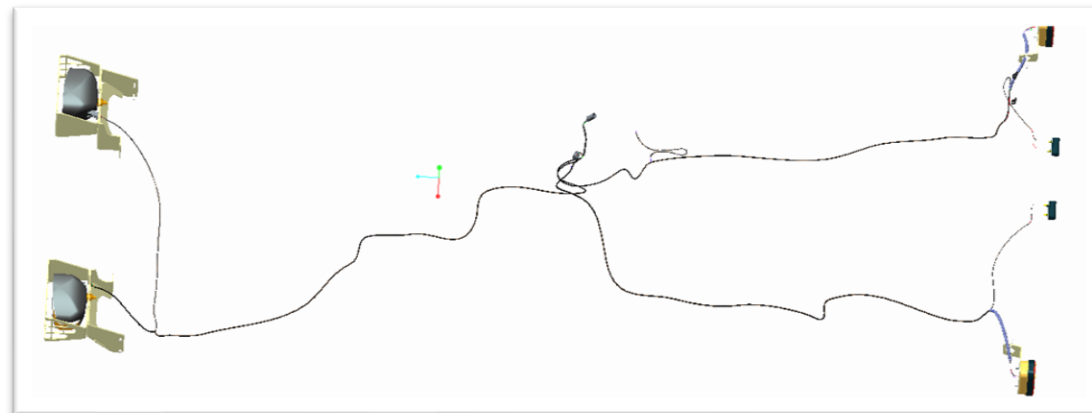
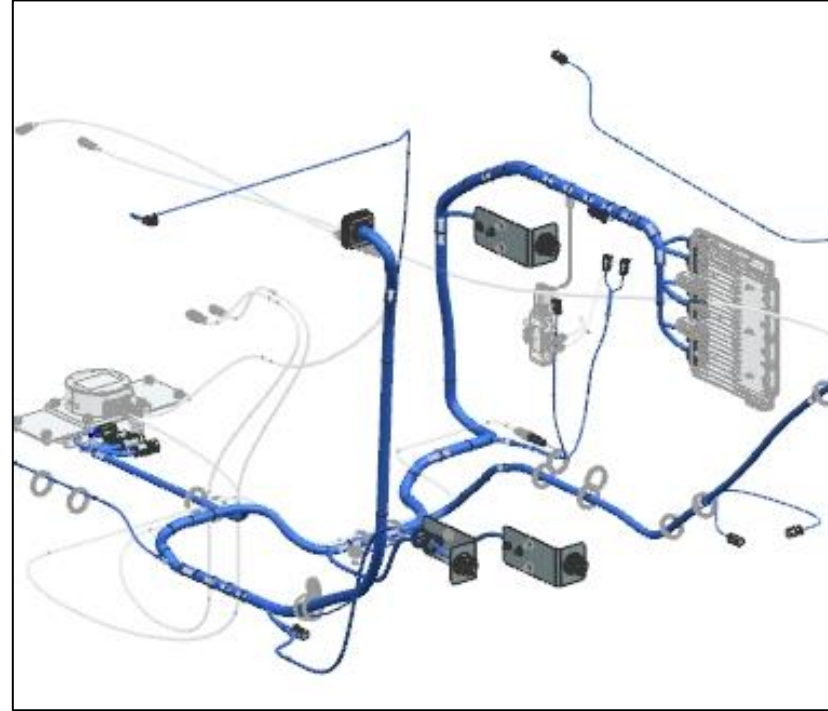
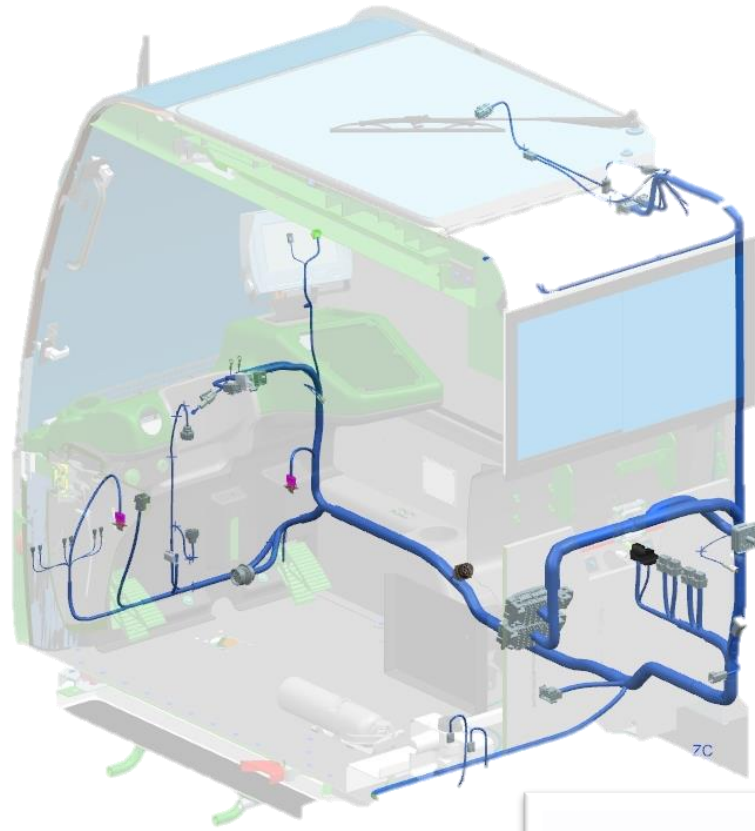


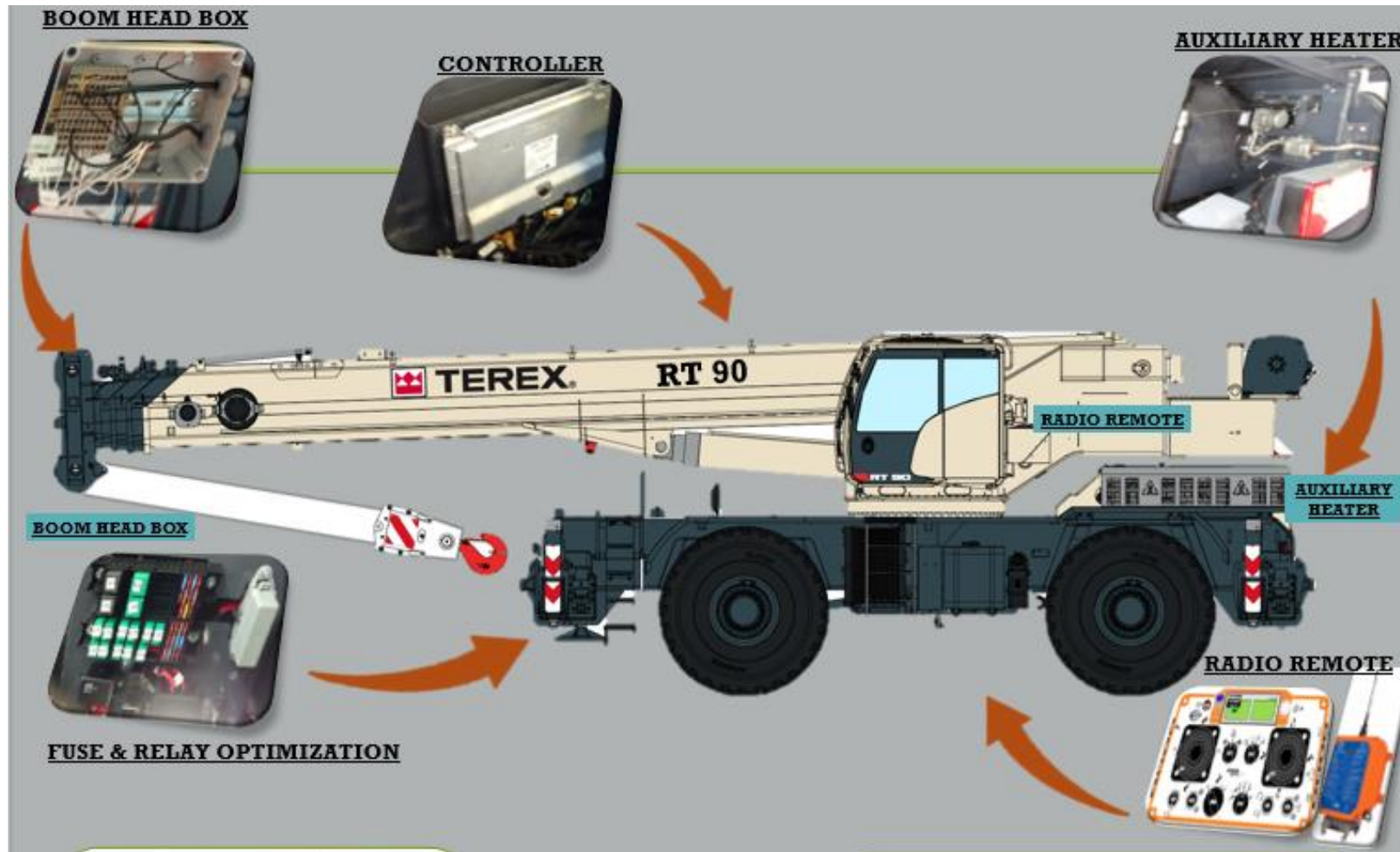
3D Harness Routing



3D Harness routing in for Cranes, Dumpers and Excavators

- Routing of major harness like cab, chassis as well as small jumpers
- Tools used, NX, Inventor and Creo
- Reduces proto design and development time
- Help to get accurate length and layout of harness
- Proto harness build with accurate fitment
- Harness and connector space requirement in constrained location
- Elimination of stress on connector
- Serviceability and accessibility can be verified during design phase
- Improves harness routing by avoiding interference with hydraulic, fuel hoses and other heat surfaces.

Proto support



Global crane proto support

- Electrical system design for Global crane as per ISO standard which is common for Europe and USA
- Integration of CAN controller
- Restructure of CAN layout from Tree topology to BUS topology
- Fuse and relay optimization
- Radio remote integration
- Supplier interaction to finalize the harness & components selection.
- Onsite Proto support and troubleshooting

Production Support

Localisation of Mini Relay



Localisation of Horn



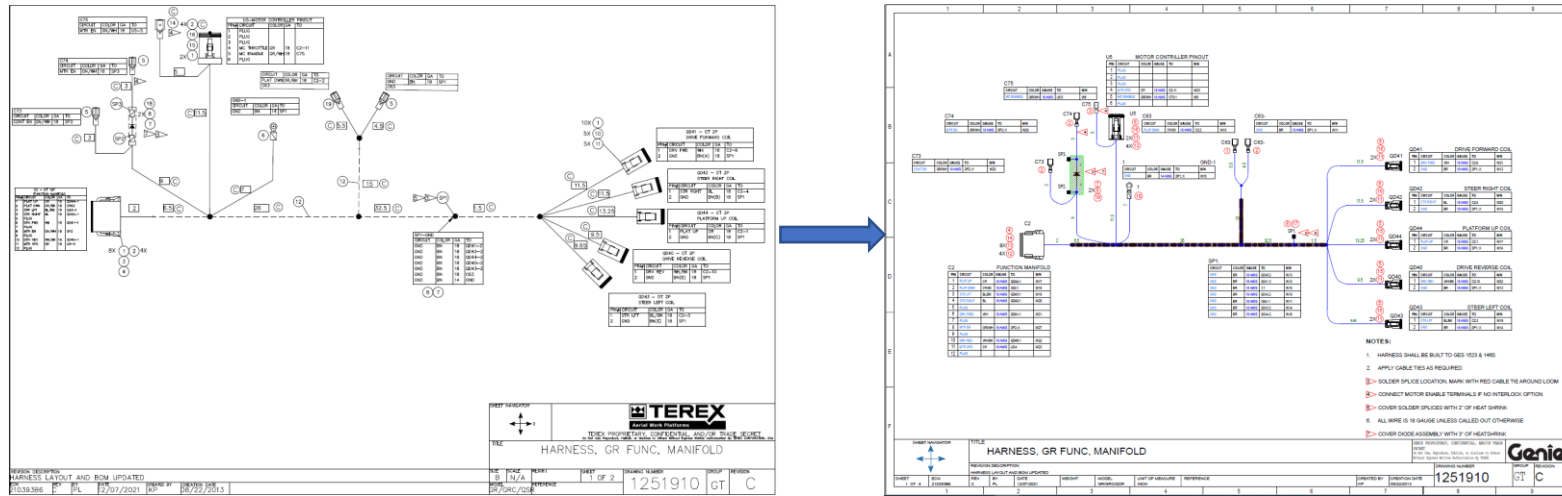
Localisation of electrical components

- Localisation of electrical harness and components like horn, relay, sensors and gauges
- Benchmarking of components
- Validation of components
- Elimination of redundant relays from electrical system
- Reliability and endurance testing
- Selection of components to meet global market
- Interacting and negotiation with supplier
- Optimization of harness to reduce copper usage

Localisation of Electrical Harness



Legacy conversion



Converting legacy drawing in E3 tool

- Creation of E3 database
- Schematic design
- Harness design
- Schematic and harness are logically connected
- Scripts for customisation for report generation like BoM, wire list, connector table, splice table, etc

Output generated in Excel with the help of customised script

BILL OF MATERIAL						
ITEM	AWP P/N	SUPPLIER P/N	DESCRIPTION	SUPPLIER	QUANTITY	DEVICE NAMES
1	55623	DNF18-206FIB-M	TERMINAL FEMALE, 3/16 RED BULK	PANDUIT	1	C63
2	15246	DNF18-250FIB-M	TERMINAL FEMALE COUPLER, 18-22GA	PANDUIT	3	C63, C74, C73
3	19247	DNF18-250FIB-D	TERMINAL MALE COUPLER, 18-22GA	PANDUIT	1	C75
4	73746	DT06-125B-P012	CONN, PLUG 12WAY, BLACK	TYCO	1	C2
5	60424	DT06-2S-P012	CONNECTOR, PLUG 2 WAY, 14-18GA	TYCO	5	QD41, QD40, QD44, QD42, QD43
6	60430	DT06-6S-P012	CONN, PLUG 6WAY, 14-18GA	TYCO	1	U5
7	13063	INS402-B	DIODE, 3 AMP		1	D1
8	81901	J318-412-T	TERMINAL PARALLEL SPICE NONI	PANDUIT	3	SP2, SP3, SP1
9	6578	PLT21-M0	CABLE TIE, 7/32"	PANDUIT	14	6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
10	23221	PV14-38R-D	TERMINAL, SOCKET, DT, 14-18 AWG, NICKEL, 0.095-0.150 OD, DEUTSCH STRIP	PANDUIT	1	1
11	73714	1062-14-0122	TERMINAL, DUMMY PLUG, DT, ROUND, NYLON, 0.092-0.0142 OD, DEUTSCH, WHITE	TYCO	20	C2, QD41, QD40, QD44, QD42, QD43, U5
12	60757	T14017	TERMINAL, DUMMY PLUG, DT, ROUND, NYLON, 0.092-0.0142 OD, DEUTSCH, WHITE	TYCO	8	C2, U5

WIRE-CUT LIST															
W/N	CIRCUIT	COLOUR	FROM		TERMINAL AWP P/N	TERMINAL SUPPLIER P/N	TO		TERMINAL AWP P/N	TERMINAL SUPPLIER P/N	AWP P/N	SUPPLIER P/N	DESCRIPTION	GAUGE	LENGTH
			DEVICE DESIGNATION	PIN			DEVICE DESIGNATION	PIN							
W/25	CONT EN	Green-White	SP2	X			C73	1	19246	DNF18-250FIB-M	21231	6GXL1801-D53	WIRE, 18 GA, GREEN/WHITE, GXL	18 AWG	3
W/21	DRV FWD	White	QD41	1	73714	1062-14-0122	C2	6	73714	1062-14-0122	1541	6GXL1801-9	WIRE, 18GA, WHITE, GXL	18 AWG	80
W/22	DRV REV	White-Black	QD40	1	73714	1062-14-0122	C2	10	73714	1062-14-0122	21230	6GXL1801-90	WIRE, 18 GA, WHITE/BLACK, GXL	18 AWG	78
W/10	GND	Brown	1	1	23221	PV14-38R-D	SP1	X			107936	6GXL1401-1	WIRE, 14 GA, BROWN, GXL	14 AWG	65.5
W/11	GND	Brown	C63-	1	19246	DNF18-250FIB-M	SP1	X			106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	52
W/12	GND	Brown	SP1	X			QD41	X	73714	1062-14-0122	106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	13
W/13	GND	Brown	QD40	2	73714	1062-14-0122	SP1	X			106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	11
W/14	GND	Brown	SP1	X			QD43	2	73714	1062-14-0122	106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	11.15
W/15	GND	Brown	QD42	2	73714	1062-14-0122	SP1	X			106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	13
W/16	GND	Brown	QD44	2	73714	1062-14-0122	SP1	X			106368	6GXL1801-1	WIRE, 18GA, BROWN, GXL	18 AWG	14.75
W/9	MC ENABLE	Green-White	C75	1	19247	DNF18-250FIB-M	U5	5	73714	1062-14-0122	21231	6GXL1801-D53	WIRE, 18 GA, GREEN/WHITE, GXL	18 AWG	5
W/26	MTR EN	Green-White	SP3	X			C74	1	19246	DNF18-250FIB-M	21231	6GXL1801-D53	WIRE, 18 GA, GREEN/WHITE, GXL	18 AWG	3
W/27	MTR EN	Green-White	SP2	X			C2	8	73714	1062-14-0122	21231	6GXL1801-D53	WIRE, 18 GA, GREEN/WHITE, GXL	18 AWG	17.5
W/23	MTR SPD	Green	U5	4	73714	1062-14-0122	C2	11	73714	1062-14-0122	1542	6GXL1801-D5	WIRE, 18 GA, GREEN, GXL	18 AWG	20
W/18	PLAT DWN	Orange-Black	C2	2	73714	1062-14-0122	C63	1	55623	DNF18-206FIB-M	50651	6GXL1801-30	WIRE, 18 GA, ORANGE/BLACK, GXL	18 AWG	55
W/17	PLAT UP	Orange	QD44	1	73714	1062-14-0122	C2	1	73714	1062-14-0122	47101	6GXL1801-3	WIRE, 18 GA, ORANGE, GXL	18 AWG	81.75
W/19	STR LFT	Blue-Black	QD43	1	73714	1062-14-0122	C2	3	73714	1062-14-0122	47039	6GXL1801-D60	WIRE, 18 GA, BLUE/BLACK, GXL	18 AWG	78.15
W/20	STR RIGHT	Blue	QD42	1	73714	1062-14-0122	C2	4	73714	1062-14-0122	47100	6GXL1801-D6	WIRE, 18 GA, BLUE, GXL	18 AWG	80