



// FNT Sustainability Management Aspects: How to reduce environmental impact of IT infrastructure ops



// Power to you! Your value add from a digital twin of the infrastructure.





// Today's simple agenda

- Sustainability and why you should care (on top of having a green heart)! (3-5min)
- Emission scopes: What are they and why do they matter? (3-5min)
- How FNT Solutions can help you successfully meet the challenges! (9-15min)
- Q&A (~5-10min)



// Sustainability in large IT, DC & network infrastructure ops: Is it optional?

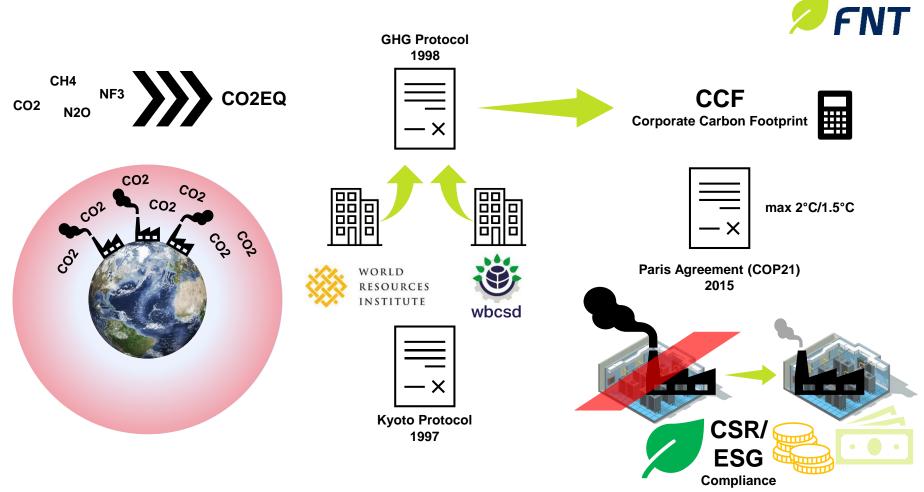
Simply put: No.

- You need this planet & its environment intact just like everyone else.
- You **will become non-compliant** if you do not take measures.
- You will loose access to important corporate refinancing sources.
- You will run at higher operating cost than your competitors.
- You will miss out on tax exemption programs.



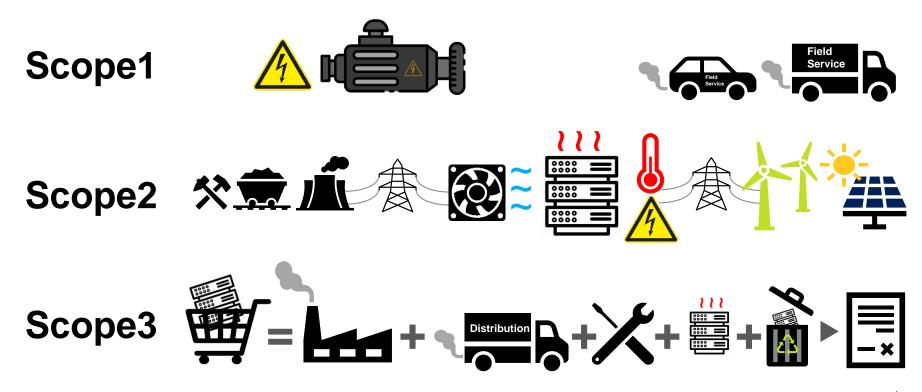








// GHG Protocol Corporate Standard – Emission Scopes: What are they?





// How do FNT Solutions help you to successfully overcome the challenges!





// Scope 1 Support: FNT DCIM & Monitoring

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FNT Command overall total capacity

Climate capacity & reserves

Combine it with space & reserves

Enables infrastructure operators to

reliably plan ahead mid- and long-term

support CO2E reduction measures

· Power capacity & reserves

optimize investment

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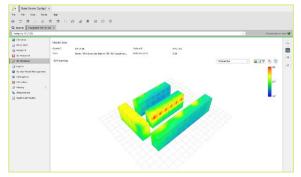
management reporting (strategic view)

FNT Command capacity mangement process support (operational view)

- · Locate capacity bottlenecks
- · Identify options to resolve capacity deadlocks
- · Find rackspace for rollout of new equipment

Enables infrastructure operators to

- optimize utilization
- avoid stranded capacity
- make planning and rollout processes of new devices faster & more reliable



FNT Command Heatmap for cooling management support

- Recognize hotspots visually
- · Identify & resolve causes

Enables infrastructure operators to

- Control that overall cooling strategy works
- optimize thermal management
- improve PUE
- support CO2E reduction measures

Reduce CO2E footprint operationally: Optimize energy consumption of equipment in lifecylce phase "use"



// Scope 1 Support: FNT Planning & Workorder Management/Process Center

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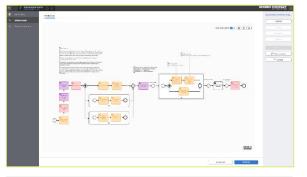
FNT Workorder Management (Phase-driven matrix overview)

- From request to planning to delivery
- From requirement to actual design
- · Per silo/function but overarching orchestration

Enables infrastructure operators to

- collect assignements of workorder for the same trades at locations with regard to time criticality
- execute mass assignments to internal workforce teams or subcontractors

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FNT Command Planning Protocol and Stepby-Step-Instructions

- created by enabling the planner to do detailed assisted planning in a digital twin of the infra
- · containing all information to execute

Enables infrastructure operators to

- send technicians out perfectly prepared and with the required material on board
- reduce onsite visit repetition due to unclear instructions or divergence btw plan and reality

FNT Process Center Workflow Management

- Design & optimize workflow in workorder mgmt
- Insight into the status of all running workflow instances

Enables infrastructure operators to

- Automate work item assignment
- Accelerate processes
- Exert control over workflow execution

Reduce CO2E footprint in services: Fewer onsite visits & more work per visit, reduced transport & truckload



// Scope 1 Support: Real-life example of sending a technician around the airport



Reduce CO2E footprint in services: Fewer onsite visits & more work per visit, reduced transport & truckload



// Scope 3: The Power of Norming – ISO Norm 14025 and the EDP

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(Тор)	From Wikipedia, the free encyclopedia		
Content of EPDs Framework for creating an EPD Product category rules Challenges in Creating EPDs EPDs in Europe EPDs in North America and Asia See also References External links	An Environmental Product Declaration (EPD) is defined by International Organ "quantifies environmental information on the life cycle of a product to enable com methodology is based on the Life Cycle Assessment (LCA) ^[2] loot that follows ISC EPDs are primarily intended to facilitate business-to-business transactions, althor focused when choosing goods or services. ^{[3](4][3](6)} Companies implement EPDs commitment to the environment to customers. ^[6] <u>Content of EPDs [edit]</u> EPD reports are available from The International EPD System ^[7] database. Speci summarize environmental information on the product in fewer than 50 pages. The and retailers. As an example, a 38-page EPD for a pasta product contains sections on the bran sustainable wheat cultivation, milling, packaging production, pasta production different markets. ^[8]	parisons between products fulfilling the same function. ⁴¹¹ The EPD 3 series 14040 ^[3]45(9] uigh they may also be of benefit to consumers who are environmentally in order to improve their sustainability goals, and to demonstrate a fifc content will vary according to the category of the product, but most e text and illustrations are designed to be easily understood by consumers and and product, environmental performance calculations, information on	tandardized way!"
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Is it just CO2? No – there are more environmental impact indicators to handle...



- Net use of freshwater (m³)
- Eutrophication potential (kg PO43-eq.)

- Depletion potential of the stratospheric ozone layer OPD (kg CFC 11 eq.)
- Formation Potential of tropospheric ozone POCP (kg C2H4 eq.)

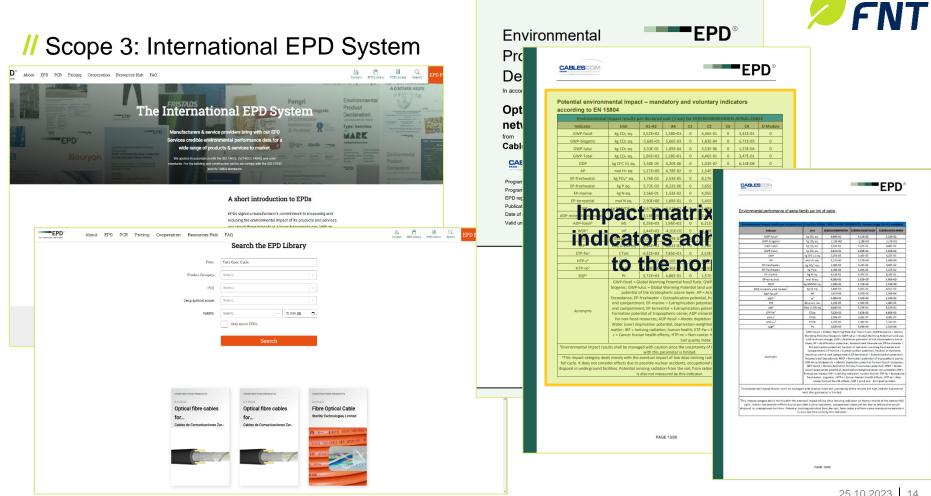
 Acidification potential (kg SO2 eq.)

And more...

- Mineral resource depletion
- Total primary energy usage
- Abiotic depletion potential fossil fuels

. . .

A nightmare to deal with?!? Well, maybe not. We can help you!



// Scope 3: Ecopassport

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The environmental impacts, reported in the following table, are calculated by using SimaPro v9.2 and the databases ecoinvent v3.7.1 and ELCD v3.2.

ARR

Parameter	Unit	Total	Manufactu	ring	Distributio	•	Installation		Use		End of life	
Global warming potential (GWP)	kg CO2	1.65E+06	8.35E+04	5.0%	1.99E+03	0.1%	1.68E+03	<0.1%	1.57E+06	94.9%	7.91E+02	<0.19
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	7.86E-02	4.355-03	5.5%	3.79E-04	0.5%	2.60E-05	<0.1%	7.36E-02	93.6%	2.40E-04	0.3%
Acidification potential (AP		pa	1C	10.0%	m	71	asi n	0.1%	W	6.5	OE+00	<0.19
Eutrophication potential (EP)	PO43-	2.71E+03	2.56E+02	9.4%	4.58E+00	0.2%	1.71E+00	<0.1%	2.46E+03	90.6%	3.52E+00	<0.11
Formation potentia of troposphilic ozone (POCP)	١d	iC	at	0	rs	B		he	eri	n	g	<0.11
Abiotic depletion potential – Elements	kg Sb eq.	1.85E+01	1.48E+01	80.3%	2.85E-03	<0.1%	4.32E-04	<0.1%	3.63E+00	19.6%	2.496-03	<0.11
Abiotic depletion potential – Fossil fuels	MJ, net calorific value	2.85E 07	1 =•00		le	n	01	1	74E+07	96.3%	1.30E+04	<0.11
Total use of primary energy during the life cycle	MJ	3.18E+07	1.11E+06	3.5%	2.69E+04	<0.1%	8.84E+02	<0.1%	3.07E+07	96.4%	1.31E+04	<0.11
Net use of fresh water	m3	4.02E+04	8.91E+02	2.2%	1.84E+00	<0.1%	-1.38E- 01	<0.1%	3.93E+04	97.8%	1.74E+00	<0.11

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// Scope 3: ISO-Compulsory Environmental Impact Indicator Matrices everywhere!

ENVPEP2009014_V1 - Product Environmental Profile - Galaxy VS UPS 10-100kW with integrated batteries

			2				
Compulsory indicators			PS 10-100kW wit	h integrated b	tteries - GVS	UPS50KB4D	
Contribution to mineral resources depletion	kg Sb eq	6.92E+01	6.92E+01	0*	0*	0*	0*
Contribution to the soil and water acidification	kg SO ₂ eq	2.24E+02	7.84E+01	2.82E-01	0*	1.45E+02	2.66E-01
Contribution to water eutrophication	kg PO, ³ eq	2.60E+01	1.70E+01	6.50E-02	1.01E-02	8.77E+00	7.71E-02
Contribution to global warming	kg CO ₂ eq	8.33E+04	4.83E+04	6.18E+01	3.97E+01	3.48E+04	1.58E+02
Contribution to ozone layer depletion	kg CFC11 eq	3.92E-03	1.63E-03	0*	0*	2.27E-03	1.58E-05
Contribution to photochemical oxidation	kg C2H4 eq	1.01E+01	2.05E+00	2.01E-02	9.16E-03	7.98E+00	3.07E-02
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Net use of freshwater	m3	1.27E+05	6.0E+02				
Total Primary Energy	MJ	1.18E+06	4.84E+05	adhe	ering t	othe	norn

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Ozone dej		-07 kgCFC-11 eq	1,21E-07	97%	1,01E-11	< 1%	3,53E-11	< 1%	3,42E-09	3%	1,51E-10	< 1%
Acidificati and water	ian of soils r	03 kgS0, eq.	1,81E-63	94%	2,24E-05	1%	2,43E-05	1%	3,89E-05	2%	2,25E-05	1%
Water eut	trophication 1,48E	-03 kg(P0 _c)* eq.	1,42E-63	96%	5,14E-06	< 1%	2,51E-05	2%	4,47E-06	< 1%	2,56E-05	2%
Photochel formation	mical ozone 2,14E	04 kgC ₂ H ₄ eq.	2,07E-84	17%	1,598-06	< 1%	1,72E-06	< 1%	2,21E-06	1%	1,76E-06	< 1%
Depletion	of abiotic 2,34E	04 kgSb eq.	2,34E-04	100%	1,99E-10	< 1%	2,20E-10	< 1%	6.64E-08	< 1%	3,81E-10	< 1%
Total use of primar		ю1 мј	1,34E+01	98%	7,04E-02	< 1%	6,87E-02	< 1%	3,56E-02	< 1%	6,45E-02	< 1%
Net use of fresh w	1,88E	-02 m ²	1,87E-02	100%	4,658-07	< 1%	1,58E-06	< 1%	4,00E-05	< 1%	5,21E-06	< 1%
Depletion resources fuels	of abiotic s - fossil 1,19E	01 MJ	1,16E+01	98%	7,00E-02	< 1%	6,99E-02	< 1%	2,85E-02	< 1%	8,44E-02	< 1%
Water pol	lution 1,59E	-02 m ²	1,56E+02	18%	8,19E-01	< 1%	7,74E-01	< 1%	3,38E-01	< 1%	6,68E-01	< 1%
Air pollut	ion 7.90E	01 m ¹ -	7.71F+01	10%	2.04E-01	< 1%	6.07E-01	<1%	3.875-01	< 1%	2,01E-01	< 1%

PCF for Volkswagen AG for 4	1x HPE ProLian	t DL385 Gen10 Plus
years product lifetime	Mean	Std deviation
Enclosure	18.78	5.58
Fan(s)	33.49	62.12
Power Supply Unit(s)	66.33	19.08
Mainboard	481.07	301.54
Solid State Drive(s)	20.05	13.16
Daughter-board(s)	242.04	271.62
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// Scope 3 Support: FNT Environmental Impact Management AddOn

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Technical data			Resources use	Net use of freshwater	m3	127000	000	680.000			126000.000		•	
operations data			Resources use	Total Primary Energy	MJ	118000	0.000	484000.000	874.000		695000.000	1590.000		0
😣 Environmental Profile (Sustainability)			Impact Indicator	Contribution to mineral resources depletion	kg Sb eq	6920.00	0	48300.000	6180.000	3970.000	34800.000	15800.000		C
CMS			Impact Indicator	Contribution to the soil and water acidification	kg SO2 eq	224.000		78.400	0.282	0.000	145.000	0.266		0
🕎 IP data	>		Impact Indicator	Contribution to water eutrophication	kg PO4 3- eq	26.000		17.000	0.650	0.101	8.770	0.771		
Port data	>		Impact Indicator	Contribution to global warming	kg CO2 eq	83300.0	00	48300.000	61.800	39.700	34800.000	158.000		
Slot data			Impact Indicator	Contribution to ozone layer depletion	kg CFC11 eq	0.003		0.001						
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System attributes			> Resources use	Total Primary Energy	MJ	118000	0.000	484000.000	874.000		695000.000	1590.000		
			> Impact Indicator	Contribution to mineral resources depletion	kg Sb eq	6920.00	0	48300.000	6180.000	3970.000	34800.000	15800.000		
			> Impact Indicator	Contribution to the soil and water acidification	kg SO2 eq	224.000		78.400	0.282	0.000	145.000	0.266		
			> Impact Indicator	Contribution to water eutrophication	kg PO4 3- eq	26.000		17.000	0.650	0.101	8.770	0.771		
			> Impact Indicator	Contribution to global warming	kg CO2 eq	84300.0	00	49260.000	101.800	41.700	34805.000	163.000		
			> Impact Indicator	Contribution to ozone layer depletion	kg CFC11 eq	0.003		0.001						



// Scope 3 Support: FNT Environmental Impact Management AddOn

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) CMS		Impact Indicator	Contribution to the soil and water acidification	kg SO2 eq	224.000	78.400	0.282	0.000	145.000	0.265		
IP data	>	Impact Indicator	Contribution to water eutrophication	kg PO4 3- eq	26.000	17.000	0.650	0.101	8.770	0.771		
Port data	>	Impact Indicator	Contribution to global warming	kg CO2 eq	83300.000	48300.000	61.800	39.700	34800.000	158.000		
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With type inheritance from master data it's designed for minimal, near-zero administrative effort!



// Scope 3 Support: FNT Environmental Impact Management AddOn Dashboard





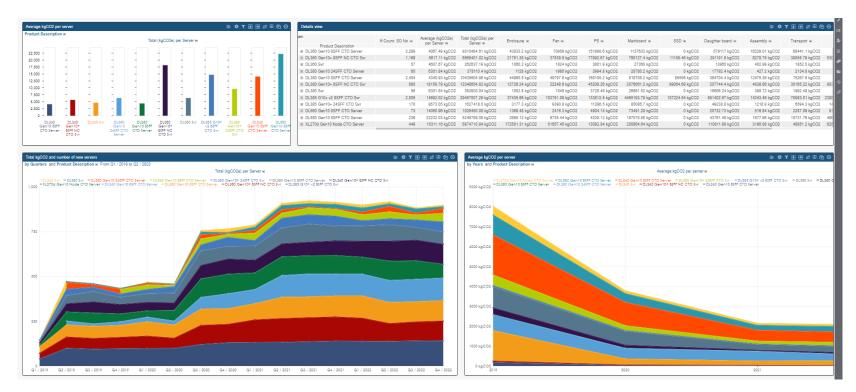
Top Level KPIs for easy quick-view on progress!

Comparative analysis and insights along every data dimension available in FNT Command (mandators/clients, regions, countries, datacenters, campus & building structures, manufacturers, product families, classes, types, funtions, areas of responsibility,...)

Proof of Progress in growth scenarios!



// Scope 3 Support: FNT Environmental Impact Management AddOn Dashboard





// Scope 3 Support: FNT Environmental Impact Management AddOn Dashboard



Overall CO2E rise due to capacity growth with company success & more digitization, new networks & new devices being rolled out.

But: Reduced CO2E averages (per rack, per HU, per device type) documentating a highly successful sustainability initiative

Compliance

CSR/ESG With the FNT Command Environmental Impact Management AddOn in place this FNT Analytics Dashboard works out-of-the-box in turnkey fashion!

21

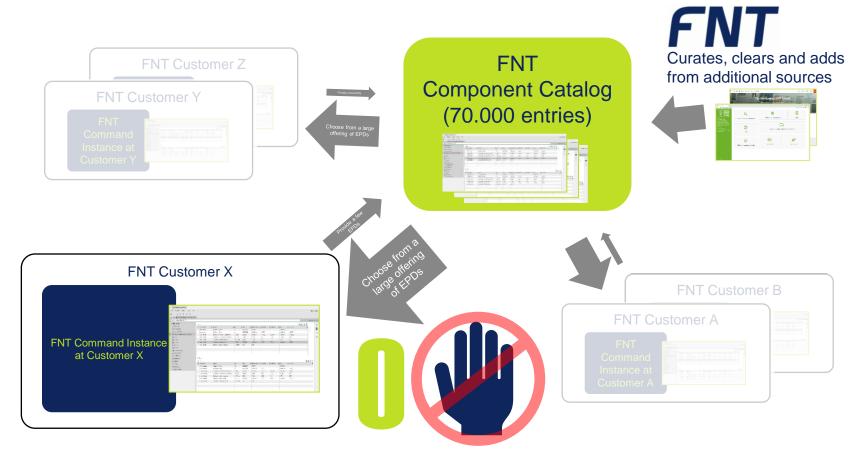


// The bigger capability picture – providing even more business value

Making things even easier for the customer, you! – EPDs in the FNT Component Catalog. Simply download.



// Dear customer! If you give a little – you'll get a LOT back!





// 4 key takeaways

- FNT Solutions help you to actually become truly more green in IT Infrastructure Operations in absolute numbers.
- FNT Solutions will contribute to your CSR/ESG compliance significantly, fast and out-of-the-box.
- FNT Solutions enable you to save cost and support you in
 - becoming eligible to tax exemption programs.
 - retaining access to refinancing funds requiring sustainability.
 - making your infrastructure less power-hungry by supporting the transfer towards "greener" products.
- FNT Solutions allow you to manage CO2 documentation of your infrastructure device & cabling landscape and monitor an important aspect of decarbonization progress with minimum effort.













// Anything left on your mind about this?







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