How They Did It:
From Idea to Mass Production in a Week.

Mar 19

Morning — Ford learned from the Mayo Clinic that there was a shortage of PPE and help was needed to protect first responders

Protective equipment task force created

Mid Day — Key PPE equipment is identified, relevant suppliers are identified and contacted, engineering and program managers engaged

4:30pm — First meeting to discuss the face shield production request

Mar 20

Morning — Designers and prototypers in Detroit and Palo Alto labs convene to review and refine shield concepts

Representatives from Detroit hospitals identified and consulted on their shield needs

Mar 21

Morning — Open-source UW/Delve design identified as the "go" candidate

Original design team contacted, refinements to design are developed with input from hospital representatives

Troy Design and Manufacturing (TDM) identified for high volume production location

First prototype completed, RCO Engineering engaged to do initial prototype production run

Afternoon — Prototype batch complete and tested and approved by hospital rep. Elapsed time: 72 hours from initial request

7:30pm–9:30pm — Suppliers identified (Creative Foam, YKK, Hope Global)

Mar 22

Morning — Material planning and logistics engaged to plan inbound and outbound deliveries

Suppliers begin shipping/overnighting materials to production locations

2:30pm — Prototype material from Creative Foam picked up in Brighton (half way from plant in Fenton) to review with DMC and HFHS representatives

3:45pm — D-Ford employees Will Brick and Jeff Sturges and launch manager Howard Lew meet in Eastern Market with DMC rep Erin Brennan and HFHS rep Brianna Riley for review and "OK to use"

Mar 23

Morning — Mylar shield component supply constraint is addressed when open source design originator (Lennon Rodgers) identifies supplier in Wisconsin capable of producing 30,000 units per hour if needed

7:00am — Creative Foam fabricates high-speed cutting tools for foam and mylar parts, begins production at 8am

Purchasing fast tracks suppliers into supply base system

Basic production line set up at RCO and first 1,000 face shields produced by close of business

Evening — FDA and Ford legal approval of production shields

Contingency planning started, alternate designs validated in case of material shortages

Mar 24

Morning — First 5,000 (1,000 RCO and 4,000 TDM) face shields deliveries arrive at Metro Detroit hospitals

Production kickoff begins in TDM

Afternoon — Supply of elastic bands identified as not sufficient for full speed production, alternate design engage, additional sources of elastic pursued

PRODUCTION 6,500 DAILY TOTAL

Mar 25

PRODUCTION 4,800 DAILY TOTAL

Morning — Production continues

8:00pm — Alternate head strap design required, closures engineering manager engaged to identify Cooper Standard as possible supplier

Mar 26

4:00am — Cooper Standard opens doors for team to produce rubber parts for head strap contingency design

New rubber components integrated into new assembly process and prototype parts delivered to DMC for approval

8:00am — Alternate strap design reviewed and approved

Production continues

Mylar supply exhausted, just-in-time re-supply runs set up to pick up parts as it comes off the cutting line

PRODUCTION 12,000 DAILY TOTAL

Mar 27

PRODUCTION 32,000 DAILY TOTAL

Morning — Supply of rubber parts exhausted, two new contingency designs engaged

Alternate supply of non-latex rubber strips from Alliance Rubber are secured with a plan to produce 1M parts

Secondary design using Rubber EPDM tube and push pins approved – removes need of staples – 3 electric staplers have been burned out from rate of use

Mar 28

Morning — TDM arranges freight pickup for 6pm in Arkansas to pick up Alliance parts built that day to support Sunday production (3/29)

PRODUCTION 41,000 DAILY TOTAL

Mar 29

PRODUCTION 41,000 DAILY TOTAL

Morning — 200K head band parts from Alliance arrive at TDM for use at 9:00am

Mar 30

PRODUCTION 93,511 DAILY TOTAL

Morning — Production ramp up continues

4:00pm — ITM confirms component capacity for up to 2.4 million units

Apr 5

PRODUCTION 225,000 DAILY TOTAL

Delivered more than 1 million face shields

Ford