

Digital Solutions

Shorter lead times, higher availability and more safety with simulation & AI.

Digital Solutions is RNA's specialised consultancy and simulation service. We have moved beyond traditional trial-and-error manufacturing to a "Digital-First" methodology.

By leveraging 3D Geometric Deep Learning and Multiphysics Simulation, we provide virtual validation of your entire automation process. We don't just build equipment; we deliver a verified digital blueprint—a Digital Twin—that guarantees your parts will feed, orient, and move exactly as required before a single component is manufactured.

In today's fast-moving world of custom automation, reducing shopfloor rework is no longer optional - it's essential. RNA Digital Solutions help engineers validate, optimise, and refine feeding and handling systems before they are built, saving time, cost, and iteration.

To achieve this, RNA has developed proprietary simulation tools that allow designs to be tested digitally at an early stage. Using **Digital Feeder™** and **Digital Motion™**, RNA engineers evaluate system functionality, analyse part behaviour, and optimise the dynamic performance of drive units under real operating conditions. Structural-mechanical validation using FEM analysis further reduces the risk of premature failure during operation.

The simulation tools **Digital Feeder™** and **Digital Motion™** are developed entirely in-house and are proven in daily engineering practice across a wide range of feeding and handling applications.

Digital Feeder™ is used to evaluate feeding and handling systems, making it particularly valuable when developing new or complex products where physical trials would be time-consuming or costly.

Digital Motion™ calculates the running behaviour of RNA drive units, enabling smooth, stable, and repeatable system performance — eliminating the traditional trial-and-error approach on the shopfloor.

Advantage of Use

- Reduced Risk Early in the Project
- Design for Manufacturability
- Reproducible Outcomes
- Faster Development & Commissioning
- Expert Consultation



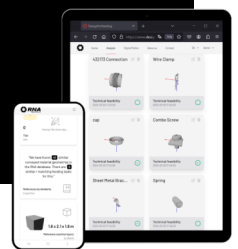
Key focus

- Simulating the entire feeding solution
- Analysing if a workpiece can be fed reliably
- Determining optimal sorting track/tooling geometry
- Using AI + 3D Deep Learning to find suitable design solutions
- Enables pre-production testing and repeatability
- Helps eliminate production site trial-and-error loops before build



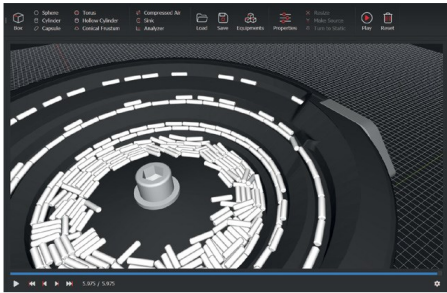
RNA's Digital Solutions apply **digital simulation, analysis, and engineering expertise** to help customers:

- Validate feeding concepts before build
- Design for manufacturability
- Reduce trial-and-error
- Improve reproducibility and long-term performance



Artificial Intelligence & Simulation

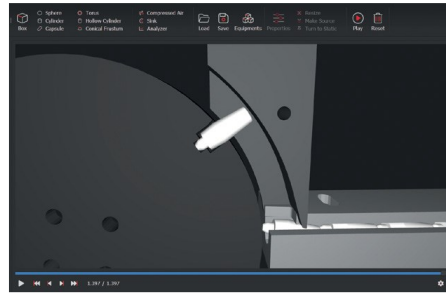
Early detection & elimination of malfunctions



Feeding Systems

Evaluate your feeding systems

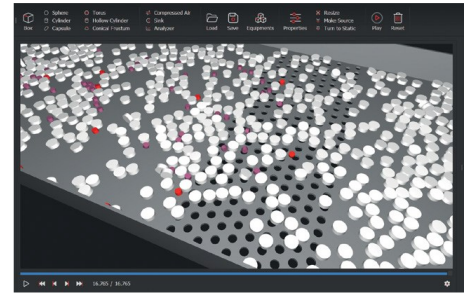
Many feeding technology manufacturers rely on RNA components. They can now use simulation studies to evaluate their designs and digitally adjust the drive units before the system is built. The commissioning time is shortened, and rework is avoided.



Separation

Interface to the separation unit

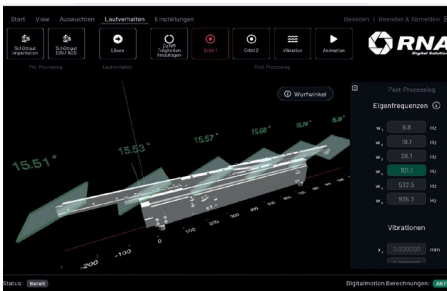
Customers often buy feeding systems with a free outlet and develop the separation unit themselves. This critical interface between the linear feeder and the customer's separation unit can be reviewed with simulation, reducing the commissioning time on the Shop Floor.



Product Development

Build less prototypes

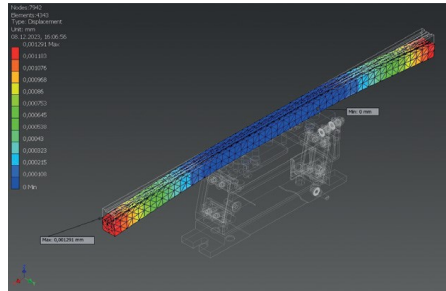
Special machine builders are faced with various evaluation tasks when developing new products: Does the parts-pusher work as planned? Is there a parts jam at the interface or do the parts feed in correctly? Can the position be accurately detected with a sensor? All these questions can be answered easily with simulation.



Training Material

Upgrade your training material

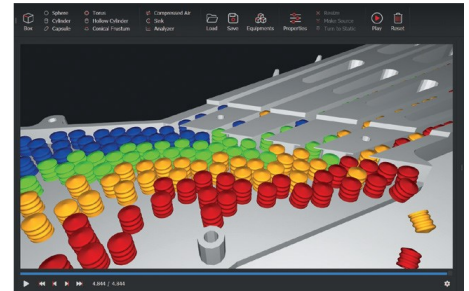
Employees are a company's most valuable asset. In times when it is hard to find skilled personnel, it is of utmost importance to educate new colleagues in the best possible way. Simulation is a key contributor when it comes to building up experiences and understanding technical contexts quickly.



FEM

Make sure your design lasts

Downtimes due to broken mechanical components are avoidable. FEM can be used to assess whether the machine can withstand the dynamic loads in everyday production as early as the design phase. The probability of premature failure can thus be minimised.



Tolerance Analysis

Increase your process stability

The OEE of the real system depends heavily on the quality of the parts to be handled. Simulation studies can be used to determine which tolerances on the feeding parts are still permissible without impairing the process stability of the feeding system.

How does it work?

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

System Delivery
Motion Tuning • Build • Commissioning • Lifecycle

01	02	03	04	05	06	07
Project Inputs	Digital Solution	Mechanical Design	Digital Feeder	Digital Motion	Build & Commission	Operation & Lifecycle
<ul style="list-style-type: none"> > Part CAD & requirements > Orientation & output > Constraints & environment > Feeder type selection 	<ul style="list-style-type: none"> > Sorting concept > System-level simulation > Feasibility validation 	<ul style="list-style-type: none"> > Final bowl & track design > Tooling definition > Layout finalised 	<ul style="list-style-type: none"> > Track & tooling geometry > Validation & Commissioning > Feed rate validation 	<ul style="list-style-type: none"> > Drive & vibration simulation > Spring & frequency tuning > Optimise running parameters 	<ul style="list-style-type: none"> > CNC or 3D-print the bowl selection & tooling > Physical system build > Reduced on-site tuning > Predictable behaviour 	<ul style="list-style-type: none"> > Reproducible systems > Service & relining > Change tooling > Digital documentation reuse