ASD SX-369-XS

Surveillance and Data Assimilation Unit

THERMAL IMAGING CAPABILITY :

Thermal Imaging and video capability with a multitude of palettes for data assimilation and multispectral data analysis.

The SX-369-XS's radiometric thermal camera measures the temperature of a surface by interpreting the intensity of an infrared signal reaching the camera. This non-contact and non-destructive technique (NDT) gives users enormous advantages for many of their surface temperature measurement applications.

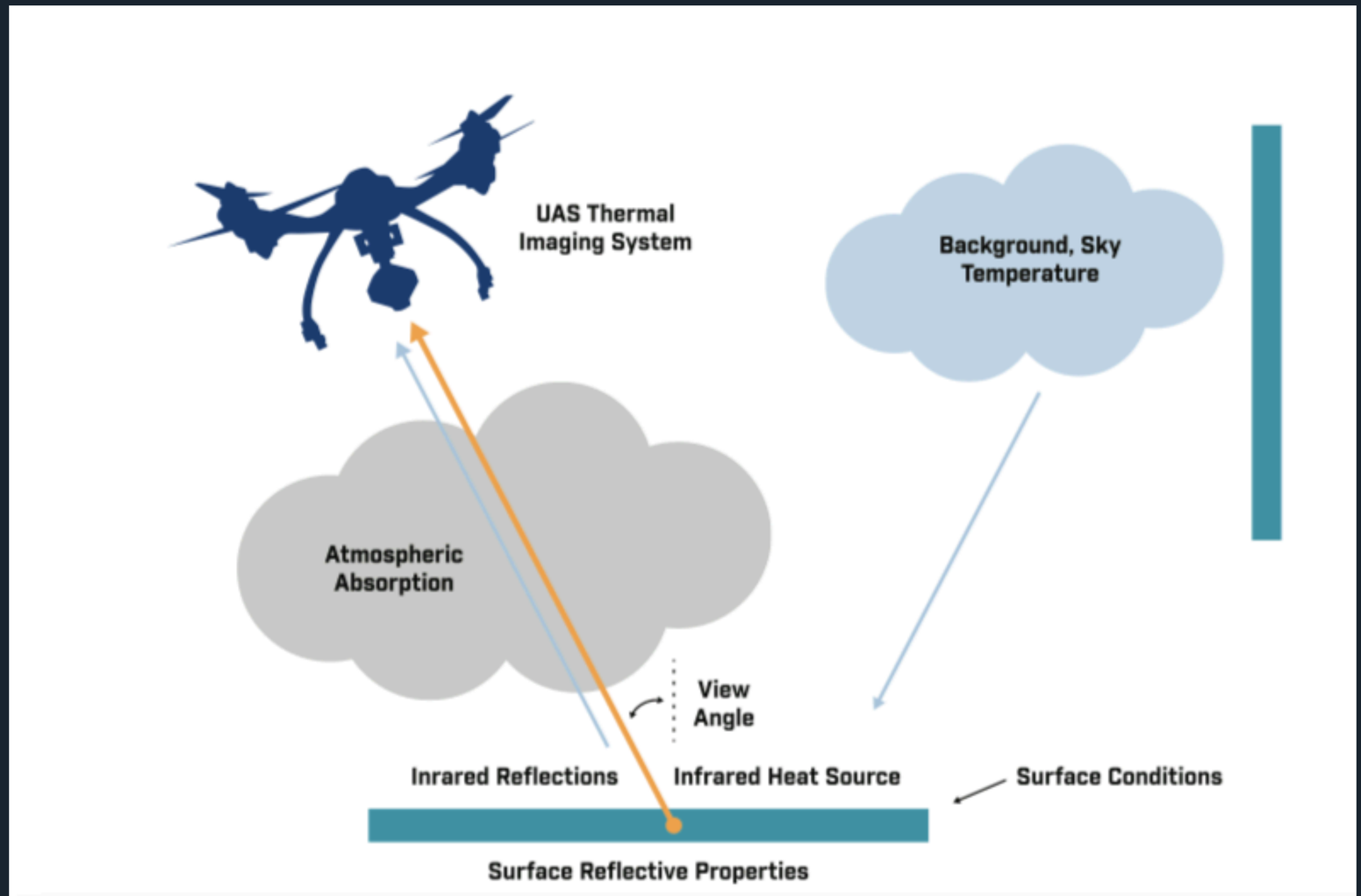

Figure 1: Remote UAS Thermal Imaging System needs to address unique radiometric temperature challenges.

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THERMAL DATA ASSIMILATION AND ANALYSIS.

EMISSIVITY

Emissivity is a measure of the efficiency of a surface to emit thermal energy relative to a perfect blackbody source. It directly scales the intensity of the thermal emission, and all real values are less than 1.0. The emissivity may be highly dependent on the surface morphology, roughness, oxidation, spectral wavelength, temperature and view angle.

A measurement that does not account for the real emissivity of a surface will appear “colder” than it actually is. For agricultural applications, many organic materials and materials with very rough surfaces have emissivity values approaching 1.0. For other applications, including power line and solar cell inspection, the surface might be a highly polished glass or metal, both of which can have much lower emissivity values. As a reference, Table 1 demonstrates the wide range of emissivity values that may be encountered in UAS radiometric applications.

Material Description	Emissivity [n.d.]1,2
Asphalt	0.90 to 0.98
Concrete	0.92
Soil, dry	0.90
Soil, wet	0.95
Wood	0.90
Water	0.92 to 0.96
Ice	0.96 to 0.98
Snow	0.83
Brick	0.93 to 0.96
Lacquer, paint	0.80 to 0.95
Lacquer, flat black	0.97
Textiles	0.90
Skin, human	0.98
Aluminum, polished	0.04 to 0.06
Aluminum, anodized	0.55
Steel, rusty	0.69
Steel, stainless	0.16 to 0.45

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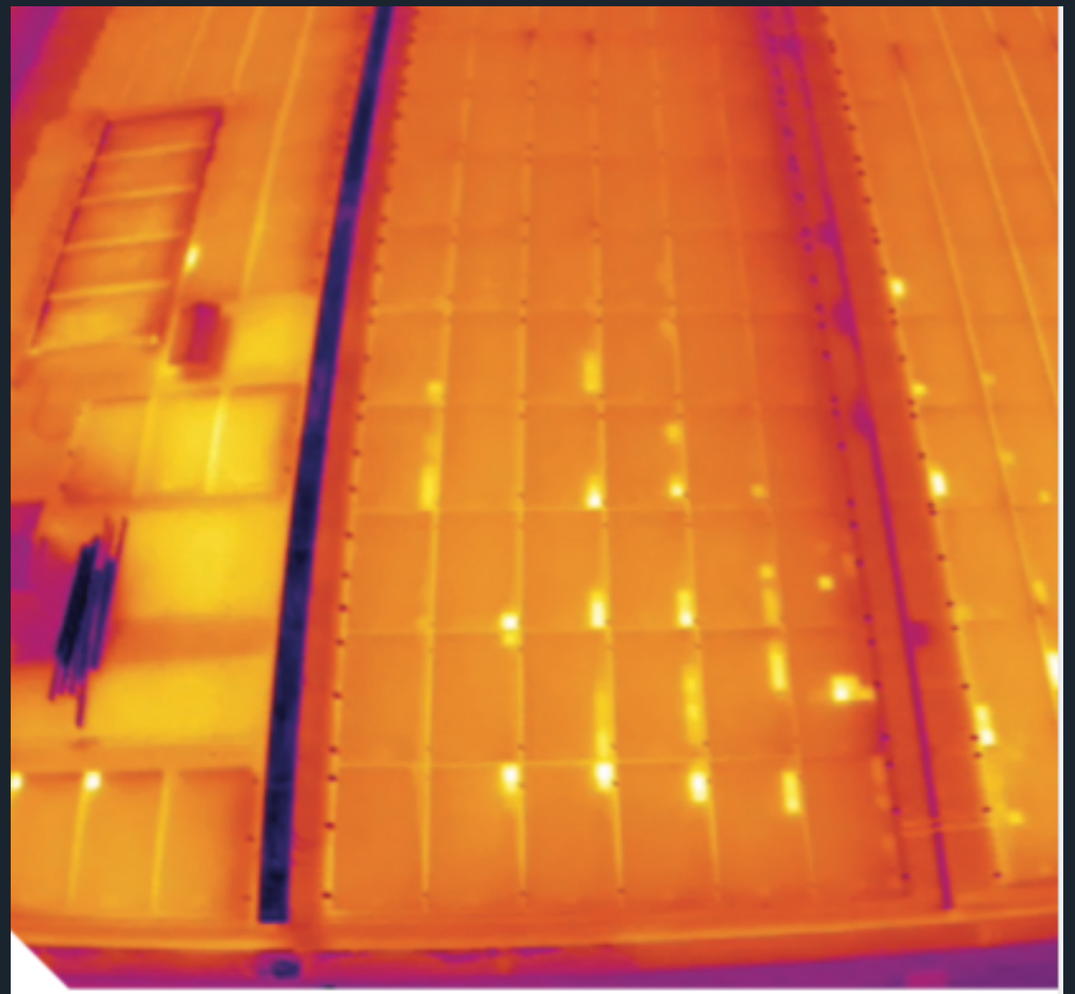
APPLICATIONS



See defects in solar panels that would be invisible to a visible camera during preventative maintenance.

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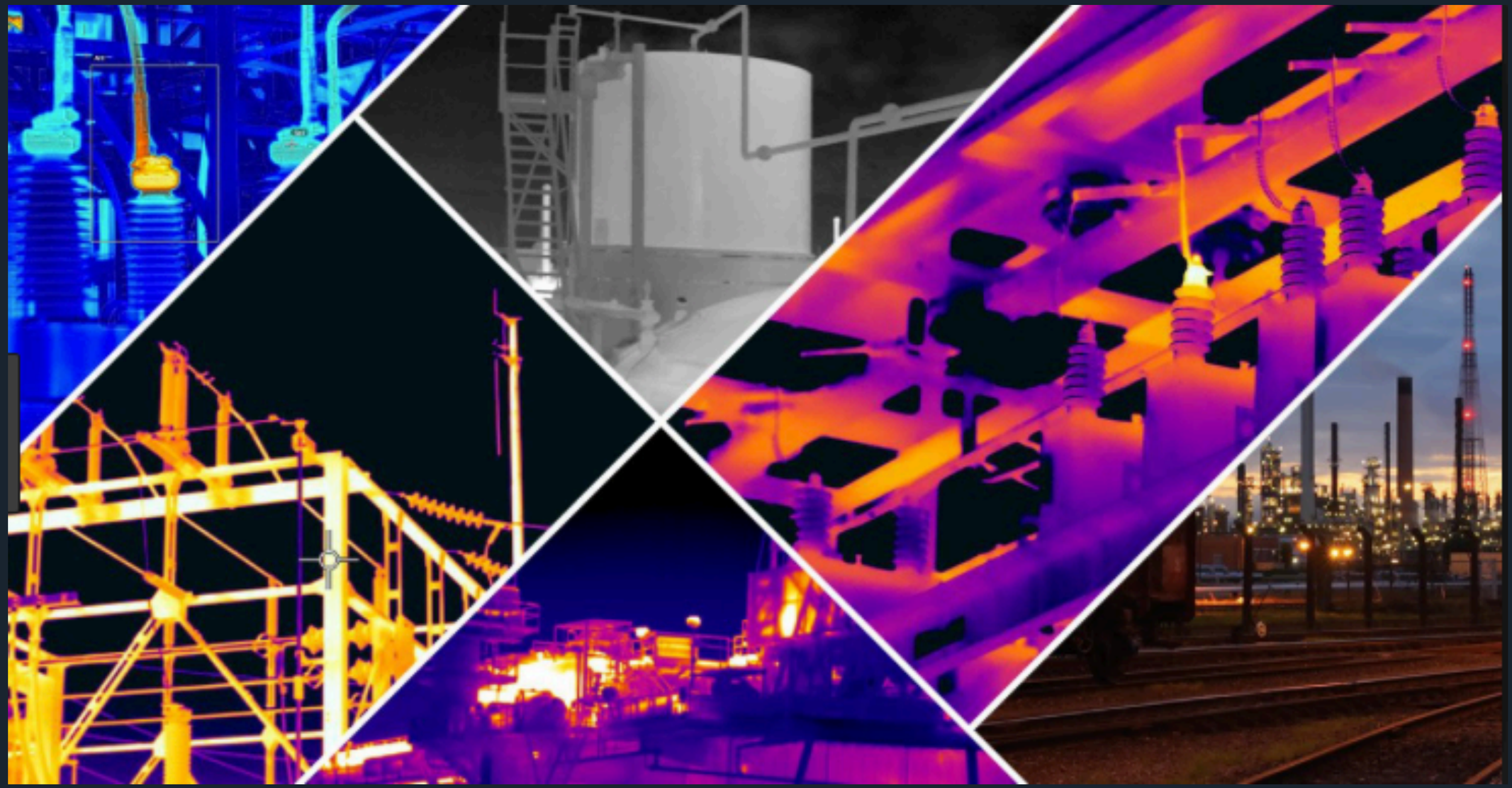
APPLICATIONS



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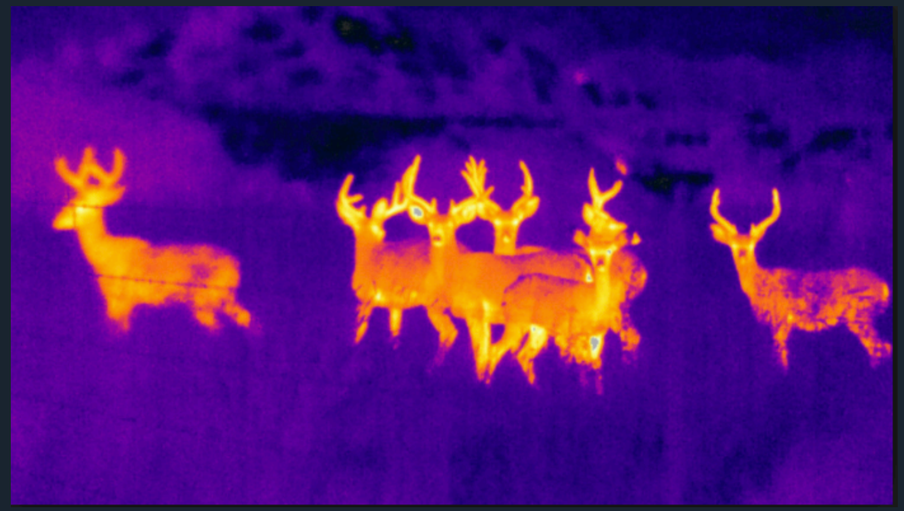

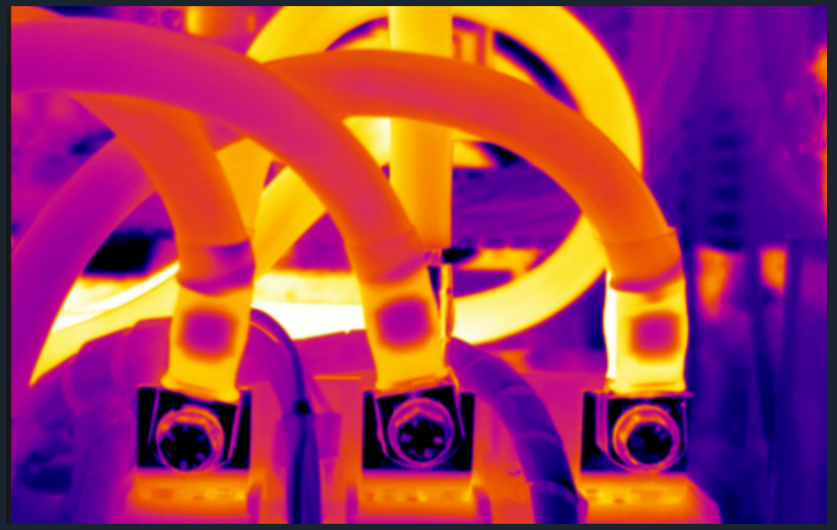

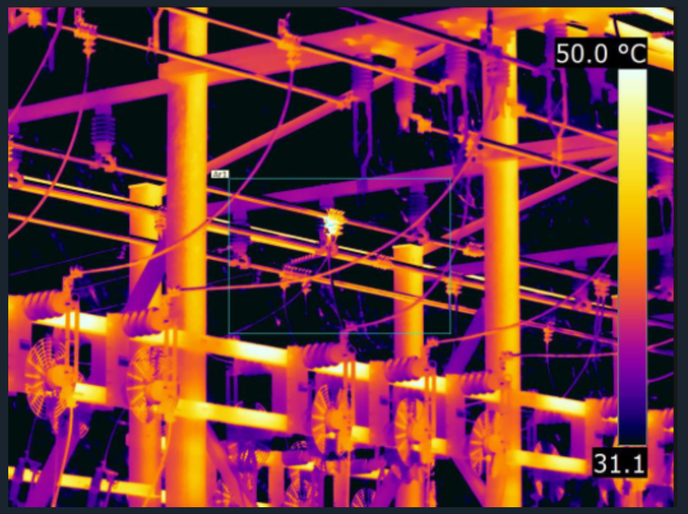

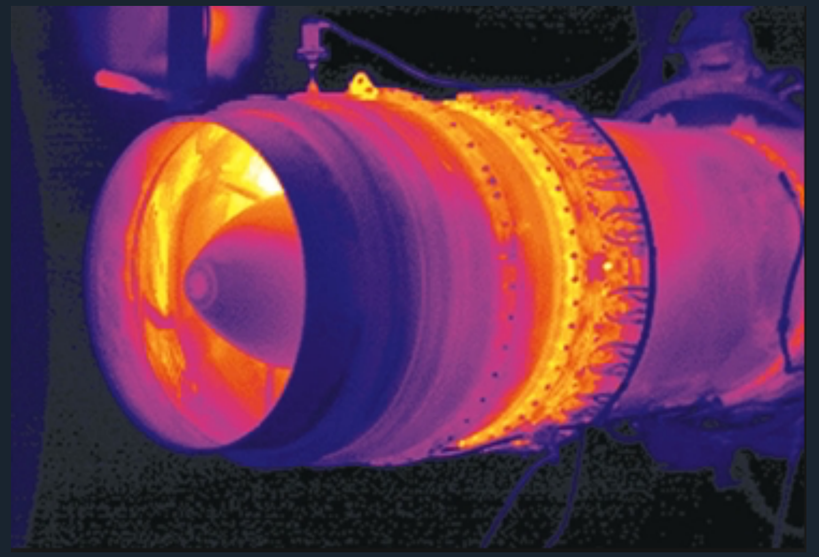

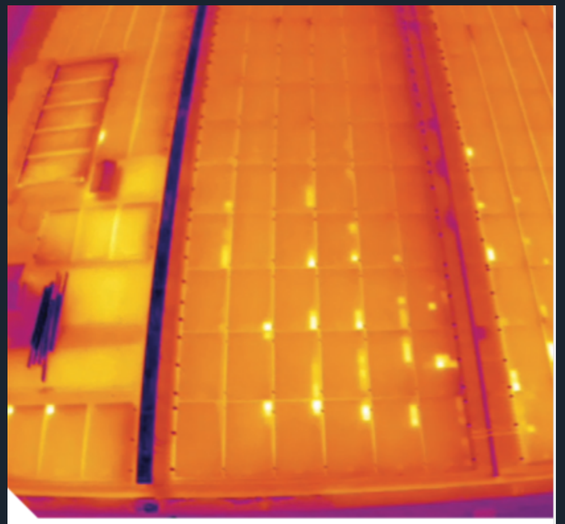

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