# ADDITIVE INTELLIGENCE **SOFTWARE SUITE** PREP, SIMULATE, PRODUCE, MONITOR



AddUp's FormUp and BeAM ranges are compatible with a wide range of advanced software solutions, designed to speed up your production processes.



# A COMPLETE SOFTWARE SUITE FOR ADDUP MACHINES

Software is at the heart of all additive manufacturing processes. It is the key to performance, flexibility and precision. From part preparation to simulation, monitoring and production, every link of the AddUp digital chain offers a high level of performance with complete ease of use.

Both the FormUp and BeAM ranges are compatible with a wide range of real-time control solutions, designed to improve confidence in your production processes.

- Powerful, simple to use, open preparation software
- Real-time and historic process data in dashboard view
- Full traceability for quality assurance and confidence in part quality
- Analyzes layering and proactively corrects faults during production
- Real-time validation and quality control during production

# TAKE CONTROL OF YOUR MACHINE FROM THE MACRO, MESO, AND MICRO SCALES



Macro Machine Level



Micro Pool level

# **CREATE. TRACK. REACT.**



## **ADDUP MANAGER: WHERE IT ALL STARTS**

AddUp Manager is the production preparation software dedicated to FormUp machines. Its industrial design enables rapid preparation of complex trays, while offering advanced traceability tools and robustness at all times.

Its powerful, extremely versatile trajectory generation engine makes it possible to generate advanced single and multi-laser strategies in seconds. For the most demanding applications, adapt fusion strategies according to production height to optimize surface finish or productivity in specific areas.

- Real-time visualization of trajectories: no need to wait hours to check the strategies used
- Adaptive layer height: apply different deposit thicknesses and strategies according to build height

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Precise calculation of manufacturing time, available by layer, part and production

- 1. Import your part
- 2. Position parts using advanced nesting options
- 3. Assign specific or single parameters
- 4. Create build file and print!

All of AddUp Manager's features are easily accessible. Assisted modes facilitate rapid tray preparation and can automatically adjust production IDs and recipes, including:

- Strategy tree for creating fusion patterns
- > Welcome Wizard with ready-to-use templates
- Customizable, shareable recipe library

After preparation, it's essential to keep an exhaustive record of every element. AddUp Manager offers a Preparation Report function detailing:

- > Preparation conditions (name, version, date)
- Unique build identifier
- Part positions and assigned strategies
- Pre part and overall load rates for each head
- Nesting images







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# ADDUP NTWIN



While our customers prefer utilizing the native power of AddUp Manager, NTwin is the option that lets you take advantage of the powerful AddUp slicer, directly from your go-to CAD software. This means you can benefit from total digital continuity, from design to production preparation, without needing any file format conversions!

### PREP > SIMULATE > PRODUCE > MONITOR

## DISTORTION SIMULATION OPTION AdditiveLab@

This addon is an option integrated into the heart of the AddUp Manager workflow process to visualize, anticipate, and correct distortion phenomena. Anticipate distortions at all different stages of production: during printing, platform release, and platform cutting.

#### **Mesh Generation**

Set a coarse mesh to identify potential high risk areas in only a few minutes, or use high detailed models for razor sharp results.

#### **Data Preparation**

Select your part material and platform from the included list, or create your own.

#### **Starting the Simulation**

Launch simulation calculations to get information about displacements, stresses, strains, accumulated equivalent plastic strain results, and a recoating collision risk analysis.

#### **Data Processing**

Creates a counter-deformed part and is essential for the production of a dimensionally accurate part, which can be used to visualize associated deformations.





# **NCORE:** THE BRAIN BEHIND THE MACHINE

NCore encompasses all software running on AddUp's PBF FormUp machines. Broken down into various modules essential for effectively executing your projects, NCore is based on a robust, industrial foundation, capable of managing your most complex projects.

With AddUp's open, modular software architecture, numerous modules can be seamlessly integrated to enhance your machine's functionality. This includes features like generating production reports, MQTT or OPC-UA connectivity, and accessing real-time control options, among others, all without affecting the core services of your FormUp.



#### **Key Features**

- Start preparation cycles
- > Production oriented workflow
- > Check geometrical and time progression of builds
- Follow main machine parameters
- > Parameter chart visualizations
- > 3D build progression
- Build process photo/video
- > XYZ Calibration tables automatically sent to NCore
- Wireless Power Calibration
- Camera calibration
- > UID (Unique IDentifier) integration

# **ADDUP DASHBOARDS: QUALITY ASSURANCE**

Dashboards is the monitoring software that comes as an option with AddUp machines. It collects all production data in real time and presents it a dashboard tailored to the needs of different users.

AddUp Dashboards receives data via MQTT and OPC-UA connections, making it compatible across Industry 4.0 platforms.

#### **Real-Time & Historical Data at your Fingertips**

AddUp Dashboards software stores data from every build and the historical data is available for viewing with just a simple click. Using this software, users can see a complete history of each machine including basic information like how many builds have been completed all the way down to each individual layer for any given print. This historical data is particularly useful for machine status and maintenance purposes to keep your machine running at optimal performance.

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#### **Status Progress at a Glance**

Get a birds-eye view of your fleet of machines.

Collect and display data for an unlimited number of machines, regardless of their physical location, and display a summary in dashboard view.

#### **Customized to Meet Your Needs**

Powered by Grafana, the most advanced data visualization solution available, AddUp Dashboards offers over 25 data visualization styles that can be customized to meet the needs of specific users. Panels can easily be moved, resized, duplicated, and edited to show whatever information is most important.

The software also includes an alerting system with a custom threshold definition. This gives users the ability to be informed when a machine status changes and address any potential faults before they become a problem.



Correction

## **RECOAT MONITORING**

The layering phase is a key step in the production of metal parts production. Any defects can cause melting problems or lead to a production interruption.

Our recoat monitoring analyzes layer quality and proactively corrects faults during production. Operating on a closed loop principle, the software checks the homogeneity of the powder bed and reveals the possible presence of deposits or lack of powder. The algorithms developed by AddUp allows users to assign a score and trigger a correction sequence when necessary.



After Melting

After Recoating with Issue Detected

# **MELTING MONITORING**

The most advanced solution in AddUp's Monitoring Suite provides visibility at the microscopic scale. Get real-time feedback on part quality and characterize defects without destroying your parts.

Adding melting monitoring to your FormUp 350 enables high frequency measurement of parameters during the printing process, such as:

- Laser spot position
- Actual power delivery
- Melt pool emissivity

Easily create proof of concepts and unique one-off parts without needing to use non-destructive testing methods. In mass production scenarios, melting monitoring can facilitate the creation of a comparison footprint across all future production runs.

Key features include:

- Recipe optimization
- Melting assessment
- Traceability
- Zone of interest for NDT



# UNLOCK THE FULL POTENTIAL OF DIGITAL MANUFACTURING



Additive Manufacturing is no small feat. It's technology that handles massive scales, crafting intricate paths with sheer precision. Think millions of vectors, navigating at lightning speeds, guided by a fine "pencil" hair-width diameter. A symphony of components - platforms, lasers, airflow - all dancing together to bring your vision to life.

Achieve seamless synergy between these components and unlock the full potential of digital manufacturing with complete, flexible end-to-end software solutions by AddUp.

LET'S TALK







in AddUp Solutions

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