TEMPO

We Power
The Work of Innovation

Get complex printed circuit board assemblies in days, not weeks.

ITAR
Registered · International Traffic in Arms Regulations

WHY TEMPO

Tempo's software-accelerated manufacturing process merges data, analytics, and automation to deliver new levels of speed, quality, and insights for rapid hardware development.

Whether it's rapid prototyping or low-volume production, Tempo Automation can realize your vision faster and more seamlessly than ever.

Experience Tempo's software-accelerated manufacturing, designed for The Work of Innovation.

Tempo Automation Overview

TURNKEY PCBA MANUFACTURING SERVICES:

- US based manufacturing and assembly in San Francisco
- Low-volume: prototypes 1-250 and production 1-1000
- In-house DFMA
- Smart sourcing of components and fabrication
- In-house assembly

CAPABILITIES:

SOURCING:
- Real time stock visibility of over 8 million components with integrated components suppliers
- Customer specified vendors, consigned components
- Component cross and life cycle tracking

FABRICATION:
- Rigid, rigid-flex and flex
- 3mil trace and space
- 2-40 layers
- Blind, buried, and stacked vias
- HDI, micro-vias, controlled impedance

ASSEMBLY:
- 01005 to 3in x 3in packages
- .3mm pitch BGA and CSP
- Staking, press fit, lead forming

CERTIFICATIONS & REGISTRATIONS:

ASD9100D with ISO 9001:20015
ISO 13485:2016
IPCA610/JSTD0001
JSTD001 Space Addendum
ANSI 2020:2014
IPC Member
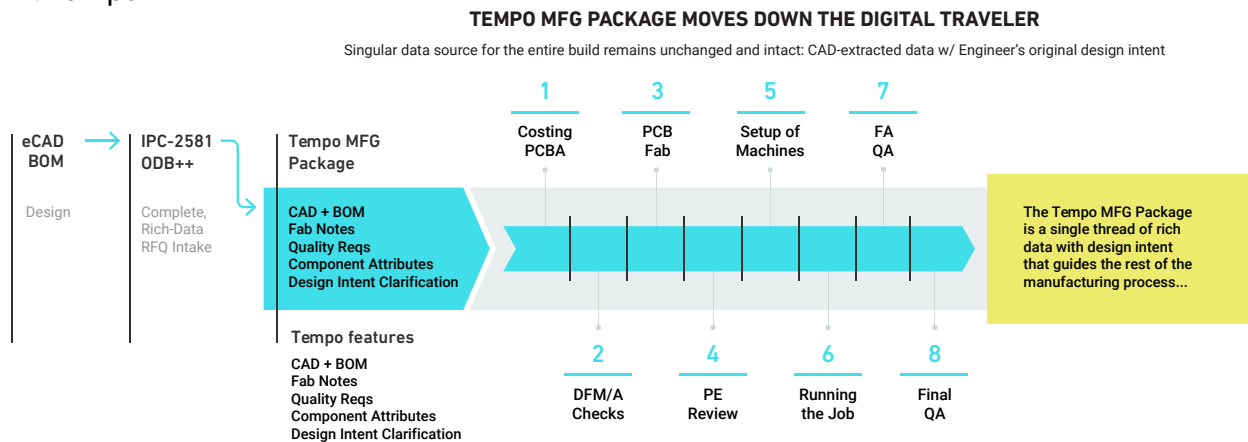SMTA
ITAR registered

ABOUT TEMPO:

WEBSITE & ONLINE QUOTING:
www.tempoautomation.com
ADDRESS: 2460 Alameda Street San Francisco, CA 94103
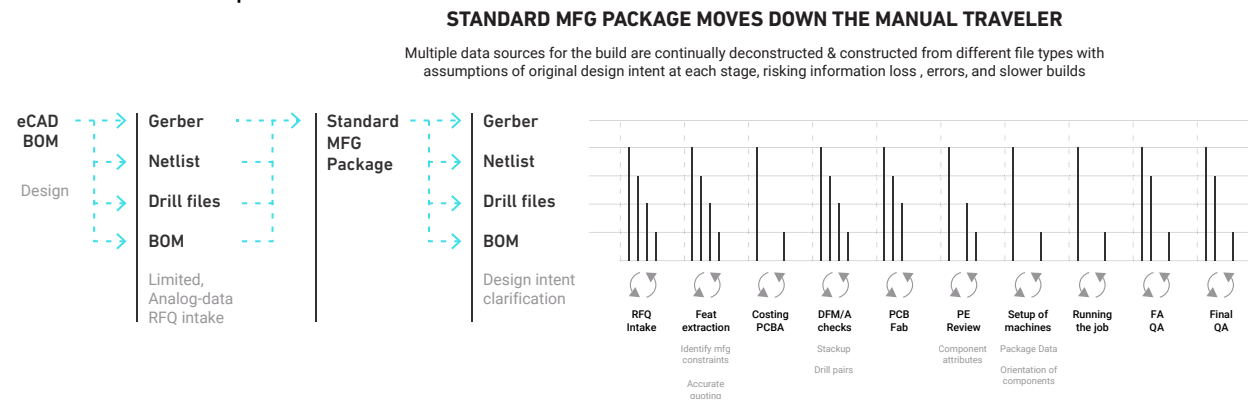**EMAIL:** sales@tempoautomation.com
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Tempo's Software-Accelerated Manufacturing Process

At Tempo

TEMPO MFG PACKAGE MOVES DOWN THE DIGITAL TRAVELER

Singular data source for the entire build remains unchanged and intact: CAD-extracted data w/ Engineer's original design intent

eCAD BOM	IPC-2581 ODB++	Tempo MFG Package
Design	Complete, Rich-Data RFQ Intake	

CAD + BOM
Fab Notes
Quality Reqs
Component Attributes
Design Intent Clarification

1 Costing PCBA
3 PCB Fab
5 Setup of Machines
7 FA QA

2 DFM/A Checks
4 PE Review
6 Running the Job
8 Final QA

Tempo features
CAD + BOM
Fab Notes
Quality Reqs
Component Attributes
Design Intent Clarification

The Tempo MFG Package is a single thread of rich data with design intent that guides the rest of the manufacturing process...

Traditional MFG process

STANDARD MFG PACKAGE MOVES DOWN THE MANUAL TRAVELER

Multiple data sources for the build are continually deconstructed & constructed from different file types with assumptions of original design intent at each stage, risking information loss , errors, and slower builds

eCAD BOM	Gerber / Netlist / Drill files / BOM	Standard MFG Package	Gerber / Netlist / Drill files / BOM
Design			Design intent clarification
Limited, Analog-data RFQ intake			

RFQ Intake — Feat extraction (Identify mfg constraints / Accurate quoting) — Costing PCBA — DFM/A checks (Stackup / Drill pairs) — PCB Fab — PE Review (Component attributes) — Setup of machines (Package Data / Orientation of components) — Running the job — FA QA — Final QA
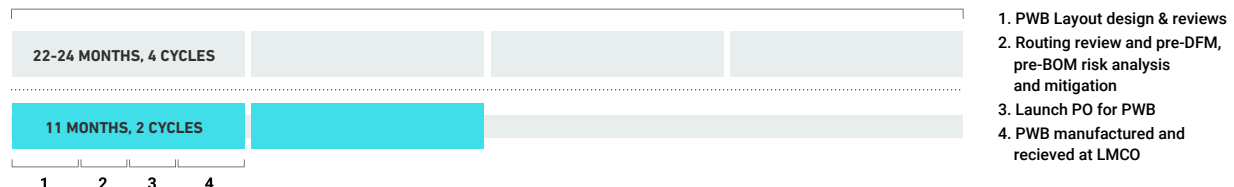
Story of Agility: Lockheed Martin & Tempo

DESIGNED SMARTER

Design team modularized and targeted different regions of the board to prototype early and often in the development process.

BUILT FASTER

What would have taken nearly two years to get a production system developed with a traditional contract manufacturer got reduced to an 11 month timeline.

Tempo Augmented Process CCA Design – Updates

22-24 MONTHS, 4 CYCLES

11 MONTHS, 2 CYCLES

1 2 3 4

1. PWB Layout design & reviews
2. Routing review and pre-DFM, pre-BOM risk analysis and mitigation
3. Launch PO for PWB
4. PWB manufactured and recieved at LMCO

> "We're entering a new era of growth, and the future of electronic design at Lockheed Martin is digital. We chose to work with Tempo Automation because they have focused their technology from the beginning to embrace software automation on both the front- and back-end, intended to create a digital thread from design to delivery."
>
> **Jeff Wilcox**, Vice President of Enterprise Transformation, *Lockheed Martin*