RNA Automation Ltd
Feeding Technology for Industrial Automation

RNA
We handle it.

Digital Bowl Feeders

Digitally validated, AI-optimised bowl feeders designed for reproducible, high-performance feeding.

RNA's Digital Bowl Feeders represent the next generation of feeding technology — a truly unique innovation on a global scale. Using AI and 3D Geometric Deep Learning, RNA can create a digital twin of the feeding system, allowing it to be simulated, tested, and optimised virtually before the physical system is built.

Unlike conventional bowl feeders - where behaviour is finalised through physical trial-and-error during commissioning - a **Digital Bowl Feeder** is engineered using a **digital twin approach**. Both the feeding concept and the vibration behaviour are defined digitally in advance, resulting in a system that is more predictable, easier to commission, and easier to reproduce.

A Digital Bowl Feeder is a vibratory bowl feeder that has been designed, validated, and tuned using digital simulation before it is built.

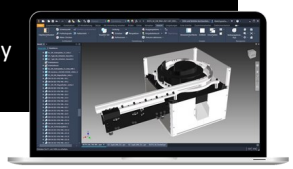
Before any hardware is manufactured, the sorting solution is tested, verified, and approved using **Digital Feeder™ simulation**. Even at an early concept stage, this allows RNA to determine whether a component can be fed reliably, providing confidence that the final solution will perform as intended in real operation and can be reproduced consistently across builds.

Many RNA bowl feeders are already digitised and can be tailored precisely to the application. The RNA Digital Bowl Feeder features a sorting track (custom tooling specific to the material), which can be **CNC-milled** or **3D-printed**. This tooling is developed after detailed simulation and assessment of the bulk material.

Using **multiphysics simulation combined with 3D Deep Learning AI**, the optimal tooling geometry is calculated with high precision. This ensures close alignment between the digital simulation of the feeding process and the actual, reproducible behaviour of the components in operation, resulting in stable, predictable transfer from bulk material to the linear outfeed.

Why Choose a Digital Bowl Feeder?

- Digitally Validated Before Production
- Reproducible & Consistent Performance
- AI-Optimised Sorting Geometry
- High Precision Manufacturing
- Flexibility for Part Variants & Materials
- High Performance & Reliability
- Shorter Lead Times & Cost Efficiency

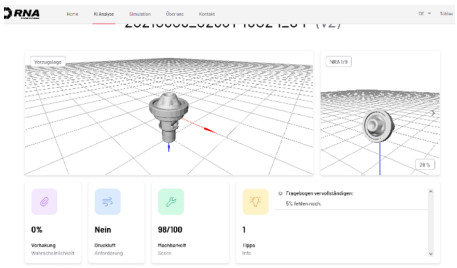


RNA's digital capabilities are applied not only to advanced systems, but also to conventional feeding technologies - combining proven mechanical design with modern digital intelligence to deliver reliable, reproducible bowl feeder solutions.

- simulated before being built
- digitally reproducible
- designed with AI & 3D Deep Learning
- equipped with CNC-milled or 3D-printed tooling, and
- delivered as a complete, real physical system.

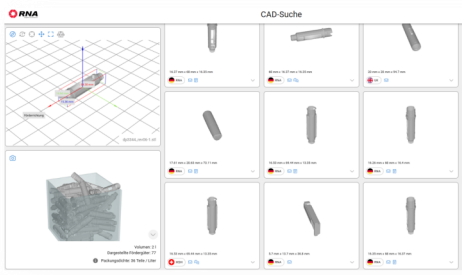
Digital Solutions Behind Every Digital Bowl Feeder

Every Digital Bowl Feeder is supported by RNA's proven digital simulation tools, which enable predictable, reproducible system behaviour from concept through to operation.



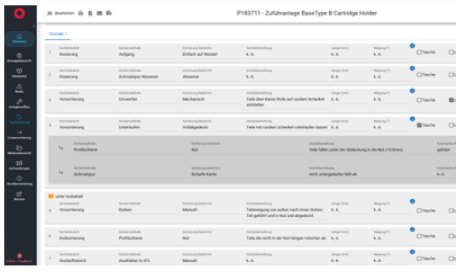
Upload CAD-Model of customer

- Determination of preferred position
- Feasibility study (performance parameters (parts/min.), recommended system concept, rough system layout with dimensions)
- First risk evaluation



RNA-internal solution finding

- AI-based identification of references through access to over 50 years of feeding system technology expertise
- Automated hopper simulation
- Automated evaluation of preferred position
- System design development

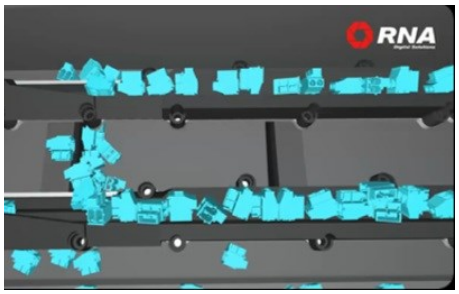


Sorting concept detailing

- Semi-automatic sorting concept creation
- Risk assessment
- Effort assessment
- Semi-automatic design derivation

Digital tuning of drive units

- All RNA drives can be digitally tuned via our web platform - for you too!
- Optimal balancing and ideal drive design right from the design phase
- No trial and error in production



Digital twin in feeding systems

- 100% reproducibility
- Testing the function of alternative workpieces
- Digital performance assessment
- Separation process
- Accumulation behaviour
- Parts locking & stress test

Part of RNA's Digital Feeding Systems

Digital Bowl Feeders are a key element of Digital Feeding Systems by RNA Automation - a portfolio of feeding solutions that are digitally engineered, validated, and optimised before build.

- Vibratory bowl feeders
- Linear feeders
- Step feeders
- Centrifugal feeders
- Integrated feeding and handling systems

How does it work?

Digital Solutions complement RNA engineering
Concept • Feasibility • Digital Validation • Design for Manufacturing

System Delivery
Motion Tuning • Build • Commissioning • Lifecycle

01 Project Inputs & Analysis

- Part CAD & requirements
- Orientation & output
- Constraints & environment
- Feeder type selection

02 Digital Solution & Feasibility

- Sorting concept
- System-level simulation
- Feasibility validation

03 Mechanical Design & Optimisation

- Final bowl & track design
- Tooling definition
- Layout finalised

04 Digital Solution & Validation

- Track & tooling geometry
- Validation & Commissioning
- Feed rate validation

05 Digital Motion

- Drive & vibration simulation
- Spring & frequency tuning
- Optimise running parameters

06 Build & Commission

- CNC or 3D-print the bowl selection & tooling
- Physical system build
- Reduced on-site tuning
- Predictable behaviour

07 Operation & Lifecycle

- Reproducible systems
- Service & relining
- Change tooling
- Digital documentation reuse

RNA Automation Ltd
Unit C Castle Bromwich Business Park, Tameside Drive, Birmingham B35 7AG, UK
Tel: +44 (0)121 749 2566 • Fax: +44 (0)121 749 6217
Email: sales@rnaautomation.com • Web: www.rnaautomation.com