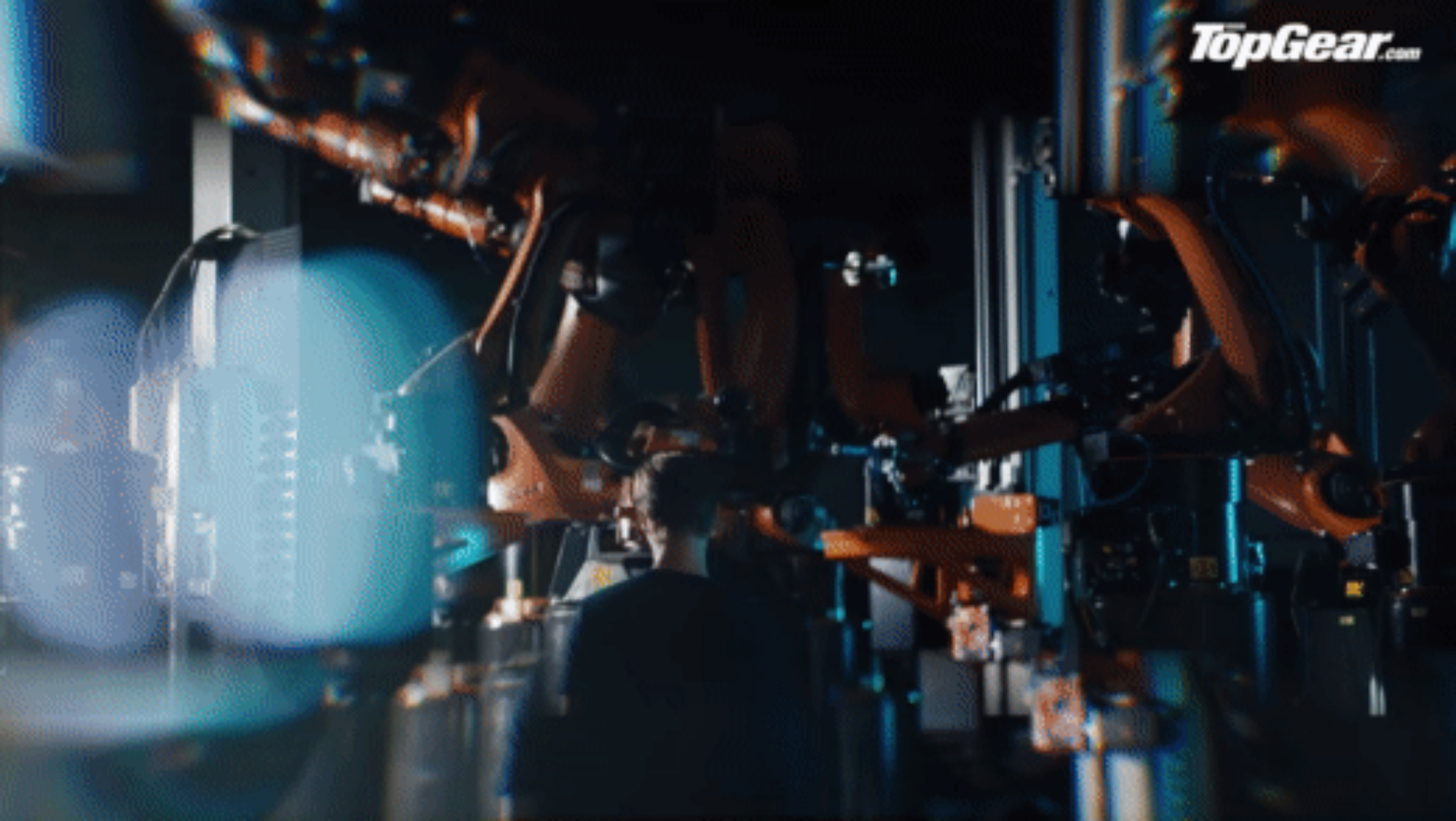


Additive manufacturing and additive unit

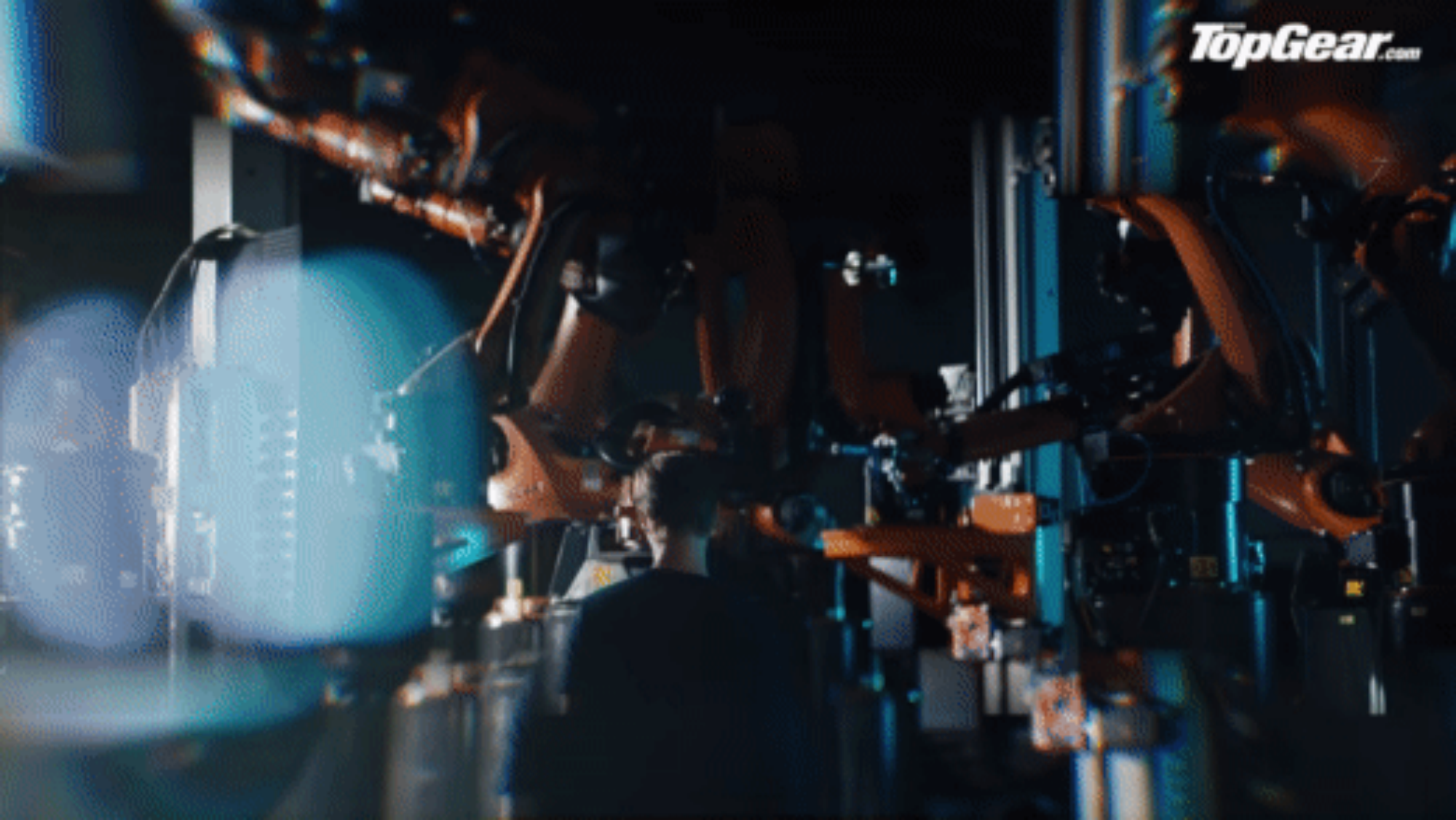
- Czinger built a vertically integrated design and production system
 1. Standard chassis but with computer optimized components
 2. Can 3D print aluminum parts as fast as casting
 3. Parts moved a few meters to robots which produce in a very small footprint
- Very flexible manufacturing system
 - Changing cars just means changing programs



AM and AU







AM and AU

Additive manufacturing and automated units

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Generative Design

Evolving Parts

- Uses computation and evolution-like processes to find good designs
- The human provides the constraints and goals
 - The computer looks for good parts
 - Designer chooses from a set of suggestions
- The parts often come out looking “organic”
- Couldn't be made until 3D printing (additive manufacturing) advanced



Heat Exchanger by Hyperganic