2016<br>Air: tbd, based on energy audit  |
| I              | 2     | electricity: compressed<br>air                                 | reducing the air pressure from 9 to 7 bar (after<br>further analysis of potential production risks)  |                                   |      |                              | maintenance dep.            |                             |       |                               | delayed to 2016  |
| I/W/SP         | 2     | electricity: compressed<br>air                                 | introducing a periodical leak detection of the air<br>pressure system + first execution in 2015 and<br>repairing detected leaks                  |                                   |      |                              | maintenance dep.            | OK                          |       |                               | monthly inspection by internal maintenance department  |
| I              | 2     | electricity: compressed<br>air                                 | including the air nozzles into the preventive<br>maintenance plan  |                                   |      |                              | maintenance dep.            |                             |       |                               | delayed to 2016  |
| I/W/SP         | 2     | electricity: compressed<br>air                                 | timer on air compressors (night, weekend)  |                                   |      |                              | maintenance dep.            |                             |       |                               | delayed to 2016  |
| SP             | 1     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of heating (gas+fuel oil), based on the<br>energy audit 2015, execution during 2016 | -10                               | %    | 112,3<br>(-2,57% in 2016)    |                             | RTO, WKK                    |       |                               | RTO installation 2016<br>WKK installation 2017<br><br>RTO is going to give a significant downfall in scope 3 emissions, which will largely<br>shift to scope 1 emissions... See RTO project summary.   |
| SP             | 2     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of electricity, based on the energy audit<br>2015, execution during 2016            | -5                                | %    | 389,8<br>(-8,92% in 2016)    |                             | compressed<br>air, LED, ICE |       | LED: 78,82 ton                | LED: Already installed in 2015: 10,21kW, projected 2016: 30kW, 2017 tbd<br>ICE: after successful tests lemans, reduction based on numbers lemans<br>Air: tbd, based on energy audit  |
| W              | 1     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of heating (gas+fuel oil), based on the<br>energy audit 2015, execution during 2016 | -5                                | %    | 54,8<br>(-2,65% in 2016)     |                             | insulation<br>painting hall |       | 76,8                          | based on energy audit<br>execution 2017  |
| W              | 2     | CO <sub>2</sub> reduction related to<br>heating OR electricity | selection of viable investments/actions for the<br>reduction of electricity, based on the energy audit<br>2015, execution during 2016            | -5                                | %    | 41,1<br>(-1,98% in 2016)     |                             | compressed<br>air, LED      |       |                               | LED: planned 2017<br>Air: tbd, based on energy audit   |
| Spo            | 1+2   | energy audit   | executing an energy audit on the Spomasz site  | audit executed                    |      |                              |                             |                             |       |                               | delayed to 2016 (ISO 50.001)   |
| Spo            | 1     | improving inventory  | back-up check: other sources of heating (fuel, gas,<br>...)?   | checked                           |      |                              |                             | municipal<br>heating        |       |                               | waiting for energy consumption numbers to be added to emission inventory   |