

Industri & Design Forum 2023



Novenco – Building & Industry

Filbaseret datahåndtering til et dynamisk produktionssystem

af RD Manager Christian Colstrup

NOVENCO Building & Industry – Hvem er vi ?

Grundlagt i 1947 af Mr. S.T. Westenholz

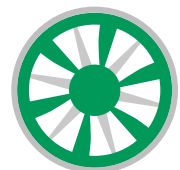
Beliggende I Næstved med produktion og administration

Er pt. +200 medarbejder fordelt I DK og udlandet

Vi producer ventilatorer til:

- Bygninger og Industrier
- Marine & Offshore
- Tunnel
- Car Park
- Landbrug
- Vindmøller
- Data Centre
- Etc.





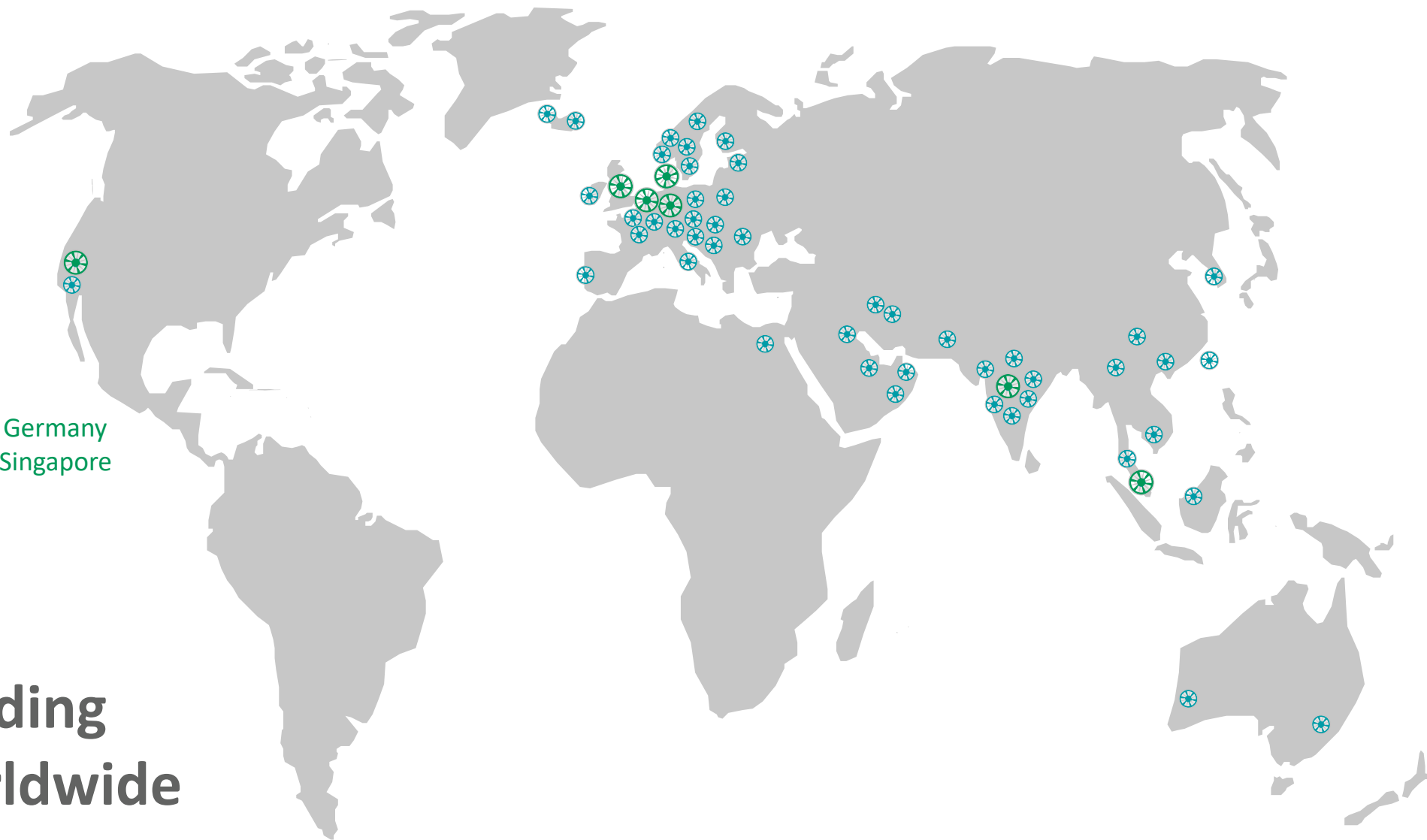
NOVENCO Offices

Denmark, Netherlands, Germany
United Kingdom, India, Singapore
and United States



NOVENCO Agents

NOVENCO Building & Industry worldwide



WE HAVE BEEN OPTIMISING FOR 75 YEARS



With an output efficiency of 92%

ZerAx® is a game changer

11

SUSTAINABLE CITIES
AND COMMUNITIES

12

RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13

CLIMATE
ACTION



... Since:

The **greenest watt**
is the one that



is **not** produced

NOVENCO fans and systems are:
Here, there and **everywhere...**
And if you can **make it here** – you can **make it anywhere**



World's largest social media

META DATACENTERS
ENERGY SAVING AND HIGH
RELIABILITY WITH ZERAX®



World's coolest building

INGENIOUS BMW WELT
CAR PARK WITH RENOWNED
NOVENCO JET FANS



World's tallest building

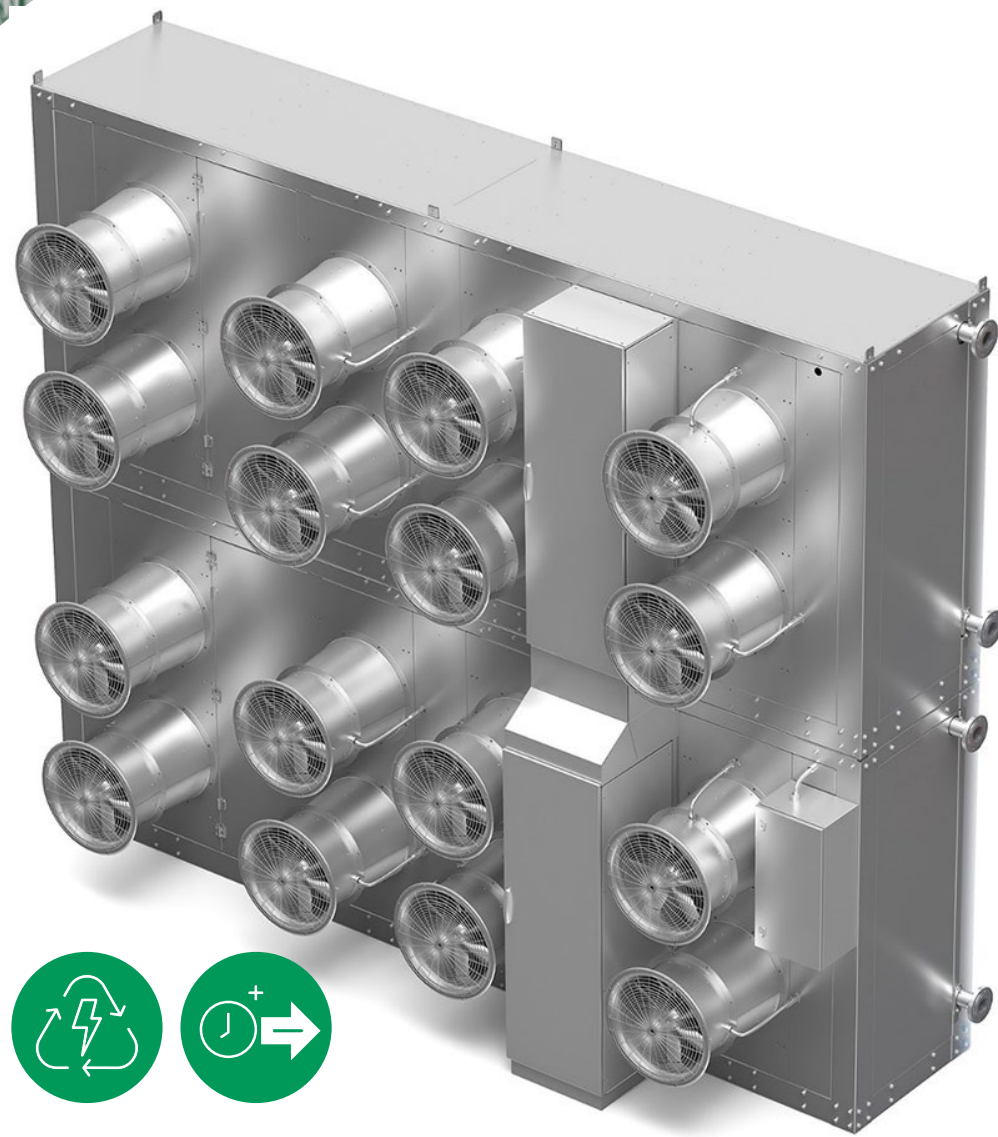
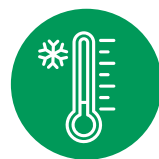
BURJ KHALIFA DUBAI
SAFETY WITH NOVENCO CAR
PARK VENTILATION SYSTEM





Datacenter in EU & US

**ZerAx® fan technology
combined with advanced
water-based cooling coils**



Flytter til ny fabrik i November 2023

Ny fabrik og kontor:

- 17.500 m² production
- 1.200 m² kontor
- Tættere på motorvej og togstation

“Next step”:

- Lignende produktion i US



CAD data i Novenco - Hvordan bliver data skabt ??



1947

1985



2012



2017

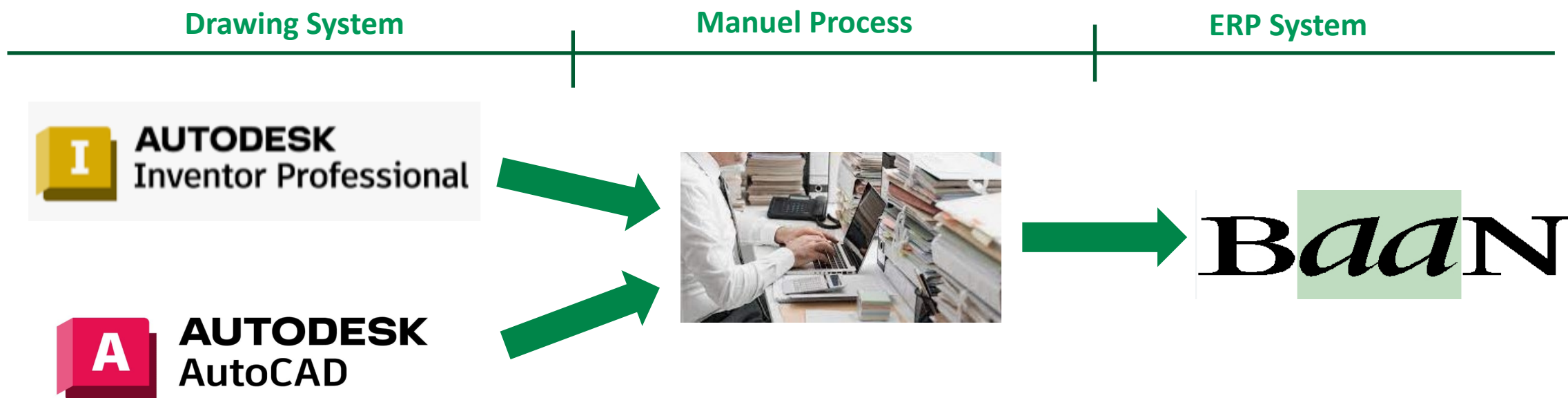


Building & Industry

NOVENCO

SCHAKO Group

BOM håndtering i Novenco indtil 2022



Ulemper/problemer:

- Fejlkilder i den manuelle process:
 - Forkert indtastning
 - Forkert eller misforstået struktur
 - Forkerte antal på komponenter
 - Osv

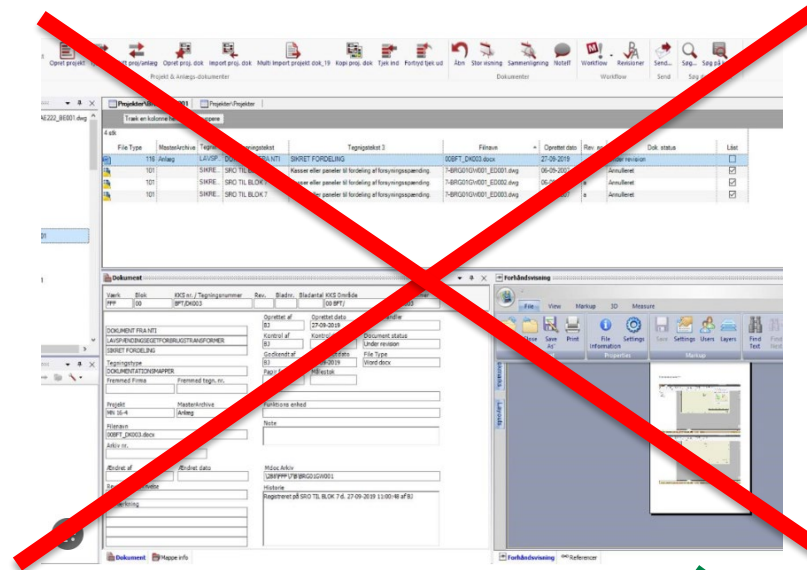
Overgang fra Mdoc til Vault:

Udfordringer med MDoc:

- Problemer med at håndtere store datamængder
- Revisionsstyring
- Afledte formater
- Nedbrud
- Problemer med at have andre "site" på samme platform

Nyt datastyringssystem:

- Beslutning: Mdoc skulle erstattes af Vault pro



Overgang fra Mdoc til Vault:

Antal CAD filer:

- + 120.000 filer
- Placeret på:
 - Stifinder (Explorer)
 - MDoc

Forskellige fil-formater:

- Håndtegning – Scannet filer
- AutoCAD
- Inventor
- Revit
- Afledte formater

Udfordringer:

- Manglende reference
 - X-ref (ACAD)
 - 3-party (Inventor)
- "Broken reference"
- "Missing reference"

Konvertering af data inden Vault:

- I første omgang besluttede vi at opdatere samtlige filer inden de kom i Vault (datavask)
BAD IDEA !!
- Tidshorisont for 4-5 fuldtidspersoner: + 7-8 mdr
- Løsning: Alt blev overført som det var !!



Indførsel af nyt ERP system:

Nyt ERP system:

- I starten af 2021 besluttede vi at erstatte det forældet BAAN med IFS
- I denne process skulle vi have en automatic for at Vault BOM'en kunne komme direkte I IFS

Opsætning af Vault:

- Opgaven gik på at skyde en komplet BOM direkte fra Vault til IFS.
- Sammen med NTI lavede vi et Export, som aflevere en XML fil til IFS

“Go-Live”:

- I maj 2022 havde vi release på IFS



Workflow – Hvordan fungere det idag ??

Inventor:

- Design / Ny-udvikling
- Vedligeholdelse
- Opdateringer og ændringer

Vault:

- Kontrol af Properties
- Revision styring
- Release proces

IFS:

- Produktion
- Indkøb
- Shipping
- Finans
- Osv.



NTI Tools i Inventor

NTI Tools:

Obligatoriske felter:

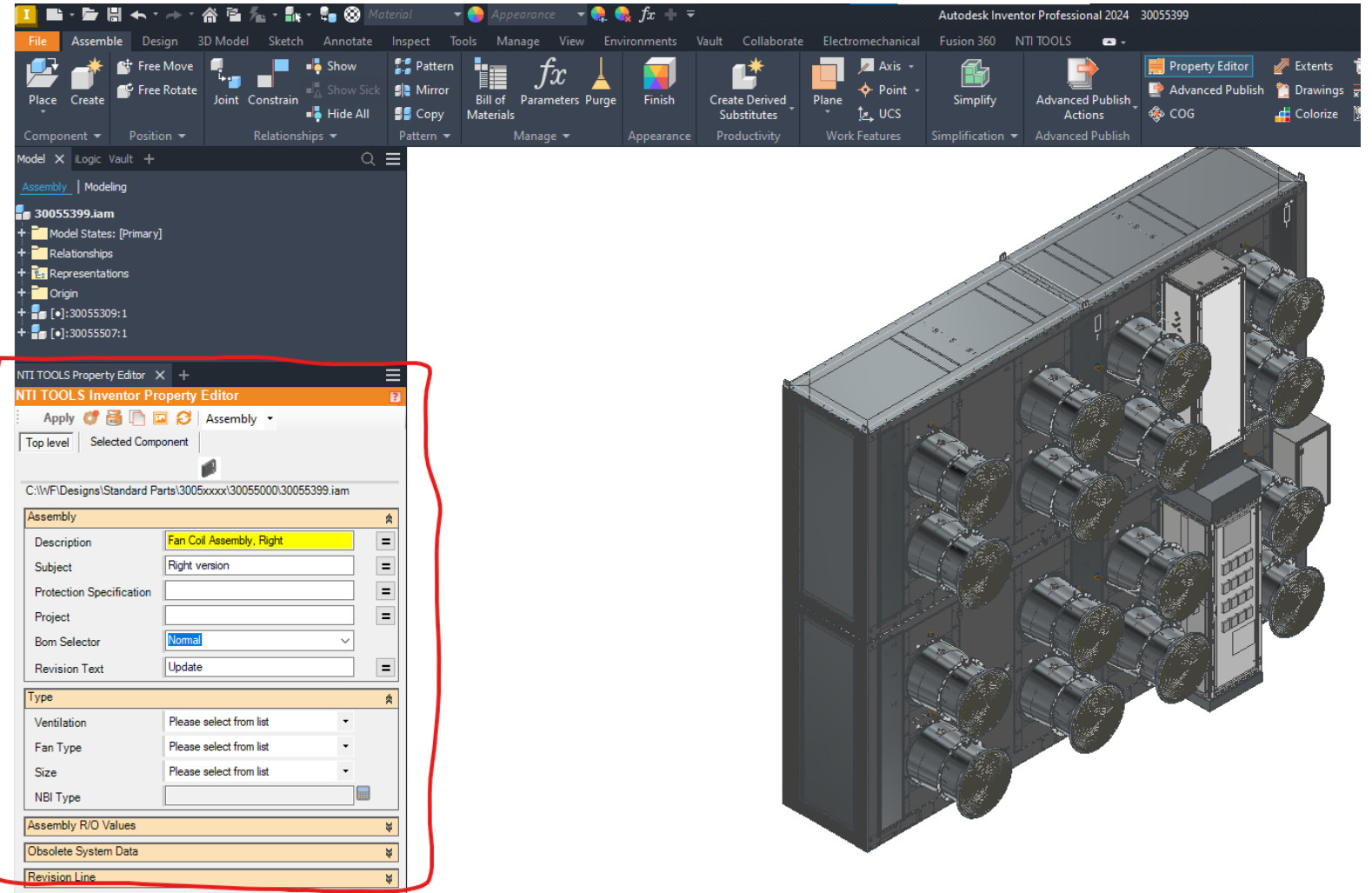
- Description
- DXF Contour (for sheet metal)
- Raw material

Ekstra information:

- Revision
- Protection spec
- Type
- Subject
- Etc.

Oprettelse af properties:

- Disse felter bliver anvendt som properties i Vault



Lifecycle i Vault Pro

Lifecycle states:

1. Work In Progress

- Ny udvikling
- Ændringer
- Opdateringer

2. Schedule for Release

- Eksportering af afledte formater
 - PDF, STP & (DXF)

3. Ready for Release

- Sidemand's kontrol

4. Released

- Frigivelse til produktionen
- Exportering af XML file

The screenshot shows the Vault Pro Item Master interface. The left sidebar contains a navigation tree with 'Vault - NOVENCO\cco' expanded, showing 'Duplicates Dashboard', 'Change Order List', 'Item Master' (selected), 'Project Explorer (\$)', and 'My Search Folders'. Below this are 'My Worklist' and 'My Shortcuts' sections. The main area displays 'Item Master (Search Results)' for item 30055434. A table lists the item details, and a detailed view below shows the item's structure with sub-items.

Number	Description (Item,CO)	Revision	State	Title (Item,CO)
30055434	FCA-L, Top Unit	A	Released	30055507

Number	Description (Item,CO)	Quantity	Revision	State (Historical)	Thumbnail
30055434	FCA-L, Top Unit	-	A	Released	
30055582	Diffuser with Back Draft Damper	8 Each	B	Released	
30055595	Zerax Axial Fan - Facebook - Type F	8 Each	H	Released	
30056288	Ground Frame	1 Each	B	Released	
30056290	Top Frame	1 Each	B	Released	

XML Export fra Vault Pro

NTI Item Export:

1. Items:

- Properties fra Vault

2. Files:

- Afledte filer som relater til parten eller samlingen
- Ex. PDF, DXF, RFA etc.

3. “Hack’s”:

- Ekstra information til ERP system’et
- Ex:
 - Hvis et Item indeholder en DXF, så skal den generere en ekstra part i ERP af en flad laserskåret plade.

```
<?xml version="1.0" encoding="utf-8"?>
<ExportData xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <TimeStamp>2023-10-27T15:24:51.8418764+02:00</TimeStamp>
  <Items>
    <Item>
      <ItemNumber type="String" value="30054030" />
      <ItemRevision type="String" value="A" />
      <ItemVersion type="Numeric" value="63" />
      <State type="String" value="Released" />
      <CategoryName type="String" value="Part" />
      <ItemDescription type="String" value="Guide vane" />
      <LastUpdatedBy type="String" value="MAR" />
      <LastModifiedDate type="Numeric" value="2023-10-27T15:24:05.27+02:00" />
      <ERPMass type="Numeric" value="0.274" />
      <UnitERPMass type="String" value="kg" />
      <Consumption type="Numeric" value="0" />
      <UnitConsumption type="String" value="kg" />
      <Length type="Numeric" value="0" />
      <UnitLength type="String" value="" />
      <Width type="Numeric" value="0" />
      <UnitWidth type="String" value="" />
      <Thickness type="Numeric" value="0" />
      <UnitThickness type="String" value="" />
      <RawMaterialNo. type="String" value="" />
      <Category type="String" value="Part" />
      <UoM type="String" value="" />
      <Type_Designation type="String" value="AZN -/160" />
      <Tracking type="String" value="Not Serial Tracking" />
      <LatestReleasedDate type="DateTime" value="2023-10-27T15:24:05.27+02:00" />
    </Item>
  </Items>
  <BOM />
  <Files>
    <File tag="">
      <ItemNumber type="String" value="30054030" />
      <ItemRevision type="String" value="A" />
      <Filename type="String" value="30054030.pdf" />
      <FileVersion type="Numeric" value="18" />
      <LocalFilename type="String" value="" />
    </File>
  </Files>
</ExportData>
```


BOM i IFS-systemet:

Item'et er nu i IFS systemet:

Part Number: 30055309 Part Description: FCA-R, Ground unit

Eng Rev: G Status: Preliminary

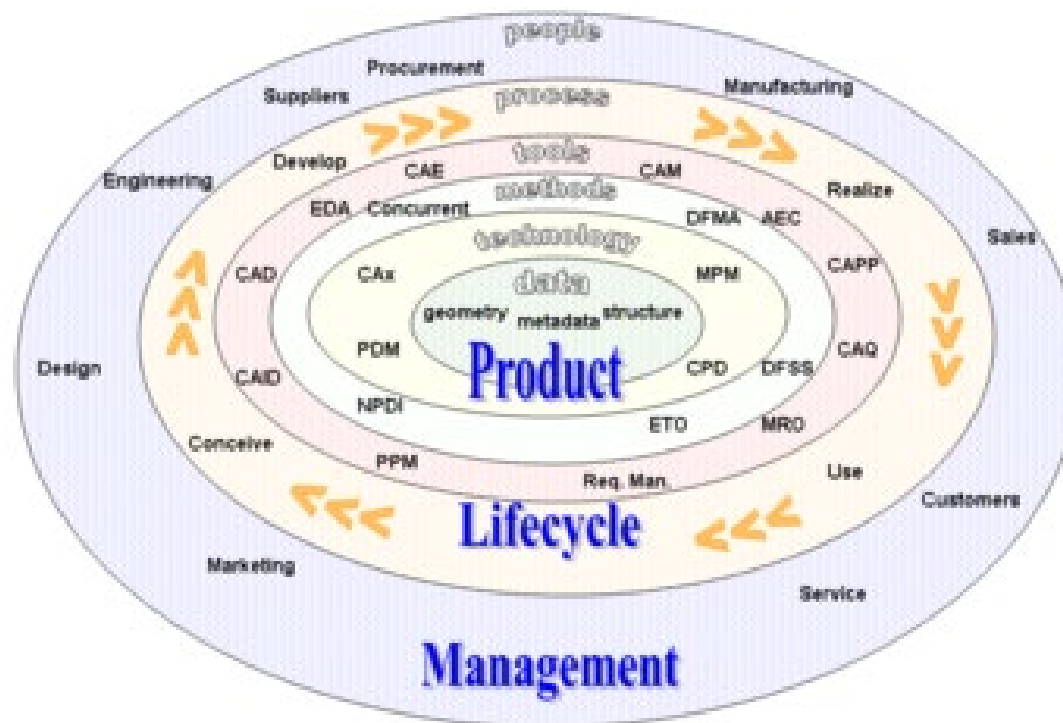
☐ Show Preview

Revision	Additional	Consists Of		Where Used	Multilevel	Journal	Development Status			Engineering Part		Spare Parts		Char. Snapshot		Alternate Part Revisions		Approval Process	
+	Sort No	Part Number	Part Revision	Part Name	Part Description	Drawing Position No	Quantity Per Assembly	Unit Code	UoM Description	Status	Number Of Children	Note	Date Created	Created By	Date Modified	Modified By	Responsi...	Transfer...	Ownership
▶	10	30055582	B	*	Diffuser with Back Draft Da...	3	8	PCS	piece	Preliminary	14		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Kim Christ...	12-10-20...	PDM
	20	30055637	B	*	Coverbox VFD Panel	4	1	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Dorthe Sø...	12-10-20...	PDM
	30	30055595	H	*	Zerax Axial Fan - Facebook ...	5	8	PCS	piece	Preliminary	28		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Kim Christ...	12-10-20...	PDM
	40	30056052	B	*	Panel bracket, top	11	1	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	50	30056053	B	*	Panel bracket	12	1	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	60	30056054	C	*	Panel bracket, Right	13	1	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	70	30056076	-	*	Base for VFD panel	14	1	PCS	piece	Preliminary	2		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	80	929048-0	-	*	Icetek 8 cables	15	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	90	928919-0	B	*	META Power Distribution cab...	16	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	100	928960-0	A	*	META VFD Cabinet V1.1	17	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	110	929055-0	-	*	Cably Tray 53/45 L=800	18	4	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	120	30049032	F	*	Bracket	19	29	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	130	929077-0	A	*	Gitterbakke MAGIC 100x55 ...	20	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM
	140	929078-0	-	*	Filterrulle	21	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Jesper Aa...	12-10-20...	PDM
	150	30055652	A	*	U-Profile	6	1	PCS	piece	Preliminary	1		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Dorthe Sø...	12-10-20...	PDM
	160	929080-0	C	*	EDC2.4.2, FKFD 4.5 - 2.5 - R...	22	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP		12-10-20...	PDM
	170	30055476	A	*	Wire Guard Ø500	7	8	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Kim Christ...	12-10-20...	PDM
	180	929081-0	C	*	EDC2.3.2, FKFD 4.5 - 5 - RS ...	23	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP		12-10-20...	PDM
	190	928968-0	B	*	Coil 3" (Roen), Right	8	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	23-10-2023	IFSAPP	Christian ...		PDM
	200	30056288	B	*	Ground Frame	24	1	PCS	piece	Preliminary	30		06-10-2023	IFSAPP	06-10-2023	IFSAPP		12-10-20...	PDM
	210	30056290	B	*	Top Frame	25	1	PCS	piece	Preliminary	21		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Mark And...	12-10-20...	PDM
	220	30056293	B	*	Fan Section 4	26	1	PCS	piece	Preliminary	6		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Dorthe Sø...	12-10-20...	PDM
	230	30056294	B	*	Fan Section 3	27	1	PCS	piece	Preliminary	6		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Dorthe Sø...	12-10-20...	PDM
	240	30056295	B	*	Fan Section 2	28	1	PCS	piece	Preliminary	7		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Dorthe Sø...	12-10-20...	PDM
	250	927793-0	-	*	Washer Ø10 x 20 x 2 - ISO ...	10	1	PCS	piece	Preliminary	0		06-10-2023	IFSAPP	06-10-2023	IFSAPP	Christian ...	12-10-20...	PDM

„What's next ??“

PLM (Product Lifecycle Management):

- Indførsel af et PLM system
 - Håndtering af data for et produkt igennem dets levetid
 - Oversigt over “claim's” for at forbedre produktet
 - Tracking af komponenter brugt i produkterne, så man kan forberede kunder om kommende service
 - Sammenkøring med Inventor og Vault
 - Marketing, Service, Salg, osv.



Tak for jeres tid.
Spørgsmål?

