

# Merus Power

SEB Small & Mid Cap Day in Helsinki  
22.9.2022

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CEO

Merus Power Plc

22.9.2022

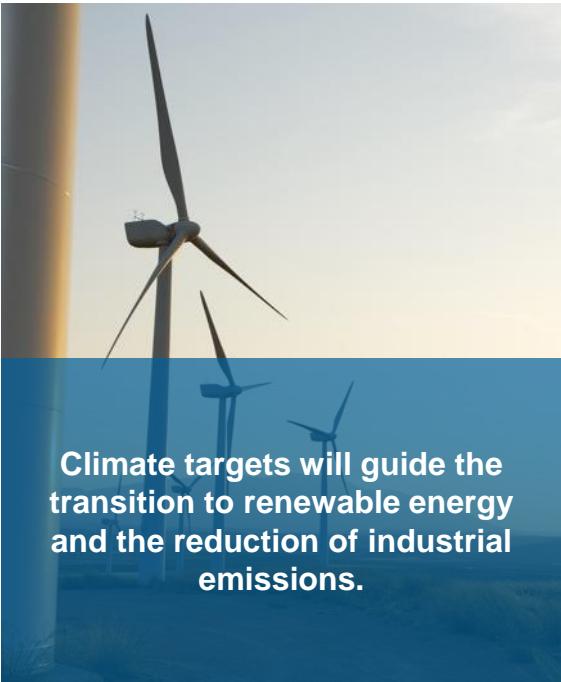


# MERUS POWER

## Electrify your Future

We enable the growth of renewable energy  
in electricity networks and improve the  
energy efficiency of society.

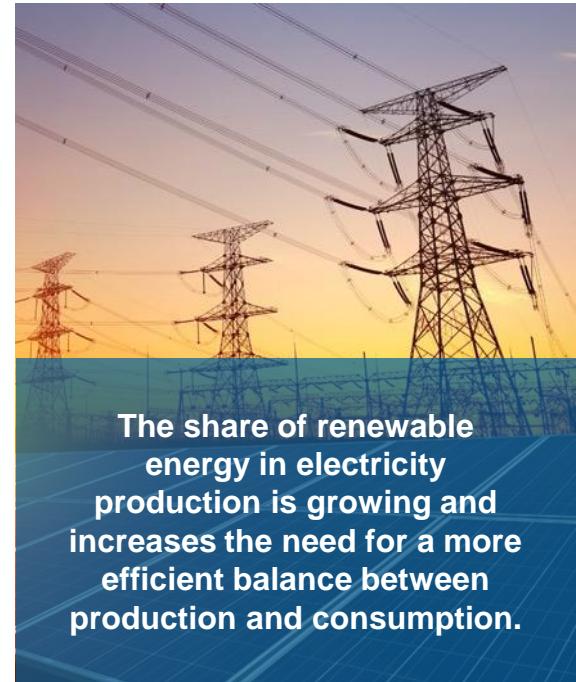
# Global transformation of energy market supports our growth



Climate targets will guide the transition to renewable energy and the reduction of industrial emissions.



Technological development makes renewable energy a significant part of electricity production.



The share of renewable energy in electricity production is growing and increases the need for a more efficient balance between production and consumption.

Imbalances in electricity production and consumption need to be managed more effectively and energy efficiency of industries needs to be improved.

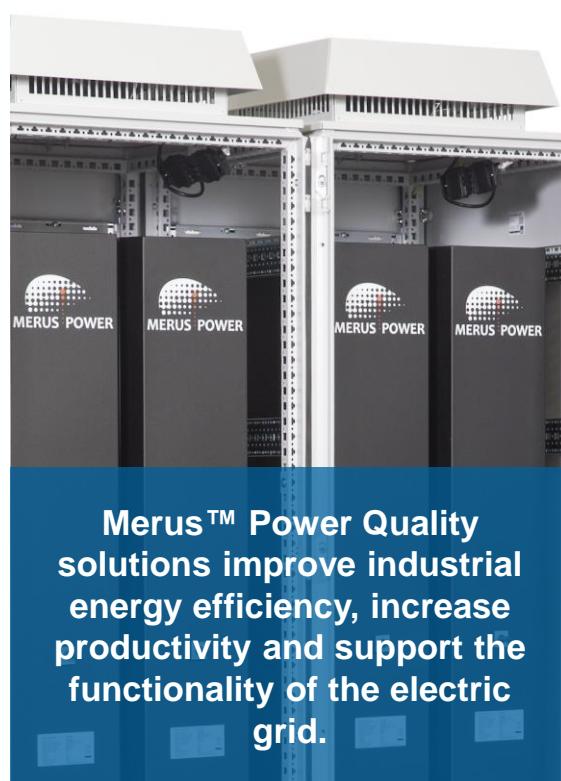
# Products and Services

## Energy Storage and renewable energy integration



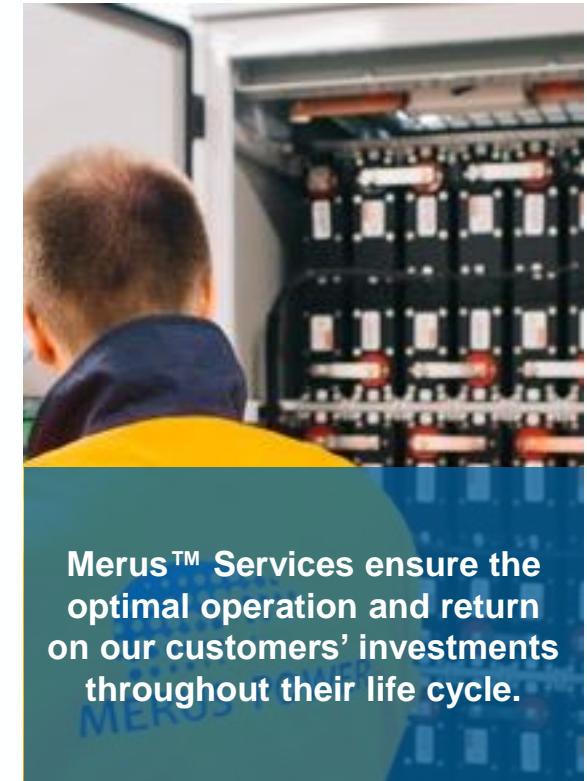
**Merus™ Energy Storage Solution** supports the operation of the electric grid by enabling the storage and integration of renewable energy into it.

## Power Quality Solutions



**Merus™ Power Quality solutions** improve industrial energy efficiency, increase productivity and support the functionality of the electric grid.

## Services



**Merus™ Services** ensure the optimal operation and return on our customers' investments throughout their life cycle.

# Our scalable product portfolio

## Energy Storage solutions



Merus™ ESS  
Energy Storage System

## Power Quality solutions

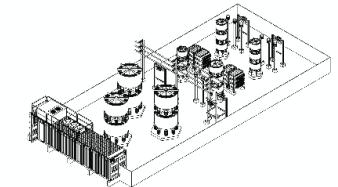
Merus™ A2  
Active Harmonic Filter



Merus™ HPQ  
Hybrid Power Compensator



Merus™ STATCOM  
Static Synchronous Compensator



Merus™ SVC  
Static Var Compensator



# One technology

## multiple innovative solutions

Advanced Power electronics



Leading electrical engineering



Reliable control software



Energy storage solutions

Harmonic mitigation and reactive power compensation

Renewable energy integration

# Our strategy

80 M€

## Cornerstones of our growth

### Scalable product portfolio

Enables growth and profitability

### Multichannel sales strategy

The right markets and partners

### Energy storage systems: Growth in Europe

System supplier position in  
the value chain

### Power quality solutions: Local and global presence

Solutions  
for integrators

### Services: Increasing share

Merus™ WISENERGY  
service for all products

## Megatrends support our growth

Climate and  
emission targets

Green transition and  
investment programs

Sustainability

14,8 M€

Turnover<sup>1)</sup>  
2021

Turnover target  
2026

1) Audited

# Our scalable technology has many applications



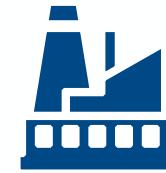
## Renewable energy

Solar power farms, wind farms  
hydropower plants  
Industry's own power generation  
Smart grids, microgrids



## Infrastructure and utilities

Water and wastewater treatment plants  
Electric car charging points and network  
Substations, transmission and distribution utilities  
smart grids, microgrids



## Heavy industry

Mining, mineral and cement industry  
Iron and steel industry  
Oil and gas industry



## Commercial buildings

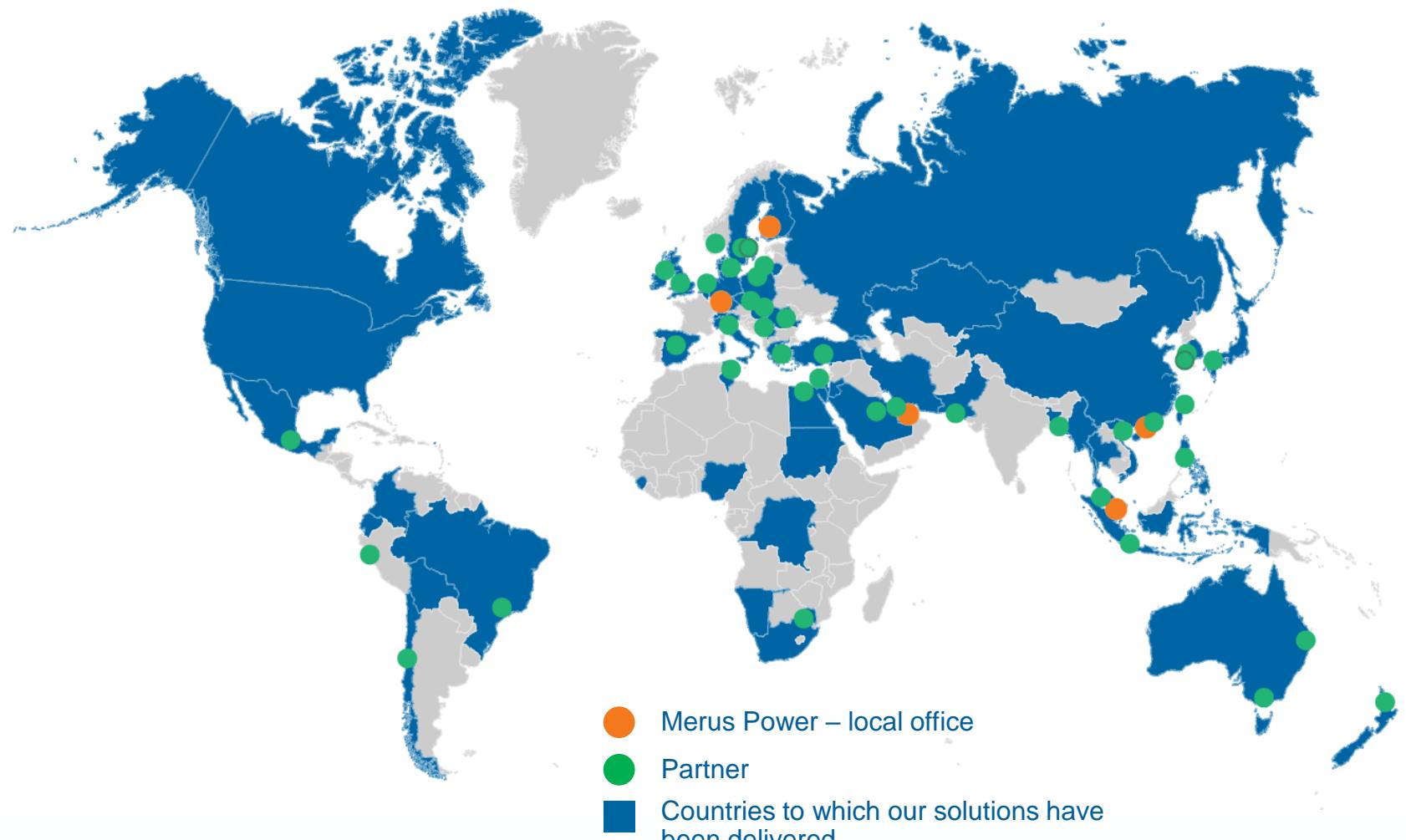
Data and IT centers  
Shopping centers and malls  
Airports  
Hospitals



## Light industry

Industries with fast fluctuating loads  
Critical process industry  
Manufacturing industry

# Global collaboration network



60

Countries with  
our solutions

43

Countries with  
partners

5

Local Office<sup>1)</sup>

1) The Hong Kong local office has no active business currently.

# Our references from around the world



**Merus™ ESS Energy Storage**  
Finland, Ii  
Wind farm



**Merus™ ESS Energy Storage**  
Finland, Lempäälä  
Microgrid



**Merus™ A2-Active Filter**  
Great Britain  
Data center



**Merus™ A2-Active Filter**  
Sweden  
Sawmill industry



**Merus™ A2-Active Filter**  
South Africa  
Solar power plant



**Merus™ STATCOM**  
South America  
Electric Arc Furnace



**Merus™ STATCOM**  
Africa  
Gold Mine



**Merus™ A2-Active Filter**  
Northern Ireland  
Hospital



**Merus™ A2-Active Filter**  
South Africa  
Wind power plant



**Merus™ ESS Energy Storage**  
Finland, Järvenpää  
Distribution center



**Merus™ UPQ**  
Taiwan  
Semiconductor fabrication plant



**Merus™ A2-Active Filter**  
Middle East  
Data center



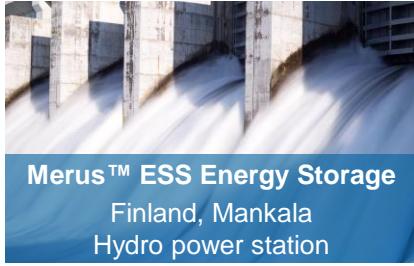
**Merus™ A2-Active Filter**  
South Korea  
Semiconductor fabrication plant



**Merus™ A2-Active Filter**  
Australia  
Wind power plant



**Merus™ A2-Active Filter**  
Finland  
Enzyme factory



**Merus™ ESS Energy Storage**  
Finland, Mankala  
Hydro power station



**Merus™ A2-Active Filter**  
Malaysia  
Water treatment plant



**Merus™ A2-Active Filter**  
China  
Chemical industry plant



**Merus™ STATCOM**  
Africa  
Underwater mining



**Merus™ ESS Energy Storage**  
Finland, TAMK  
Electric vehicle charging station

# Our handprint is visible globally

We work for the UN Sustainable Development Goals.

Through our business, we contribute to the sustainable and energy-efficient development of the economy and society globally.

Our energy storage and power quality solutions have already been delivered to

**60 countries.**

Annual CO2 emission reductions for our customers<sup>2)</sup> is **over 110 000 tons**

This means **over 910 000** London-Madrid passenger flights

Our solutions have enabled **446 MW** of renewable energy connected to the grid

Our share of the Finnish electricity market's usage reserve<sup>1)</sup> is **12 %**



1) Merus Power's management assessment. The company's share is 12 MW of Finland's frequency-controlled operating reserve, which is a total of 103 MW in 2022. (source: Fingrid).

2) Merus Power's management assessment. Emission reductions have been assessed from the perspective of the Company's customers and with the Company's current equipment.

# Main drivers for Merus Power growth and profitability

## Green transition

**Green transition** supports Merus Power business from both sides

**High penetration of renewable energy and de-centralization of the grid** will create new market opportunities where Merus Power can utilize power quality and energy storage synergies.

## Energy Storage market growth create “unlimited” opportunities

**New earning models** will be created for customers from the challenges of renewable energy – mainly in the frequency reserve markets.

**Volatile energy price** makes energy arbitration feasible

**Electrification of transportation** needs technology and solutions to make it happen.

## Power Quality benefits from the same megatrend

**Energy saving** investments are now more profitable than ever

Established **key accounts and partner network** will create continuous repeatable business. Recurring revenues are received from digital services that supports profitability

**Standardization** and economies of scale will improve profitability.

# What makes us different in ESS competition

## Control of key technologies in ESS solutions

**Deep proven technology** know how in power electronics will keep us competitive ( PCS systems )

**Own ESS/EMS software development** create ability to respond to swift market changes

**Technology and grid integration** capability supports future drive towards lower costs

## Power quality competence and turn-key capability

**Long experience** in delivering systems in difficult technical and commercial environments give confidence in delivering significant size contracts and open growth opportunities.

**Power quality** experience give competitive advantage in certain niche market segments such as remote power and microgrids.

## Flexible and agile working model and partnership capability

**As moderate size company**, we have fast decision making process, since the key competences are centralized in Nokia.

**We are small enough** to be able to listen to the customers unlike global giants.

**Partnerships create repeatable** system business instead in comparison to project based business model.

# Our success stories



# Merus™ A2 in 175 MW wind farm application

- One of the world's largest active harmonic filtering system
- Guarantees Transgrid grid code compliance in the point of common coupling POC for harmonics for 175MW windfarm
- Enables tuning of windfarm converters to optimize active power production
- Four independent systems
- Grid connection to MV busbar via step up transformers
- Enhances power quality by filtering harmonics and provides dynamic reactive power compensation



**Location:** White Rock wind farm, Australia

**Capacity:** 4 x 5MVA Merus™ A2-Active Harmonic Filters in 33kV in 175MW windfarm

70 Goldwind turbines

**Year of commissioning:** 2019

# Merus™ ESS in Logistics center with solar power production

- Fully supporting the operation of the smart grid running on renewable energy
- Provides opportunity for a new source of income by enabling participation in the frequency response services
- Significant energy and cost savings
- Optimized and effective use of solar power
- Possibility of off-grid operation
- Improves power quality



**Location:** Järvenpää, Finland

**Capacity:** 20kV 50Hz 2.6MW 2.3MWh

**Year of commissioning:** 2019

# Merus™ ESS in 20 kV Energy Community

- Fully supporting the operation of the grid running on renewable energy
- Provides opportunity for a new source of income by enabling participation in the frequency response services
- Uninterruptible power supply
- Optimized and effective use of solar power
- Black start ability for the microgrid
- Possibility of off-grid operation
- Improves power quality



## LEMENE Energy Community

**Location:** Lempäälä, Finland

**Capacity:** 20kV 50Hz 1.6MW 1.3MWh

**Year of commissioning:** 2020



# Merus™ ESS in 44 MW wind farm application

- One of the Nordic's largest energy storage systems
- Revenue from Fingrid's frequency response service markets
- Storage of excess wind power for better income on spot markets
- Black start ability for wind turbines during grid failure
- Uninterrupted electricity for the wind farm's own consumption during grid failure
- Dynamic reactive power control
- Peak shaving



**Location:** Ii, Finland

**Capacity:** 20.5kV 50Hz 6MW 6MWh Merus™ ESS

**Year of commissioning:** 2021

# Merus™ STATCOM in Gold mine application

- Power generation with hydro power and diesel generators
- Large number of VSDs and large DC winder
  - Generate lot of harmonics
- Fuel savings by optimizing the power consumption
- Energy savings by reducing harmonics and improving power factor
- Longer life-time of equipment with better power quality and stable voltage
- Production improvement by reducing downtime



**Location:** Africa

**Year of commissioning:** 2019?

- Merus™ STATCOM
- 4 x 11kV 4MVar C-type 5th harmonic filters
- 2 x 11kV 4MVar 3rd harmonic filters

# Our strengths

Our scalable high-tech solutions contribute to the sustainable energy<sup>1)</sup> revolution.

Our well-established business in power quality solutions supports our growth and creates a strong foundation for our product development.

Our growing service business utilizes digitalization thus enables continuous cash flow.

Global megatrends support strong growth in the demand for renewable energy and our energy storage systems.

Our power quality solutions improve energy efficiency in industry and reduce CO<sub>2</sub> emissions.

We have global sales channels and strong partnerships.

Our engineering expertise is internationally recognized.

# Thank you for your attention!



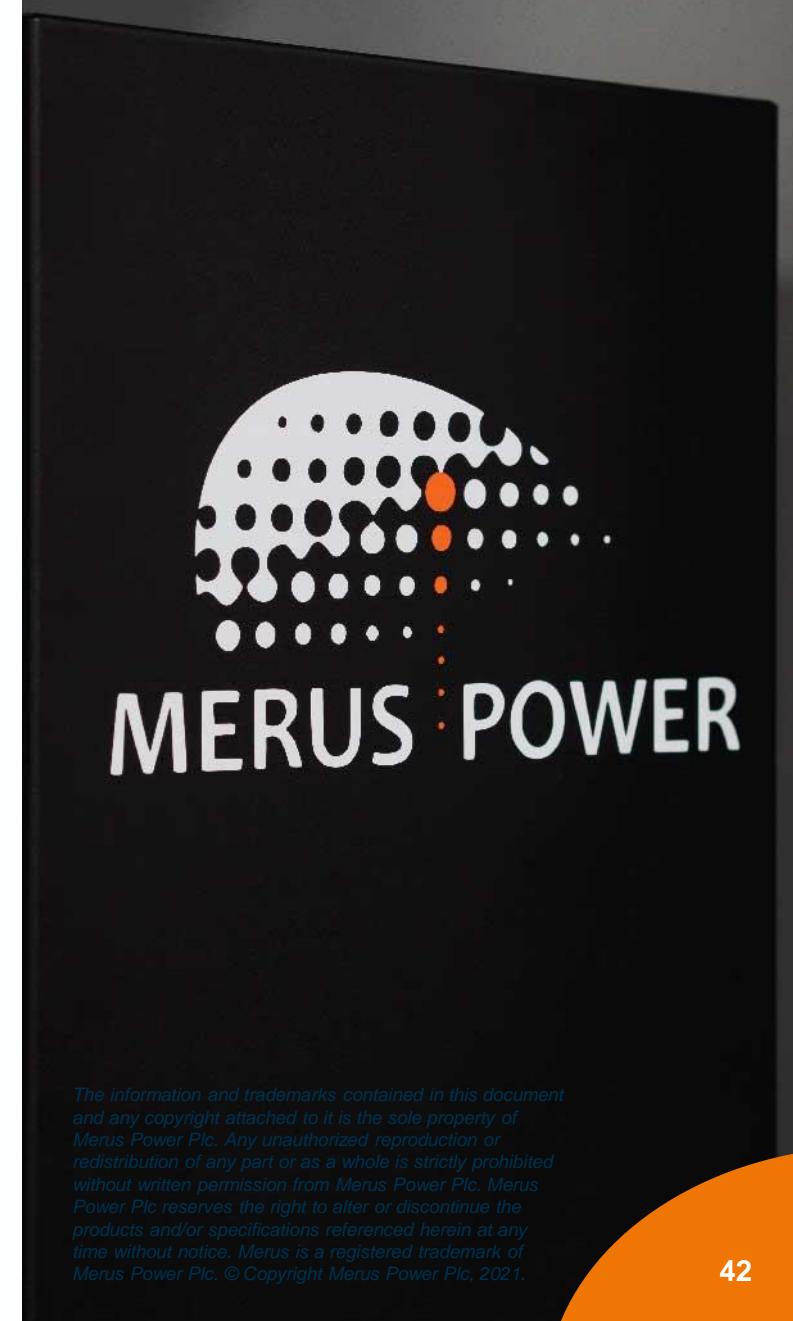
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