

Company Profile
Shaping the Future
of Manufacturing



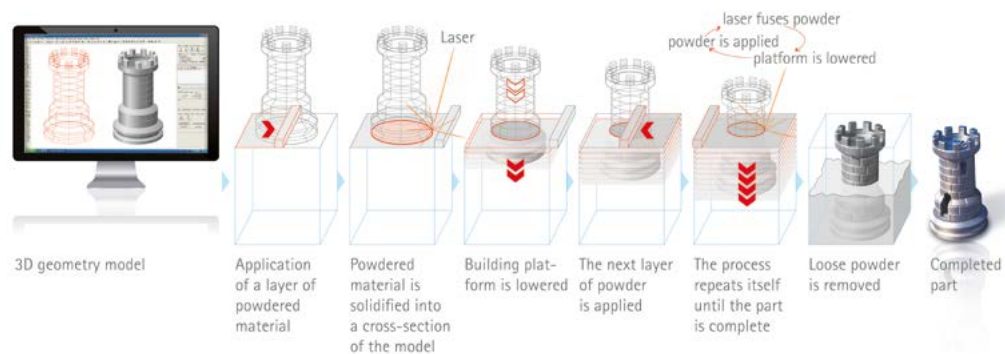
About EOS

EOS is the world's leading technology supplier in the field of industrial 3D printing of metals and polymers. Formed in 1989, the independent company is pioneer and innovator for comprehensive solutions in additive manufacturing. Its product portfolio of EOS systems, materials, and process parameters gives customers crucial competitive advantages in terms of product quality and the long-term economic sustainability of their manufacturing processes. Furthermore customers benefit from deep technical expertise in global service, applications engineering and consultancy.

EOS Technology

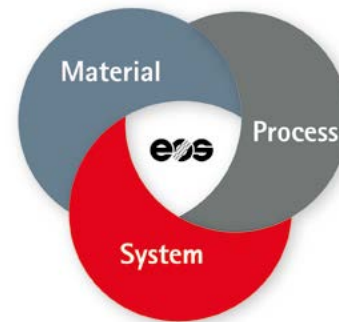
Additive manufacturing (AM) enables the production of components directly from 3D CAD data. Components are built up layer by layer from materials supplied as fine powder, which are available in a wide range of metals and plastics.

How industrial 3D printing works:



EOS Quality

The comprehensive quality assurance concept* ensures that products are manufactured at a reproducibly high quality; to do this, it uses an approach that is unique throughout the industry, which takes in all three central technical elements of the production process: system, material and process.



SYSTEM: Numerous Quality-Assurance Measures Ensure the Plant's Reliable Compliance with Production Standards

The acceptance procedure performed with the EOS machine includes the production of defined reference objects, which are subsequently subjected to testing on the basis of all decisive criteria (e.g. mechanical properties, porosity, surface finish); comprehensive testing of all system components is also performed.

MATERIAL: Multidimensional Quality Management Ensures the Uniform Composition of All Material Batches

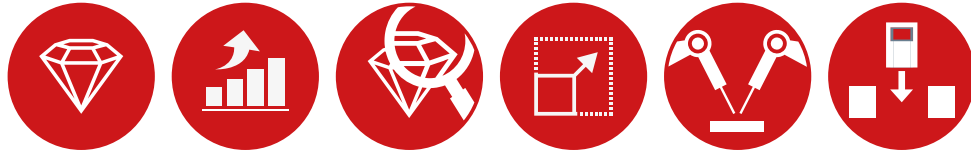
The quality assurance of all powder batches begins with the delivery of the raw powder material (with a check of chemical characteristics and grain size distribution) and ends with an analysis of manufactured density cubes and tensile bars. All testing and processing steps performed on metal powders are conducted in class 9 cleanrooms.

PROCESS: Tested and Secured Processes Ensure Consistent Production Quality

All parameters (e.g. laser power or layer thickness) that are required for attaining certain chemical or component characteristics are based on more than 25 years of experience at EOS, coupled with a comprehensive series of tests during product development.

* Certification of EOS GmbH in accordance with ISO 9001:2008 (since 1998) for the development & production and sale & service of laser sintering systems. Certification of EOS Oy (EOS subsidiary in Turku, Finland) in accordance with ISO 9001:2008 (since 2013) and in accordance with the Medical Products Law (ISO 13485:2003, since 2012). Certification of KVS GmbH in accordance with ISO 9001:2008 for the development, production, testing and marketing of polyamide powders and mixtures.

Customer Requirements



Quality of parts Productivity Quality of control Scalability Automation Integration

Benefits of EOS Technology

Maximum Freedom of Design

The strengths of additive manufacturing come into effect where conventional manufacturing reaches its limits: where part design and production have to be reconceived so as to come up with effective solutions. It offers maximum freedom of design, enabling a process in which design determines production. Parts can be created which were difficult or even impossible to produce using conventional manufacturing techniques.

Complex Parts for Functional Optimization

Additive manufacturing enables the production of highly complex geometries which are, at the same time, extremely lightweight and stable. It allows functional optimization and integration so that additional assembly stages are no longer required. It is also ideal for producing small batch sizes at a reasonable unit price, as well allowing for a high level of product customization – even in serial production.

For All Phases of the Product Lifecycle

Additive manufacturing is an ideal method for making prototypes during the early development phases of a product, significantly reducing the time to market. EOS also advises customers on series production, supporting them in finding the right applications, optimizing these for additive manufacturing and putting this innovative technology to work for customers' core business.

Examples of EOS Technology Applications



Aerospace

Antenna bracket made of EOS Aluminium AlSi10Mg: topologically optimized design contributes to a weight reduction of 40%.

(Source: RUAG, Altair)



Medical

Cranial implant made of EOS Titanium Ti64: The porosity allows liquids to flow through and bone tissue can grow together with the outer edges.

(Source: Alphaform, Novax DMA)



Dental

Removable partial dentures made of EOS CobaltChrome RPD: production is fast, economic and with reliable high quality.

(Source: EOS)



Service Provider

Small series production of exclusive Bobby Cars: Thanks to complex parts made of PA 2200, highly customized products can be produced quickly and cost-effectively.

(Source: Bobby Tailor)



Tooling

Tool insert made of EOS MaragingSteel MS1 and injection moulding component: cycle time reduction thanks to conformal cooling, quality improvement of the final part and extended maintenance interval.

(Source: Innomia, Magna)



Industry

Gripper for handling chips packages made of PA 2200: redesign with functional integration contributes to significant weight reduction and increased reliability; colored by DyeMansion GmbH.

(Source: Formrise)

Industrial 3D Printing of Plastic Material

EOS Systems

Established machines for a flexible and economical production of prototypes and final products in small to medium sized series.



FORMIGA P 110 Velocis

The small laser spot of the entry-level system ensures excellent detail resolution - ideal for manufacturing small, fine components as well as excellent surfaces.

Usable build size:

200 × 250 × 330 mm (7.9 × 9.8 × 13 in)



EOS P 800 & EOS P 810

Two unique systems processing high-performance polymers at operating temperatures of up to 385°C. For components that have to satisfy the most stringent requirements.

Usable build size:

700 × 380 × 560 mm (27.6 × 15 × 22.05 in)



EOS P 396

The fastest polymer laser sintering system in the world is equipped with a powerful 70 W laser and produces isotropic part properties.

Usable build size:

340 × 340 × 600 mm (13.4 × 13.4 × 23.6 in)



EOS P 770

With its large building volume the dual-laser system allows for the production of large parts and high-throughput manufacturing.

Usable build size:

700 × 380 × 580 mm (27.6 × 15 × 22.9 in)

EOS Production Platform

As part of EOS Shared Modules concept the innovative platform can be automated and is perfectly suited for the additive manufacturing of end products on an industrial scale.



EOS P 500

The system processes polymers at up to 300°C. Thanks to its high productivity and short cycle times it is the only additive manufacturing platform for the economic mass production of plastic parts in the market.

Usable build size:

500 × 330 × 400 mm (19.7 × 13 × 15.7 in)

Industrial 3D Printing of Metal Material

EOS Systems

Established machines for a flexible and economical production of prototypes and final products in small to medium sized series.



EOS M 100

The proven DMLS system with smallest build volume is ideally suited for a small-scale production of metal parts. The laser power is 200 W.

Usable build size:

Ø 100 mm x 95 mm (Ø 3.9 in x 3.7 in)



EOS M 290

The system with a medium build volume and a 400 W laser manufactures metal parts with proven DMLS quality. Its pro series comprises a more operator friendly material management.

Usable build size:

250 x 250 x 325 mm (9.8 x 9.8 x 12.8 in)

EOS Production Platforms

As part of EOS Shared Modules concept the innovative platforms can be automated and are perfectly suited for the additive manufacturing of end products on an industrial scale.



EOS M 400

With its large build volume and the 1000 W laser the proven DMLS system allows for the production of large parts and high-throughput manufacturing. The EOSTATE Monitoring Suite enables a comprehensive process monitoring.

Usable build size:

400 x 400 x 400 mm (15.8 x 15.8 x 15.8 in)



EOS M 400-4

With its four 400 W lasers the proven DMLS system achieves up to four times higher build rates. The EOSTATE Monitoring Suite enables a comprehensive process monitoring.

Usable build size:

400 x 400 x 400 mm (15.8 x 15.8 x 15.8 in)



EOS M 300-4

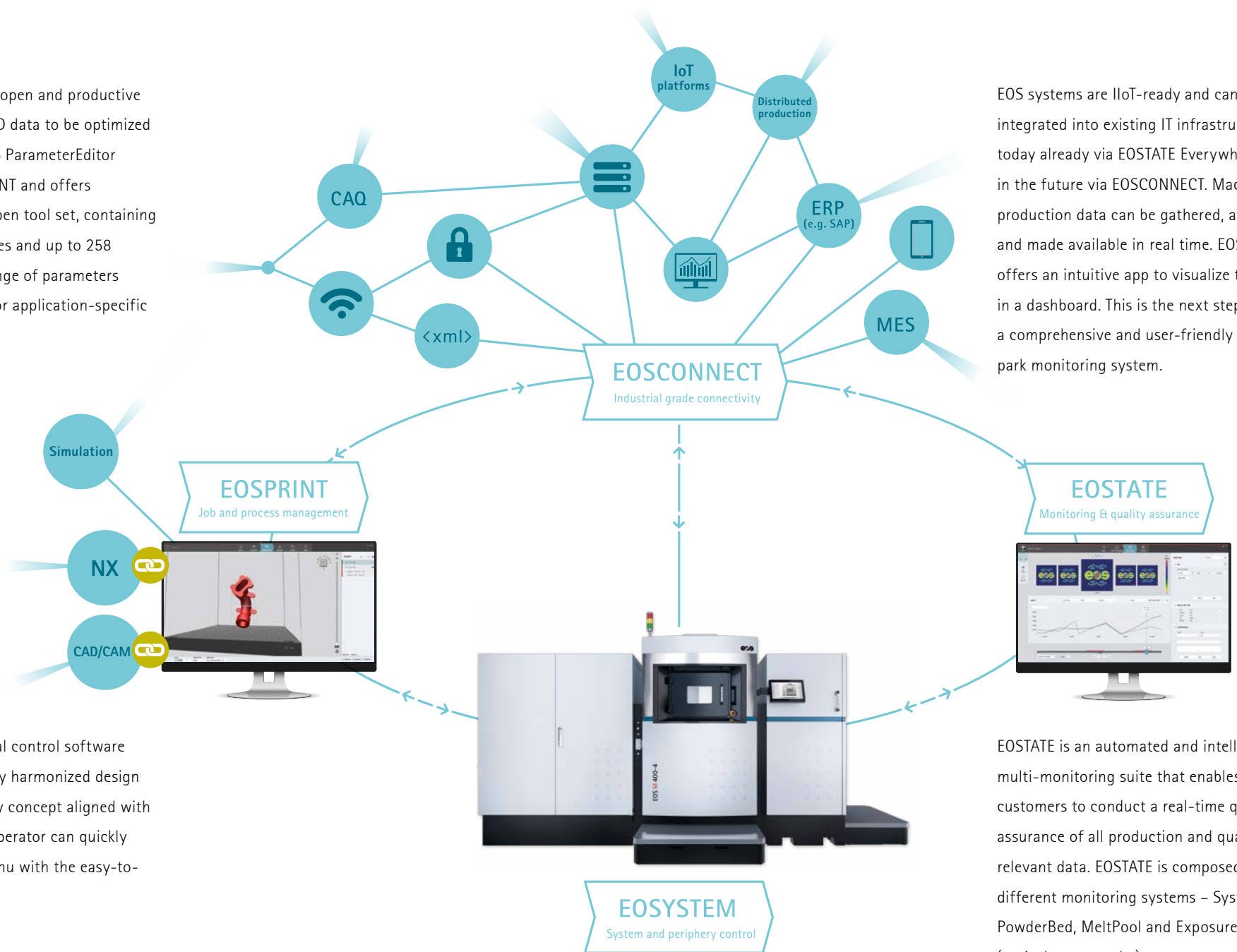
Each of this machine's four 400 W laser covers the entire build area which maximizes productivity. Improved and patented EOS ClearFlow 2 Technology ensures consistent process gas management.

Usable build size:

300 x 300 x 400 mm (9.8 x 9.8 x 12.8 in)

EOS Software

EOSPRINT is an intuitive, open and productive CAM tool that allows CAD data to be optimized for EOS systems. The EOS ParameterEditor module is part of EOSPRINT and offers developers a large and open tool set, containing unique exposure strategies and up to 258 parameters. This wide range of parameters offers greater freedom for application-specific optimization.



EOS systems are IIoT-ready and can be integrated into existing IT infrastructures today already via EOSTATE Everywhere and in the future via EOSCONNECT. Machine and production data can be gathered, analyzed and made available in real time. EOS even offers an intuitive app to visualize the data in a dashboard. This is the next step towards a comprehensive and user-friendly machine park monitoring system.

The system and peripheral control software EOSYSTEM has a perfectly harmonized design combined with a usability concept aligned with user requirements. The operator can quickly navigate through the menu with the easy-to-use touch display.

EOSTATE is an automated and intelligent multi-monitoring suite that enables customers to conduct a real-time quality assurance of all production and quality-relevant data. EOSTATE is composed of four different monitoring systems – System, PowderBed, MeltPool and Exposure OT (optical tomography).

EOS Materials and Processes

EOS possesses an extremely high level of competence and offers a comprehensive portfolio of highly developed plastic and metal materials. The material employed is an essential factor of production quality, which is why EOS employs multidimensional quality management with every batch of powder, to ensure uniform composition. The best possible part property profiles can be realized using suitable materials. We provide our customers with intensive advice and support in the selection of materials, allowing them to benefit from our many years of experience in achieving their design, development and production goals.



EOS Plastic Materials

- Unfilled, filled and flame-retardant polyamide 12 (PA)
- Polyamide 11 (PA)
- Polystyrene (PS)
- Thermoplastic elastomers (TPE)
- Polyaryletherketone (PAEK)
- Polypropylen (PP)

Layer thicknesses: 60, 100, 120, 150, 180 μm

EOS Metal Materials

- Tool and stainless steels
- Aluminium alloys
- Cobalt Chrome
- Nickel alloys
- Titanium
- Tungsten
- Custom materials like copper and bronze

Layer thicknesses: 20, 30, 40, 60 μm

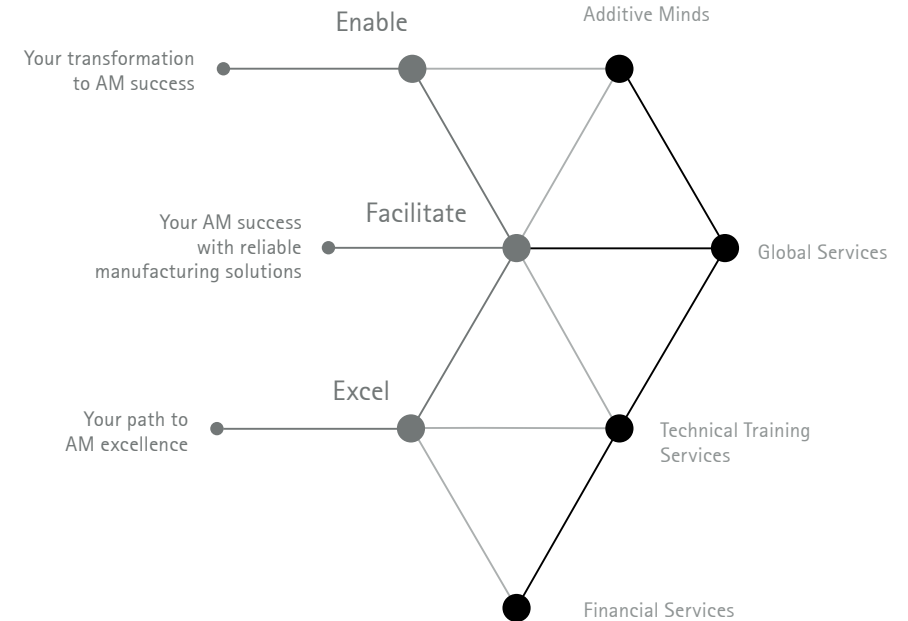
EOS supplies processes that exactly match the materials and systems, to allow our customers to enjoy the full benefit of their comprehensive optimisation potential. They represent the best possible combination of parameters for the respective product characteristic.

EOS Service Portfolio

EOS Services are based on 30 years of experience in the industrial 3D printing sector. From the first contact with additive manufacturing technology (AM) to fully developed solutions during ongoing operations - with Additive Minds, Global Services and Technical Training Services, we cover all phases on your way to AM success, a whole machine life long. With our flexible Financial Services, we provide fast and cost-efficient access to our systems.

We take care of your AM performance – so you can focus on your core business.

The Comprehensive Range of Services & Consulting Offered by EOS



EOS Consulting: Additive Minds

Organizations around the world are under increasing pressure to develop new and disruptive products. Integrating additive manufacturing into your organization is often a challenge because the necessary expertise can be hard to find.

Minimize your investment risk and optimize your competitive edge. The EOS Additive Minds portfolio offers a comprehensive range of consulting and trainings, to prepare your way into additive manufacturing.

We accelerate your transformation into the champion of additive manufacturing with added value.



Your Benefits:

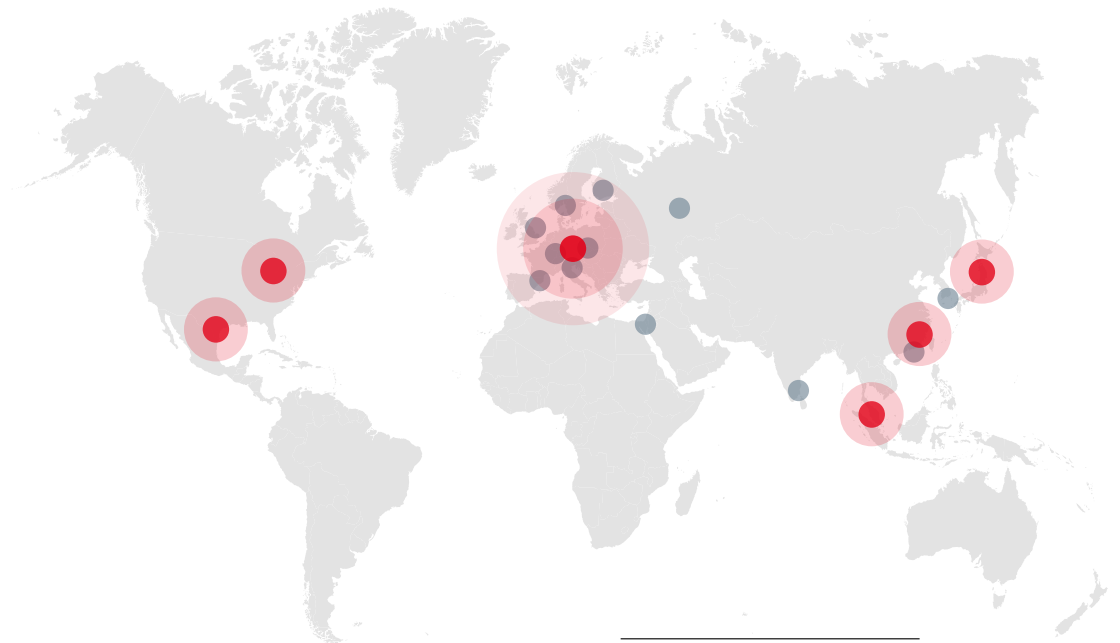
- We make your people faster and better, turning them into the next industry champions
- Combat any lack of additive manufacturing competence in your existing organization
- Gain a competitive advantage through additive manufacturing
- Accept economic pressure as a challenge for faster innovation

A Global Service Network

Stay on top of the competition and produce successfully with a reliable partner at your side.

We offer a unique, complementary portfolio of global services and local support based on our deep business expertise. We ensure that your systems remain durably profitable and efficient throughout their entire lifecycle!

With six technology centers on three continents – Europe, North America and Asia/Pacific – our outstandingly qualified service employees will always be available at short notice. Our growing number of local service locations with their own spare parts depots guarantees that we will always be nearby.



● 6 Technical Centers on three continents

● 12 local service sites

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