



Solutions for a Better Tomorrow

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# LKO MDaaS Project

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# Agenda

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- Symptoms of the LKO Master Data Opportunity
- Business Impacts of the LKO Opportunity
- Project Scope for LKO Master Data
- Master Data as a Service – the planned Prometheus solution
- Prometheus view of MDaaS as presented to LKO
- LKO Results and thoughts on MDaaS Project
- Phase 2 Visibility and Automation
- Pros and Cons/Current Status
- Conclusion

## Symptoms of the LKO Master Data Opportunity

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- **Data transformations from legacy system to LYB resulted in corrupted records**
  - Truncation of descriptions on Material
    - Use of OEM for non-use of characteristics
    - Needed Actual Noun/Modifier and Attributes
- **Spare parts records are inaccurate or incomplete making ordering Material a showstopper**
  - Stocked Material marked as Non Stock in BOM
- **BOM missing or insufficient to clearly identify needed parts**
  - Project records not clear when transferred to site
- **Needed min/max on Materials not completed from recommended information**
  - Data required was for a two-year spare parts

## Business Impacts of the LKO Master Data Opportunity

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- **Planners unable to accurately plan work and allocate appropriate materials**
  - No Make/Model information on Equipment in SAP
    - Result: Unplanned downtime and expedited Material procurement = \$\$\$
- **Maintenance unable to efficiently perform work**
  - Parts identified for Equipment repair contain incomplete descriptions and incorrect parts
    - Result: Increased maintenance backlog and reduced cycles for proactive maintenance
- **Procurement unable to accurately plan Material purchase with optimized quantities and negotiated agreements**
  - Result: Ballooning MRO spares inventory and costs

## Project Scope for LKO Master Data

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- **Capture Critical/Non-Critical Assets**
  - 3,680 Critical and 22,511 Non-Critical Assets
- **Cleanse and Enrich Critical Equipment and BOMs**
  - 6,803 Critical equipment and BOMs identified
- **Cleanse and Enrich Non-Critical Equipment BOMs**
  - 54,218 Non-Critical equipment and 3,197 BOMs identified
- **Materials Cleansed and Enriched**
  - Identified based on needed BOMs 150,000 needed

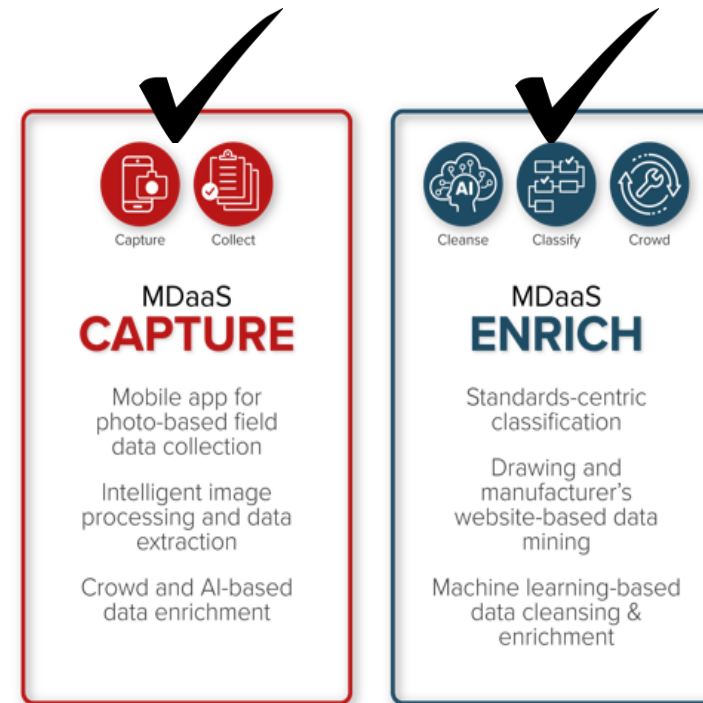
## Master Data as a Service (MDaaS)

### ■ LKO Site used Capture to verify nameplate data

- Not all project files were correct
  - Packaged manuals only at skid level and not broken out to the individual Equipment

### ■ MDaaS Enrich used for cleansing data

- Equipment Taxonomy Validated/Updated
- Equipment Classification Validated/Updated
- Equipment Mfg/Model Validated/Updated
- BOM Suggested/Created/Validated/Updated
- New Materials Suggested/Created



MDaaS in use in two current features

# Prometheus View of MDaaS as Presented to LKO – Phase 1

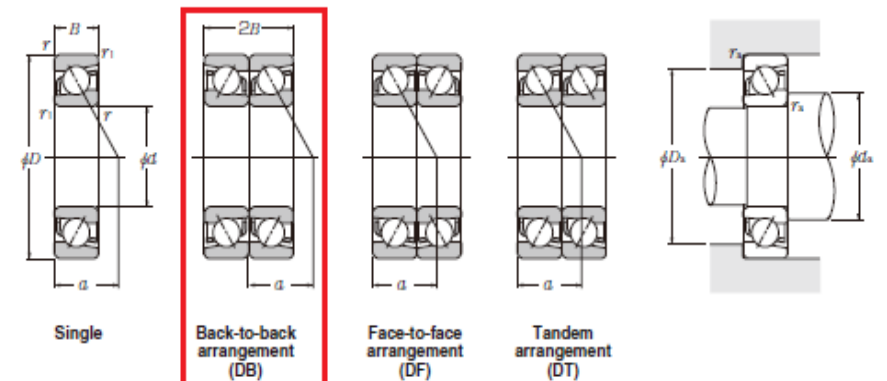
## ■ Spreadsheet data for BOM review

MATERIAL_ID	BOM_COMPONENT_TEXT1	OEM NAME	OEM PART NUMBER	OPM NAME	OPM PART NUMBER	WEB_URL_LINK_1	WEB_URL_PAGE
M0000018	BALL BEARING-THRUST	SHIN NIPPON MACHINERY		NTN	7318BDB	<a href="http://www.ntn.co.th/download/NTN%20General%20Bearing%20Catalog.pdf">http://www.ntn.co.th/download/NTN%20General%20Bearing%20Catalog.pdf</a>	159, 151, 152, 86

MATERIAL ID	UNSPSC	NOUN	MODIFIER	CHARACTERISTICS_NAME	CHARACTERISTICS_VALUE
M0000018	31171504	BEARING	BALL	TYPE	ANGULAR CONTACT,THRUST
M0000018	31171504	PUMP	BALL	INSIDE DIAMETER	90 MM
M0000018	31171504	PUMP	BALL	OUTSIDE DIAMETER	190 MM
M0000018	31171504	PUMP	BALL	OVERALL WIDTH	86 MM
M0000018	31171504	PUMP	BALL	CLOSURE TYPE	OPEN
M0000018	31171504	PUMP	BALL	NUMBER OF ROWS	2
M0000018	31171504	PUMP	BALL	CAGE MATERIAL	STEEL
M0000018	31171504	PUMP	BALL	BEARING SERIES	73
M0000018	31171504	PUMP	BALL	DYNAMIC LOAD RATING	156 KN
M0000018	31171504	PUMP	BALL	STATIC LOAD RATING	135 KN
M0000018	31171504	PUMP	BALL	SPEED RATING	3400 RPM (GREASE),4500 RPM (OIL)
M0000018	31171504	PUMP	BALL	CERTIFICATION/STANDARD	
M0000018	31171504	PUMP	BALL	ADDITIONAL FEATURES	PRESSED CAGE, BACK TO BACK ARRANGEMENT

SHORT DESCRIPTION	LONG DESCRIPTION
BEARING:BALL;ANGLR CONT,THRST,90X190X86	BEARING:BALL;TYPE:ANGULAR CONTACT,THRUST,INSIDE DIAMETER:90 MM,OUTSIDE DIAMETER:190 MM,OVERALL WIDTH:86 MM,CLOSURE TYPE:OPEN,NUMBER OF ROWS:2,CAGE MATERIAL:STEEL,BEARING SERIES:73,DYNAMIC LOAD RATING:156 KN,STATIC LOAD RATING:135 KN,SPEED RATING:3400 RPM (GREASE),4500 RPM (OIL),ADDITIONAL FEATURES:BACK TO BACK ARRANGEMENT,PRESSED CAGE OEM:SHIN NIPPON MACHINERY,OPM PART NUMBER:7318BDB, DRAWING NUMBER:3PS-67571,POSITION NUMBER:135

## Single and Duplex Angular Contact Ball Bearings



d 85 ~ 120mm

d	Boundary dimensions					Basic load ratings				Limiting speeds <sup>1)</sup>		Bearing numbers <sup>2)</sup>	Load center kg	Mass kg single (approx.)
	D	B	2B	r <sub>max</sub> <sup>2)</sup>	r <sub>min</sub> <sup>2)</sup>	dynamic kN	static C <sub>or</sub>	dynamic kgf	static C <sub>or</sub>	grease min <sup>-1</sup>	oil			
85	180	41	82	3	1.1	159	133	16 200	13 500	4 200	5 600	7317	59	4.34
	180	41	82	3	1.1	146	122	14 800	12 400	3 600	4 800	7317B	76	4.43
90	125	18	36	1.1	0.6	36.0	38.0	3 650	3 850	5 200	7 000	7918	40	0.658
	140	24	48	1.5	1	65.0	63.5	6 650	6 450	4 900	6 500	7018	45	1.35
	160	30	60	2.0	1	118	103	12 000	10 500	4 400	5 900	7218	51	2.18
	160	30	60	2.0	1	107	94.0	10 900	9 550	3 800	5 000	7218B	67.5	2.22
90	190	43	86	3.0	1.1	171	147	17 400	15 000	4 000	5 300	7318	62	5.06
	190	43	86	3.0	1.1	156	135	15 900	13 800	3 400	4 500	7318B	80.5	5.16



# LKO Results and Thoughts on MDaaS Project – Phase 1

## ■ Spreadsheet data equipment (Green is Existing Data)

Equipment	Description of Technical Object	AUSP	MFR of asset	Model number
20127532	CARBON BED BLOWER	P & ID NUMBER:L2CC-081-25-PI-6011	*****	NA
20138456	CARBON BED AIR BLOWER	P & ID NUMBER:L2CC-081-25-PI-6011	*****	NA
20139012	FAN, F083-0003B, REGENRATN AIR	P & ID NUMBER:L2CC-083-25-PI-0020-04	*****	NA
20127612	AERATION BASIN BLOWER	P & ID NUMBER:L2CC-982-25-PI-1044	AERZEN	DeltaGM60S-DN20Gen
20138923	AERATION BASIN BLOWER	P & ID NUMBER:L2CC-982-25-PI-1044	AERZEN	DeltaGM60S-DN20Gen
20138924	AERATION BASIN BLOWER	P & ID NUMBER:L2CC-982-25-PI-1044	AERZEN	DeltaGM60S-DN20Gen
20188209	*PC*PUMP, P060-5011, PPB ROTARY FEEDER	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-060-25-PI-5001	*****	NA
20165917	*PC*PUMP, P060-6213, GRANULR RESN FEEDR	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-060-25-PI-6201	*****	NA
20146498	*PC*CONVEYOR, Z060-6220, RESIN/ADDITIVE	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-060-25-PI-6207	*****	NA
20195888	*PC*COMP, C050-3000, CRACKED GAS	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-050-25-PI-3002	*****	NA
20196121	*PC*COMP, C050-6500, C2 RFRG / HEAT PUMP	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-050-25-PI-6501	*****	NA
20131494	*PC*COMP, C050-6000, C3 REFRIGERANT	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-050-25-PI-6001	*****	NA
20196275	ETHYLENE EXPORT COMPRESSOR	P & ID NUMBER:L2CC-055-25-PI-0010-01	*****	NA
20207329	COMP, C079-1062, PROPYLENE UNLDNG	CYLINDER LUBRICATION:DRY-RUNNING   ORIENTATION:VERTICAL   P & ID NUMBER:L2CC-079-25-PI-1004	NEUMAN & ESSER	NA
20155475	*PC*COMP, C063-1000, PRIMARY	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-063-25-PI-1002	GENPOWER	NA
20141699	*PC*COMP, C063-1500, SECONDARY	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-063-25-PI-1502	GENPOWER	NA
20200022	*PC*COMP, C063-6500, PURGE GAS	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-063-25-PI-6502/03/04	GENPOWER	NA
20256376	PKG, Q083-0001A, PLANT & INST AIR COMP	DRIVER:MOTOR   DRIVE TYPE:DIRECT   P & ID NUMBER:L2CC-083-25-PI-0021-01/02   SEAL TYPE:LABYRINTH   SERVICE:AIR   TYPE:SCREW	AERZEN	VMT8
20256377	PKG, Q083-0001B, PLANT & INST AIR COMP	DRIVER:MOTOR   DRIVE TYPE:DIRECT   P & ID NUMBER:L2CC-083-25-PI-0022-01/02   SEAL TYPE:LABYRINTH   SERVICE:AIR   TYPE:SCREW	AERZEN	VMT8
20256380	PKG, Q083-0001C, PLANT & INST AIR COMP	DRIVER:MOTOR   DRIVE TYPE:DIRECT   P & ID NUMBER:L2CC-083-25-PI-0023-01/02   SEAL TYPE:LABYRINTH   SERVICE:AIR   TYPE:SCREW	AERZEN	VMT8
20256381	PKG, Q083-0001D, PLANT & INST AIR COMP	DRIVER:MOTOR   DRIVE TYPE:DIRECT   P & ID NUMBER:L2CC-083-25-PI-0024-01/02   SEAL TYPE:LABYRINTH   SERVICE:AIR   TYPE:SCREW	AERZEN	VMT8
20256382	PKG, Q083-0001E, PLANT & INST AIR COMP	DRIVER:MOTOR   DRIVE TYPE:DIRECT   P & ID NUMBER:L2CC-083-25-PI-0025-01/02   SEAL TYPE:LABYRINTH   SERVICE:AIR   TYPE:SCREW	AERZEN	VMT8
20123293	*PC*COMP, C050-4251, RESIDUE GAS EXPNDR	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-050-25-PI-4206	*****	NA
20207419	*PC*COMP, C050-4252, RESIDUE GAS EXPNDR	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-050-25-PI-4208	*****	NA
20200822	PELLET DRYER	P & ID NUMBER:L2CC-060-25-PI-7001-10	*****	NA
20189716	*PC*DRYER, Z063-7002, PELLET	PM_PRODUCTION_CRITICAL:YES   P & ID NUMBER:L2CC-063-25-PI-7011	CARTER DAY	NA
20150462	QUENCH WATER DISPOSAL PUMP MOTOR		*****	NA
20205949	C055-0001A MAIN DRIVER MOTOR		*****	NA
20210950	MIXER MOTOR		*****	NA
20191118	MZ060-7003 ELECT MOTOR		*****	NA
20191121	MZ060-7007 PELLETIZER MOTOR		*****	NA
20191155	MZ060-7010 ELECT MOTOR		*****	NA
20159294	MZ060-7130 ELECT MOTOR		*****	NA
20132782	HYDRLC PWR UNIT PUMP ELEC MOTOR		BALDOR	NA
20205868	HYDRLC PWR UNIT PUMP ELEC MOTOR		BALDOR	NA
20205795	PROPYLENE UNLOAD COMP MOTOR		*****	NA
20133389	CARBON BED BLOWER MOTOR		*****	NA



# LKO Results and Thoughts on MDaaS Project – Phase 1

## ■ Spreadsheet data equipment (Yellow is cleansed Data 2<sup>nd</sup> pass) Based off of Captured nameplate data

MFR_NAME_1	MFR P/N_1	MFR_NAME_2	MFR P/N_2	MFR_NAME_3	MFR_URL_1	MFR_URL_2	VENDOR_URL_1	VENDOR_URL_2	LONG_DESCRIPTION	CLASS DESCRIPTION	ATTRIBUTE_NAME_1	ATTRIBUTE VALUE_1
SPENCER TURBINE COMPANY	G-1505-SS								CENTRIFUGAL BLOWER;P & ID NUMBER:L2CC-081-25-PI-6011,SERVIC	CENTRIFUGAL BLOWER	P & ID NUMBER	L2CC-081-25-PI-6011
AIRPRO	BCHS445		12113201						ROTARY BLOWER;P & ID NUMBER:L2CC-081-25-PI-6011,SERVICE-CAR	ROTARY BLOWER	P & ID NUMBER	L2CC-081-25-PI-6011
RUCON	FE807/N4-RD270							<a href="https://www.fluidengineering.com.au/breh">https://www.fluidengineering.com.au/breh</a>	ROTARY BLOWER;P & ID NUMBER:L2CC-083-25-PI-0020-04,SERVICE	ROTARY BLOWER	P & ID NUMBER	L2CC-083-25-PI-0020-04
AERZEN	DELTA60S-DN20GEN5							<a href="https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/">https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/</a>	ROTARY BLOWER;P & ID NUMBER:L2CC-982-25-PI-1044,TYPE:AERAT	ROTARY BLOWER	P & ID NUMBER	L2CC-982-25-PI-1044
AERZEN	DELTA60S-DN20GEN5							<a href="https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/">https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/</a>	ROTARY BLOWER;P & ID NUMBER:L2CC-982-25-PI-1044,TYPE:AERAT	ROTARY BLOWER	P & ID NUMBER	L2CC-982-25-PI-1044
AERZEN	DELTA60S-DN20GEN5							<a href="https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/">https://www.aerzen.com/product/blower-units-delta-blower-generation-5/performance/</a>	ROTARY BLOWER;P & ID NUMBER:L2CC-982-25-PI-1044,TYPE:AERAT	ROTARY BLOWER	P & ID NUMBER	L2CC-982-25-PI-1044
ZEPELLIN SYSTEMS GMBH	PFZ 850/320 AC/SS/AC P							<a href="https://www.zeppelin.com/de-en/systems/p/zsd/pfc-process-rotary-feeder-2_ZIMSER_P97">https://www.zeppelin.com/de-en/systems/p/zsd/pfc-process-rotary-feeder-2_ZIMSER_P97</a>	FEEDER;P & ID NUMBER:L2CC-060-25-PI-5001,TYPE:PPB ROTARY PUM	FEEDER	P & ID NUMBER	L2CC-060-25-PI-5001
COFERION	ZPD-800.1-350-AC								FEEDER;P & ID NUMBER:L2CC-060-25-PI-6201,TYPE:GRANULAR RESI	FEEDER	P & ID NUMBER	L2CC-060-25-PI-6201
BW SINCLAIR									FEEDER;P & ID NUMBER:L2CC-060-25-PI-6207,PROCESS CAPACITY:75	FEEDER	P & ID NUMBER	L2CC-060-25-PI-6207
mitsubishi heavy industries	7H-8B								CENTRIFUGAL COMPRESSOR;P & ID NUMBER:L2CC-050-25-PI-3002,R	CENTRIFUGAL COMPRE	P & ID NUMBER	L2CC-050-25-PI-3002
mitsubishi heavy industries	11H-7S						<a href="https://www.mhi.com/group/mco/business/outline/detail/gas_processing">https://www.mhi.com/group/mco/business/outline/detail/gas_processing</a>		CENTRIFUGAL COMPRESSOR;P & ID NUMBER:L2CC-050-25-PI-6501,R	CENTRIFUGAL COMPRE	P & ID NUMBER	L2CC-050-25-PI-6501
mitsubishi heavy industries	7H-6S								CENTRIFUGAL COMPRESSOR;P & ID NUMBER:L2CC-050-25-PI-6001,N	CENTRIFUGAL COMPRE	P & ID NUMBER	L2CC-050-25-PI-6001
NEUMAN & ESSER	1-TZL-190								RECIPROCATING COMPRESSOR;P & ID NUMBER:L2CC-055-25-PI-0011	RECIPROCATING COMP	P & ID NUMBER	L2CC-055-25-PI-0010-01
NEUMAN & ESSER	1TES40-08-03								RECIPROCATING COMPRESSOR;P & ID NUMBER:L2CC-079-25-PI-1004	RECIPROCATING COMP	P & ID NUMBER	L2CC-079-25-PI-1004
MITSUI ENGINEERING & SHIPBUILDING CO.,LTD.	6HG/3-2	GENERAL ELECTRIC		GENPOWER					RECIPROCATING COMPRESSOR;P & ID NUMBER:L2CC-063-25-PI-1001	RECIPROCATING COMP	P & ID NUMBER	L2CC-063-25-PI-1002
MITSUI ENGINEERING & SHIPBUILDING CO.,LTD.	2DPK/2	GENERAL ELECTRIC		GENPOWER					RECIPROCATING COMPRESSOR;P & ID NUMBER:L2CC-063-25-PI-1501	RECIPROCATING COMP	P & ID NUMBER	L2CC-063-25-PI-1502
MITSUI ENGINEERING & SHIPBUILDING CO.,LTD.	6HG/3-2	GENERAL ELECTRIC		GENPOWER					RECIPROCATING COMPRESSOR;P & ID NUMBER:L2CC-063-25-PI-6501	RECIPROCATING COMP	P & ID NUMBER	L2CC-063-25-PI-6502/03/04
AERZEN	VMT8							<a href="https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf">https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-083-25-PI-0021-01/02,	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-083-25-PI-0021-01/02
AERZEN	VMT8							<a href="https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf">https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-083-25-PI-0022-01/02,	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-083-25-PI-0022-01/02
AERZEN	VMT8							<a href="https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf">https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-083-25-PI-0023-01/02,	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-083-25-PI-0023-01/02
AERZEN	VMT8							<a href="https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf">https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-083-25-PI-0024-01/02,	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-083-25-PI-0024-01/02
AERZEN	VMT8							<a href="https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf">https://www.europages.com/filestore/gallery/5f/7a/6706865_f0ce2460.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-083-25-PI-0025-01/02,	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-083-25-PI-0025-01/02
CRYOSTAR SAS	2MTC400/150							<a href="https://cryostar.com/datas-pdf/magazine/30/catalogue/common/data/catalogue.pdf">https://cryostar.com/datas-pdf/magazine/30/catalogue/common/data/catalogue.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-050-25-PI-4206,SERVIC	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-050-25-PI-4206
CRYOSTAR SAS	2MTC400/150							<a href="https://cryostar.com/datas-pdf/magazine/30/catalogue/common/data/catalogue.pdf">https://cryostar.com/datas-pdf/magazine/30/catalogue/common/data/catalogue.pdf</a>	ROTARY COMPRESSOR;P & ID NUMBER:L2CC-050-25-PI-4208,SERVIC	ROTARY COMPRESSOR	P & ID NUMBER	L2CC-050-25-PI-4208
GALA INDUSTRIES	100-DW	KOBE STEEL LTD.							PELLET DRYER;P & ID NUMBER:L2CC-060-25-PI-7001-10	PELLET DRYER	P & ID NUMBER	L2CC-060-25-PI-7001-10
CARTER DAY INTERNATIONAL		THE JAPAN STEEL WORKS, LTD							PELLET DRYER;P & ID NUMBER:L2CC-063-25-PI-7011,SPEED:330 RPM	PELLET DRYER	P & ID NUMBER	L2CC-063-25-PI-7011
WEG	202036ST3QIE082715							<a href="https://static.weg.net/medias/downloadcenter/h91/h14/WEG-w22-three-phase-electric">https://static.weg.net/medias/downloadcenter/h91/h14/WEG-w22-three-phase-electric</a>	AC INDUCTION MOTOR;SPEED:3520 RPM,RATED POWER:20 HP,VOLTA	AC INDUCTION MOTOR	SPEED	3520 RPM
WEG	MGF10407								AC INDUCTION MOTOR;SPEED:445 RPM,RATED POWER:1425 HP,VOLTA	AC INDUCTION MOTOR	SPEED	445 RPM
ABB	AMS-1000-LE-6LBSN								AC INDUCTION MOTOR;SPEED:1200 RPM,RATED POWER:18100 HP,V	AC INDUCTION MOTOR	SPEED	1200 RPM
BALDOR	0108219309-000010	BALDOR	MA44-7362-3350						AC INDUCTION MOTOR;SPEED:1190 RPM,RATED POWER:125 HP,VOL	AC INDUCTION MOTOR	SPEED	1190 RPM
BALDOR		BALDOR	A58-0942-5692						AC INDUCTION MOTOR;SPEED:395 RPM,RATED POWER:350 HP,VOLTA	AC INDUCTION MOTOR	SPEED	395 RPM
BALDOR	0108350160-000030	BALDOR	MA44-7482-2120						AC INDUCTION MOTOR;SPEED:1190 RPM,RATED POWER:125 HP,VOL	AC INDUCTION MOTOR	SPEED	1190 RPM
BALDOR									AC INDUCTION MOTOR;ELECTRIC,SERIES-SUPER-E SEVERE DUTY	AC INDUCTION MOTOR	SPEED	
BALDOR		BALDOR	12H897X731G1						AC INDUCTION MOTOR;SPEED:1770 RPM,RATED POWER:50 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1770 RPM
BALDOR		BALDOR	12H897X731G1						AC INDUCTION MOTOR;SPEED:1770 RPM,RATED POWER:50 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1770 RPM
WEG	201518ST3Q061815							<a href="https://static.weg.net/medias/downloadcenter/h91/h14/WEG-w22-three-phase-electric">https://static.weg.net/medias/downloadcenter/h91/h14/WEG-w22-three-phase-electric</a>	AC INDUCTION MOTOR;SPEED:1765 RPM,RATED POWER:15 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1765 RPM
BALDOR	07N724Y389G1								AC INDUCTION MOTOR;CARBON BED BLOWER	AC INDUCTION MOTOR	SPEED	
BALDOR	ECP84400T-4	BALDOR	P40G3911				<a href="https://www.baldor.com/catalog/ECP84400T-4">https://www.baldor.com/catalog/ECP84400T-4</a>		AC INDUCTION MOTOR;SPEED:1785 RPM,RATED POWER:100 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1785 RPM
WEG	TE1BFOX0							<a href="https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-IEC/General-Purpo">https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-IEC/General-Purpo</a>	AC INDUCTION MOTOR;SPEED:3555 RPM,RATED POWER:25 HP,VOLTA	AC INDUCTION MOTOR	SPEED	3555 RPM
WEG	TE1BFOX0							<a href="https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-IEC/General-Purpo">https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-IEC/General-Purpo</a>	AC INDUCTION MOTOR;SPEED:3555 RPM,RATED POWER:25 HP,VOLTA	AC INDUCTION MOTOR	SPEED	3555 RPM
WEG	02518ST3QIE284TC-W22							<a href="https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-NEMA/Severe-Duty">https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-NEMA/Severe-Duty</a>	AC INDUCTION MOTOR;SPEED:1765 RPM,RATED POWER:25 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1765 RPM
BALDOR	CECP84103T-4	BALDOR	10-0000-0471				<a href="https://www.baldor.com/catalog/CECP84103T-4">https://www.baldor.com/catalog/CECP84103T-4</a>		AC INDUCTION MOTOR;SPEED:2770 RPM,RATED POWER:25 HP,VOLTA	AC INDUCTION MOTOR	SPEED	2770 RPM
WEG	02518ST3QIE284TC-W22							<a href="https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-NEMA/Severe-Duty">https://www.weg.net/catalog/weg/US/en/Electric-Motors/AC-Motors-NEMA/Severe-Duty</a>	AC INDUCTION MOTOR;SPEED:1765 RPM,RATED POWER:25 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1765 RPM
WEG									AC INDUCTION MOTOR;EFFLUENT PUMP	AC INDUCTION MOTOR	SPEED	
WEG									AC INDUCTION MOTOR;EFFLUENT PUMP	AC INDUCTION MOTOR	SPEED	
WEG									AC INDUCTION MOTOR;EFFLUENT PUMP	AC INDUCTION MOTOR	SPEED	
BALDOR		BALDOR	120011 471-000010						AC INDUCTION MOTOR;SPEED:2700 RPM,RATED POWER:2 HP,VOLTA	AC INDUCTION MOTOR	SPEED	2700 RPM
GENERAL ELECTRIC	SKS286SAA434								AC INDUCTION MOTOR;SPEED:885 RPM,RATED POWER:15 HP,VOLTA	AC INDUCTION MOTOR	SPEED	885 RPM
GENERAL ELECTRIC	SKS286SAA434								AC INDUCTION MOTOR;SPEED:885 RPM,RATED POWER:15 HP,VOLTA	AC INDUCTION MOTOR	SPEED	885 RPM
GENERAL ELECTRIC	SKS286SAA434								AC INDUCTION MOTOR;SPEED:885 RPM,RATED POWER:15 HP,VOLTA	AC INDUCTION MOTOR	SPEED	885 RPM
BALDOR	0108051220-000020	BALDOR	M07K629Y929MD						AC INDUCTION MOTOR;SPEED:3510 RPM,RATED POWER:7.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	3510 RPM
BALDOR	0108051220-000010	BALDOR	M07K629Y929MD						AC INDUCTION MOTOR;SPEED:3510 RPM,RATED POWER:7.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	3510 RPM
WEG	TE1BFOXON	WEG	00158EP3E145TC						AC INDUCTION MOTOR;SPEED:1755 RPM,RATED POWER:1.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1755 RPM
WEG	TE1BFOXON								AC INDUCTION MOTOR;SPEED:1755 RPM,RATED POWER:1.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1755 RPM
WEG									AC INDUCTION MOTOR;SPEED:1760 RPM,RATED POWER:3 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1760 RPM
WEG	TEFOKON0000302084								AC INDUCTION MOTOR;SPEED:1760 RPM,RATED POWER:3 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1760 RPM
WEG	TE1BFOXON								AC INDUCTION MOTOR;SPEED:1755 RPM,RATED POWER:1.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1755 RPM
WEG	145TC-W22	WEG	00158EP3E145TC						AC INDUCTION MOTOR;SPEED:1755 RPM,RATED POWER:1.5 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1755 RPM
WEG	203504PHGF122815							<a href="https://static.weg.net/medias/downloadcenter/h67/h2d/WEG-WMO-HGF-50103095-brod">https://static.weg.net/medias/downloadcenter/h67/h2d/WEG-WMO-HGF-50103095-brod</a>	AC INDUCTION MOTOR;SPEED:1788 RPM,RATED POWER:350 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1788 RPM
WEG	203504PHGF122815							<a href="https://static.weg.net/medias/downloadcenter/h67/h2d/WEG-WMO-HGF-50103095-brod">https://static.weg.net/medias/downloadcenter/h67/h2d/WEG-WMO-HGF-50103095-brod</a>	AC INDUCTION MOTOR;SPEED:1788 RPM,RATED POWER:350 HP,VOLTA	AC INDUCTION MOTOR	SPEED	1788 RPM
BALDOR									AC INDUCTION MOTOR;PHASE:3 PH,MELT PUMP,PM PRODUCTION CR	AC INDUCTION MOTOR	SPEED	

# LKO Results and Thoughts on MDaaS Project – Phase 1

## ■ Spreadsheet BOM Data (Yellow is cleansed Data 2<sup>nd</sup> pass) Based on results of web crawl

EQUIPMENT	BOM_COMPONENT_TEXT	SOURCE	SOURCE_FILE_1
20159294	OEM MOTOR;BALDOR,SA 09-0000-0858	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;BALDOR,RA 09-0000-0858	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;LABLE,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;WRNG LBL,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;CONCTN LBL,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;WRNG LBL,BALDOR,DIV-2/NEC	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;U DRV PIN,BALDOR,4 X 1/4 IN	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;TAG-INSTALL-MAINT,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	LUG;COMPRSN;RNG TERMNL,#12-#10 AWG	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;EYEBOLT,BALDOR,1/2-13	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;WSHR,BALDOR,5/8	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	CONNECTOR;TERMNL;LUG,14-4 AWG,1/4 IN	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;FAN CVR,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;LCK WSHR,BALDOR,3/8 IN	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;NUT,BALDOR,3/8-16,FINISHED	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;EXTRNL FAN,BALDOR,PLSTC	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;WDRFF KEY,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;HEX HD SCRW,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;FREP MACH,BALDOR,309 BRG	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;STUD,BALDOR,3/8-16 X 6.44 OAL	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;SEAL,BALDOR,VBXX 309 BRG	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;WSHR,BALDOR,W3917-042 WVY (WB)	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;GRSER EXTENS,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;GRSER EXTEN,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;PIPE CPLG,BALDOR,1/8 IN NPT	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;HEX HD SCRW,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;CAP,BALDOR,PLSTC,FOR GRS FTG	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	FITTING;GRS;1/8 IN,STL,1/2 IN,8000 PSI	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	FITTING;GRS RELF,1/8 IN,PTF,0.25-1 PSI	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;PIPE PLG,BALDOR,1/8 IN NPT SL	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;DRN FTG,BALDOR,304 SS	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;PUPEP MACH,BALDOR	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	OEM MOTOR;CAP SCRW,BALDOR,3/8-16 X 1.75	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf
20159294	FITTING;GRS-STRCT 1/8 IN PTF 11/16 IN	WEB	https://www.baldorvip.com/servlet/productInfoPacket/ECP82332T-4.pdf

## Phase 2 Visibility and Automation

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- **Instead of Passing 3 different types of spreadsheets, Technology Utilized with validated workflows**
  - Highlighted columns indicate where a required field is filled in or remains incomplete
  - Filtered webpage shows live, actual status counts
  - Documentation and Capture linkages on the screen instead of behind the scenes
  - Comments are user name/time stamped
  - Characteristics display type, unit of measure so intelligent decisions/input recognized
    - Equipment linked to BOM (and ability to remove BOM requirement from EQ while still cleansing)
    - BOM linked to Material library



S...	BOM	Comments	Status	Batch	Equipment	Unit	Assigned User	Cat	Technical Object Type	Catalog Prof...	Final Class
1951			Ready for Review		20149726			E	EM	EMACAL	E_EMAC
1952			Approved	1 - Batch 01	20150036			E	EM	EMACAC	E_EMAC
1953			Approved	1 - Batch 01	20152466			E	EM	EMACAC	E_EMAC
1954			Approved	1 - Batch 01	20152475			E	EM	EMACAC	E_EMAC
1955			Approved	1 - Batch 01	20152490			E	EM	EMACAC	E_EMAC
1956			Approved	1 - Batch 01	20152505			E	EM	EMACAC	E_EMAC
1957			Approved	1 - Batch 01	20152555			E	EM	EMACAC	E_EMAC
1958			Ready for Review	1 - Batch 01	20152561		Clayton Welch	E	EM	EMACAC	E_EMAC
1959			Ready for Review	1 - Batch 01	20152569		Clayton Welch	E	EM	EMACAC	E_EMAC
1960			Ready for Review	1 - Batch 01	20155127		Clayton Welch	E	EM	EMACAC	E_EMAC
1961			Ready for Review	1 - Batch 01	20163639		Clayton Welch	E	EM	EMACAC	E_EMAC
1962			Ready for Review	1 - Batch 01	20149811		Clayton Welch	E	EM	EMACAC	E_EMAC
1963			Ready for Review	1 - Batch 01	20140757		Clayton Welch	E	EM	EMACAC	E_EMAC
1964			Ready for Review	1 - Batch 01	20179474		Clayton Welch	E	EM	EMACAC	E_EMAC
1965			Ready for Review	1 - Batch 01	20179537		Clayton Welch	E	EM	EMACAC	E_EMAC
1966			Ready for Review	1 - Batch 01	20213044		Clayton Welch	E	EM	EMACAC	E_EMAC
1967			Cancelled	1 - Batch 01	20217480			E	PB	PBPBOP	E_CBLV
1968			Ready for Review	1 - Batch 01	20217641			E	EM	EMACAC	E_EMAC
1969			Ready for Review	1 - Batch 01	20126536			E	EM	EMACAC	E_EMAC
1970			Ready for Review	1 - Batch 01	20126570			E	EM	EMACAC	E_EMAC
1971			Ready for Review	1 - Batch 01	20131016			E	EM	EMACAC	E_EMAC
1972			Ready for Review	1 - Batch 01	20144713			E	EM	EMACAC	E_EMAC
1973			Ready for Review	1 - Batch 01	20145619			E	EM	EMACAC	E_EMAC
1974			Ready for Review	1 - Batch 01	20152692			E	EM	EMACAC	E_EMAC
1975			Ready for Review	1 - Batch 01	20152788			E	EM	EMACAC	E_EMAC
1976			Ready for Review	1 - Batch 01	20160514			E	EM	EMACAC	E_EMAC
1977			Ready for Review	1 - Batch 01	20164304			E	EM	EMACAC	E_EMAC
1978			Ready for Review	1 - Batch 01	20164395			E	EM	EMACAC	E_EMAC
1979			Ready for Review	1 - Batch 01	20164519			E	EM	EMACAC	E_EMAC
1980			Ready for Review	1 - Batch 01	20179434			E	EM	EMACAC	E_EMAC
1981			Ready for Review		20179431			F	FM	FMAFAC	F_FMAM

MANUFACTURER: BALDOR RELIANCE  
 PART NUMBER: VECP83584T-4  
 EQUIPMENT NUMBER: 20152561

### AC INDUCTION MOTOR

Attribute Description	Attribute Value	UOM	Type
VOLTAGE	480 V	Volt	NUM
VFD APPLICATION			CHAR
SPEED	1780 RPM	rpm	NUM
SERVICE FACTOR	1.15		NUM
RATED POWER	1.5 HP	kw	NUM
PHASE	3 PH		NUM
FULL LOAD CURRENT	2.1 A	Amp	NUM
FREQUENCY	60 HZ	HZ	NUM
FRAME	145TC		CHAR
ENCLOSURE	TE		CHAR
EFFICIENCY	88.5 %		NUM
LUBRICATION METHOD			CHAR

## Pros and Cons/Current Status

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### ■ Manufacturer/Make Model/Class/Characteristics

- This was a great improvement from current master data
  - Result: Corrections made based on field validations

### ■ Material descriptions

- Needed Improvement, incorrect data sourcing or removal of pertinent information needed, descriptive not following LYB taxonomy (Corrected within system with talks among the Material group on expectations)
  - Results: Not many changes to existing material had been made. Minimal enrichment of current data. Not useful. Circed back with LYB load template for PG to use with our rules on taxonomy. Load file given to Technical IT Specialist to review and approve. Much improved process. Still needed improvements from our side on the load file templates we currently use. Could use some refinement. **Significant improvement with the new portal changes – Plans for Ad Hoc Dashboards and Integrated MDaaS Request to MDG CR Automation**

### ■ Hurdles

- Best to use folks familiar to site (Capture count could be higher/quicker)
- Retirees good to use as SME in designated areas
  - Remember – You get what you pay for...

# Conclusion

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## ■ It's a Work in Progress

- Project has 2 PG quality checks
  - Result: Still not thorough enough for confidence level in data to approve (MOC changes), offshore knowledge of material nouns.

## ■ Capture Process Works

- The data captured in field on nameplate data went extremely well
  - Result: Avg. 500 records per day per person = 4-man team

## ■ Stay Tuned

- We are confident we will be complete with Critical Equipment and BOMs by 12/30/23 **Success**
  - **Significant improvement with creation of MDaaS Portal.**