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Laser Guided / Controlled Machining (LGM/LCM)

The Basic Concept

The basic principle is to use a spinning Laser that was developed by Hamer Lasers in the USA.

The Laser continually spins through 360 degrees and produces a very accurate Laser plane flatness of 0.0025mm/M

The laser light is picked up by receiver targets attached to the travelling arm of the machine.

The signal from the receiver targets is used to control servo motors to raise and lower slides connected by zero backlash ball screws.

The lifting heads have a total travel range of 100mm, this will give +/- 50mm of height adjustment when set in the middle.

Maximum speed to raise and lower the heads is 10mm per second.

All parameters are adjustable, optimum speed will be set up during the trials.

The Laser Controlled Large Circular Self Levelling Machine

Design Parameters

Specifically designed to machine horizontal or near horizontal circular faces from 6 to 30 metres diameter.

Needs to be relatively compact and fast to assemble on the workpiece.

Only requires rigid arm from the centre of the workpiece connected to a spherical bearing on a fixed spindle.

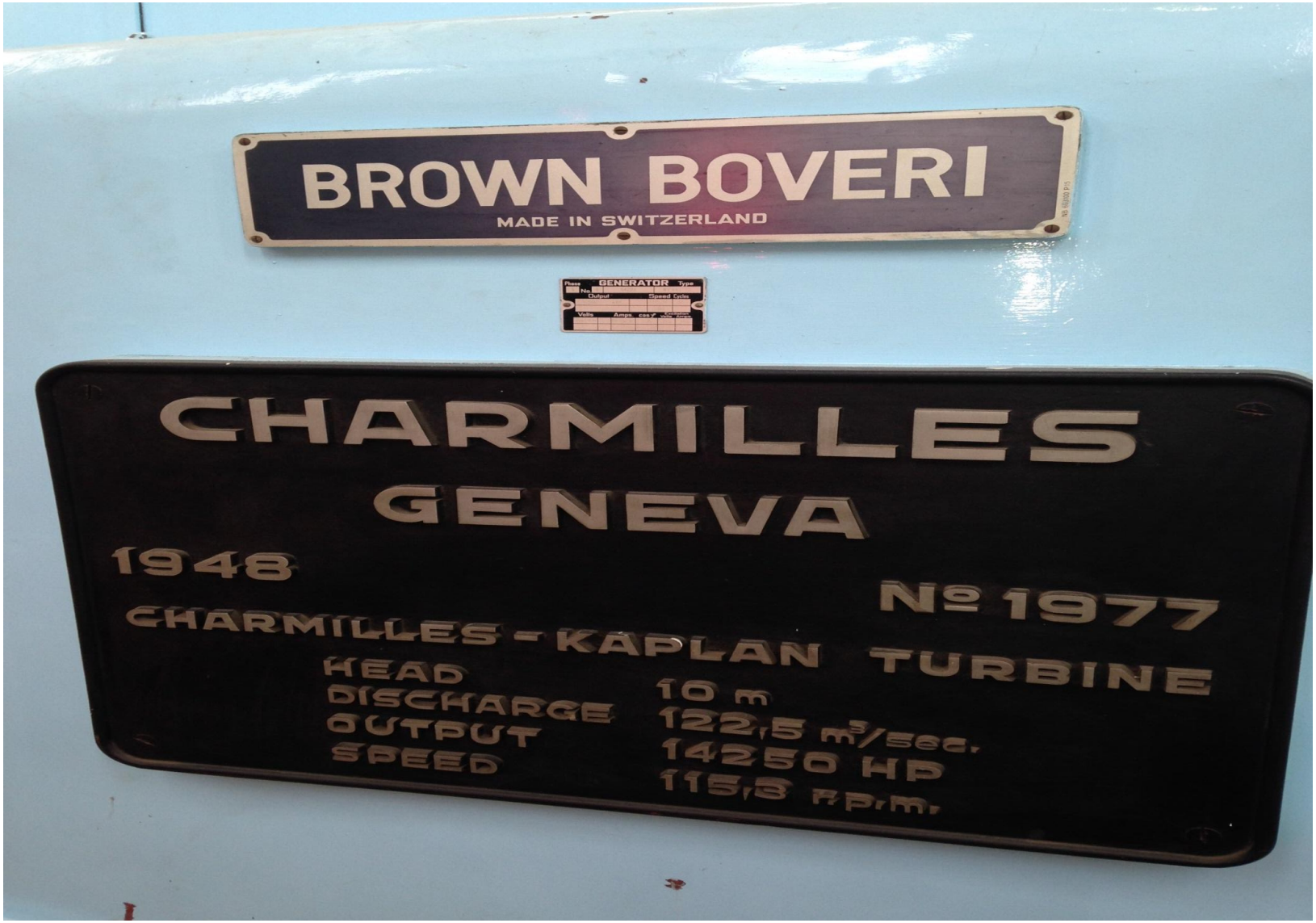
Wheels to run on existing fabrication & drive under friction.

Weight can be added to drive end by filling hollow tanks in the frame with water.

The machine cuts a flat plane because the wheels are controlled to maintain the milling cutter in a level plane by referencing off a central scanning laser, which has been set to the desired plane.

Other concentric and parallel faces can be machined once the face on which the machine rolls has been machined.

6.5 Meter diameter Water Turbine


BROWN BOVERI
MADE IN SWITZERLAND
GENERATOR
CHARMILLES
GENEVA
1948
Nº 1977
CHARMILLES - KAPLAN TURBINE
HEAD 10 m
DISCHARGE 122,5 m³/sec.
OUTPUT 14250 HP
SPEED 115,3 r.p.m.

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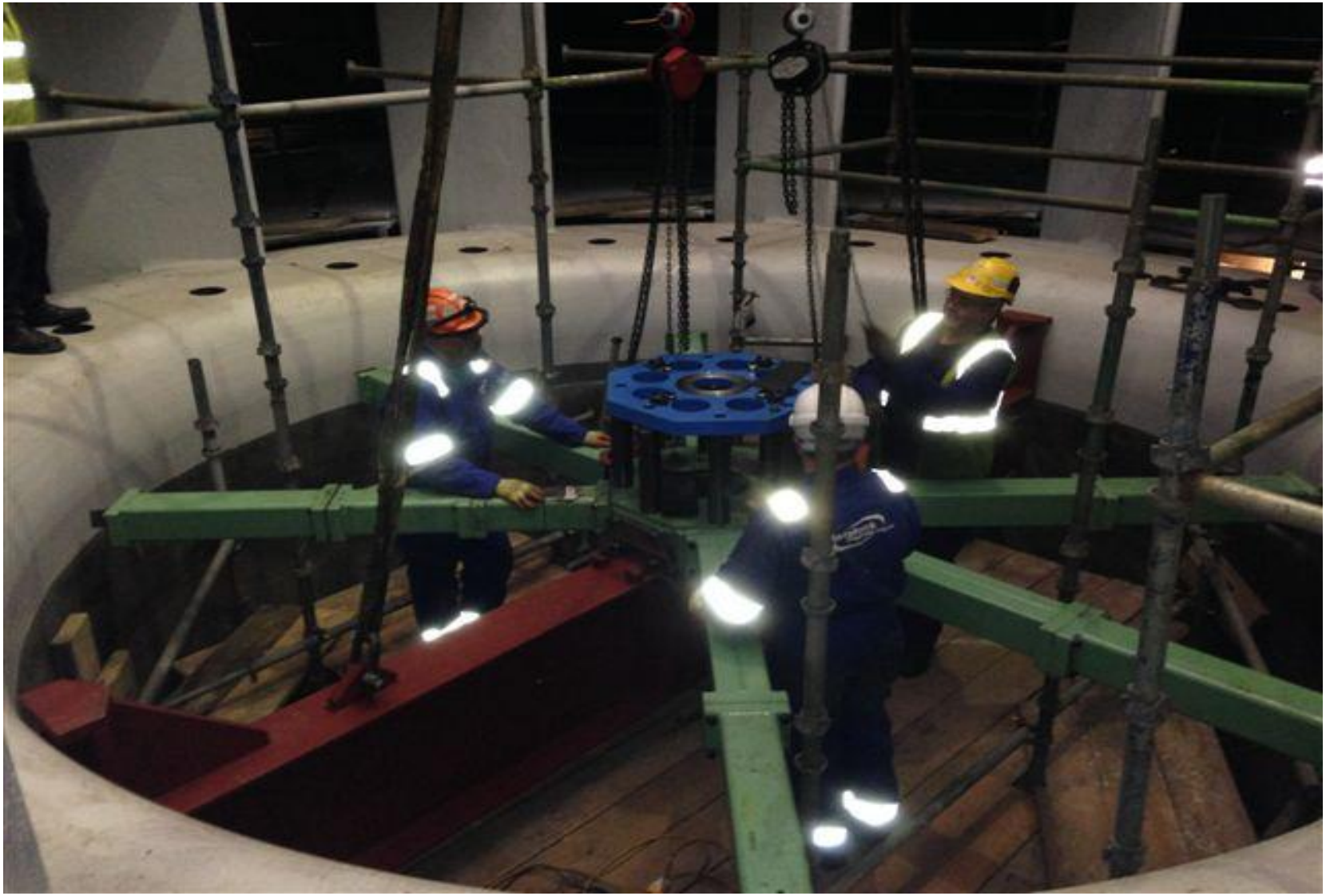

Base going in

Top Steady going in

Laser Controlled Machining

Machine being lifted in

Laser Controlled Machining

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Machine being lifted in

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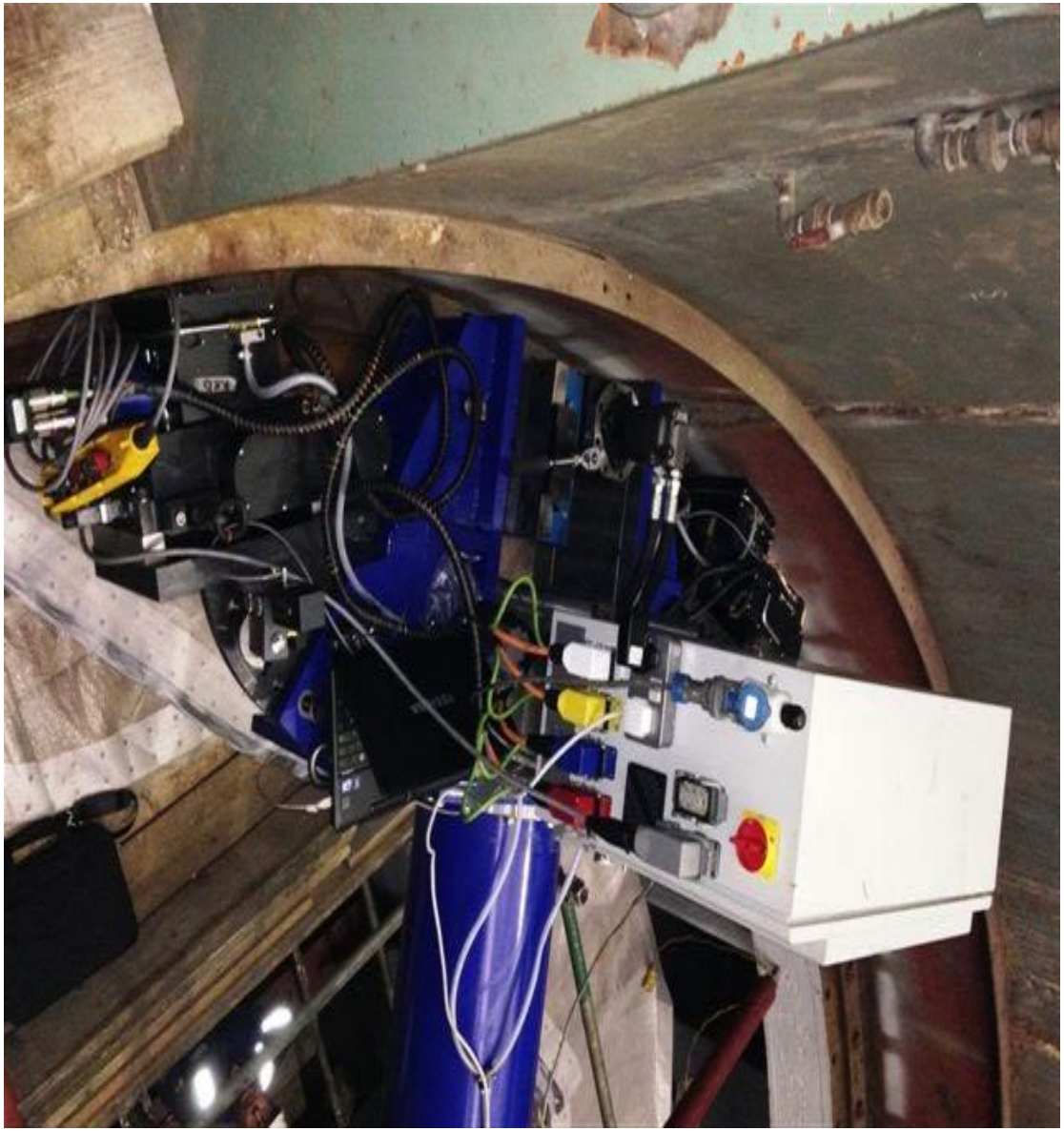

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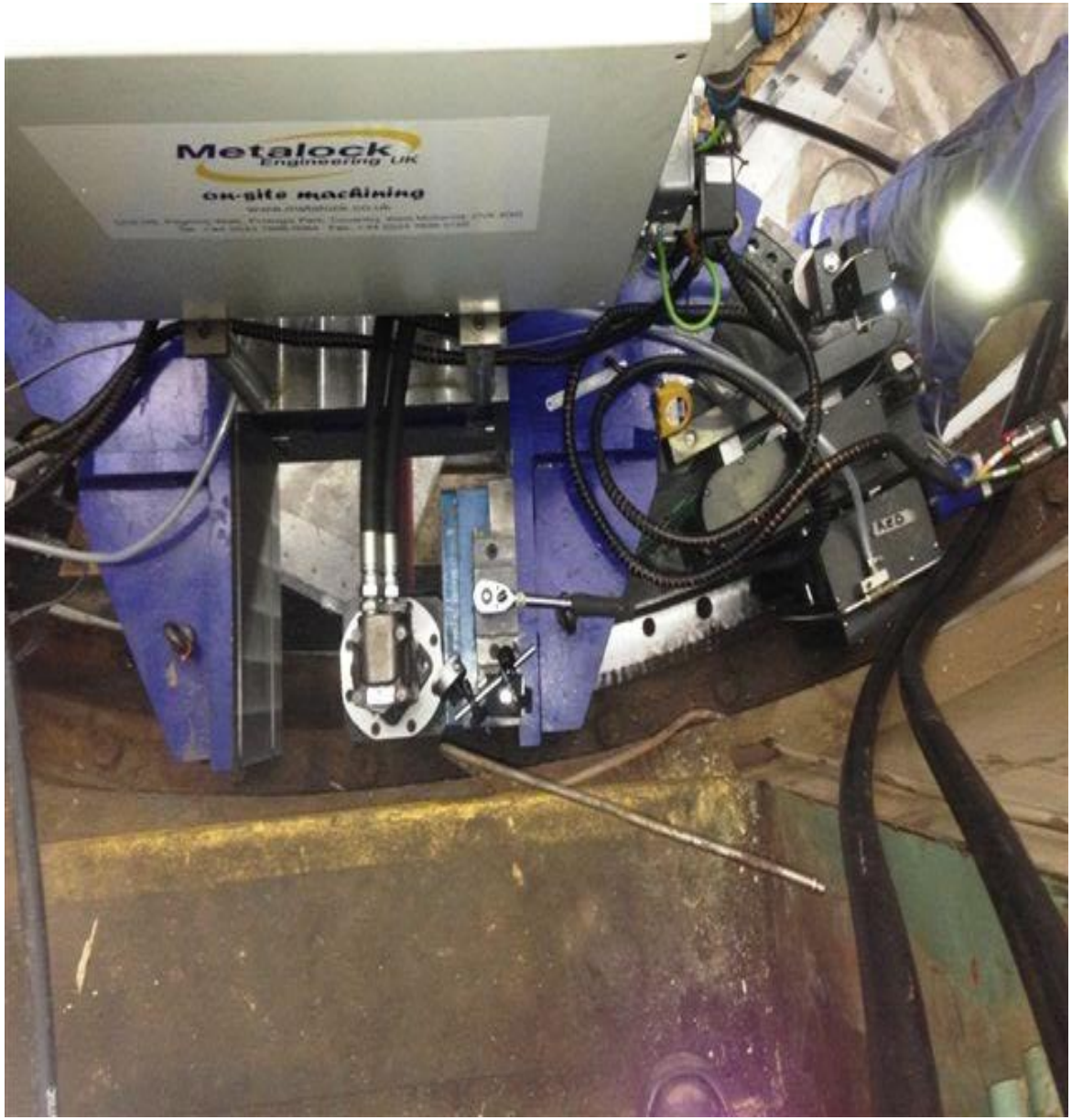

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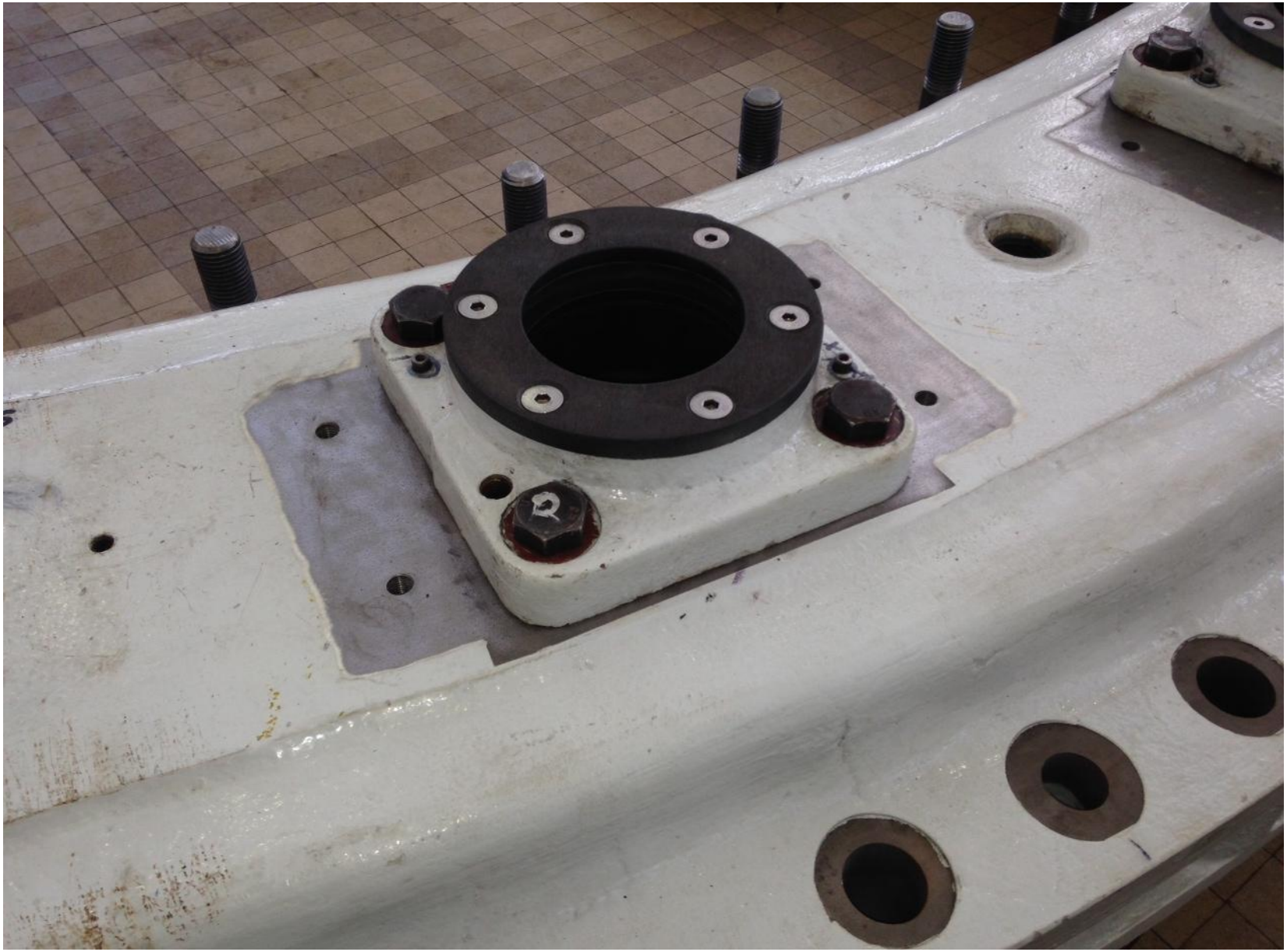

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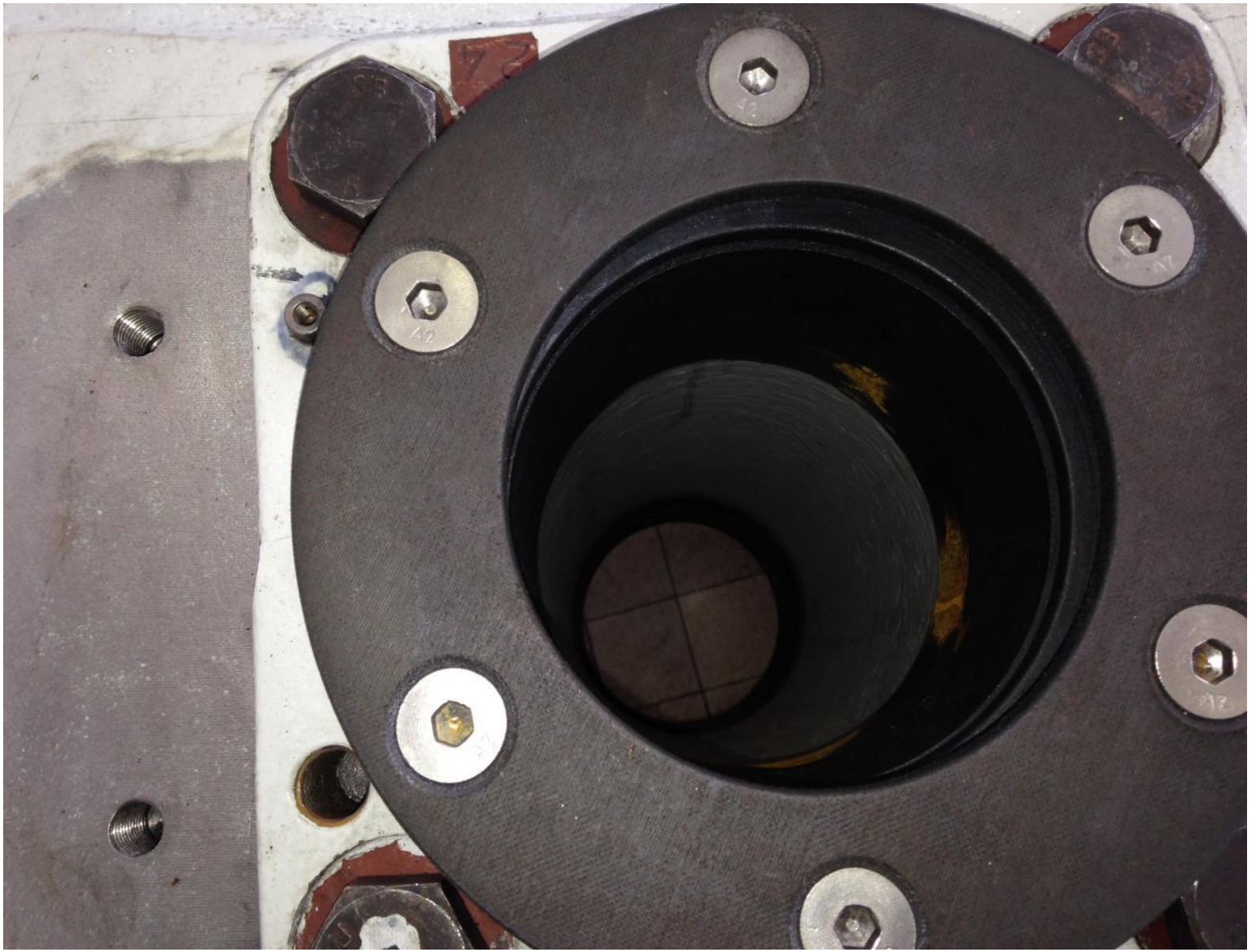

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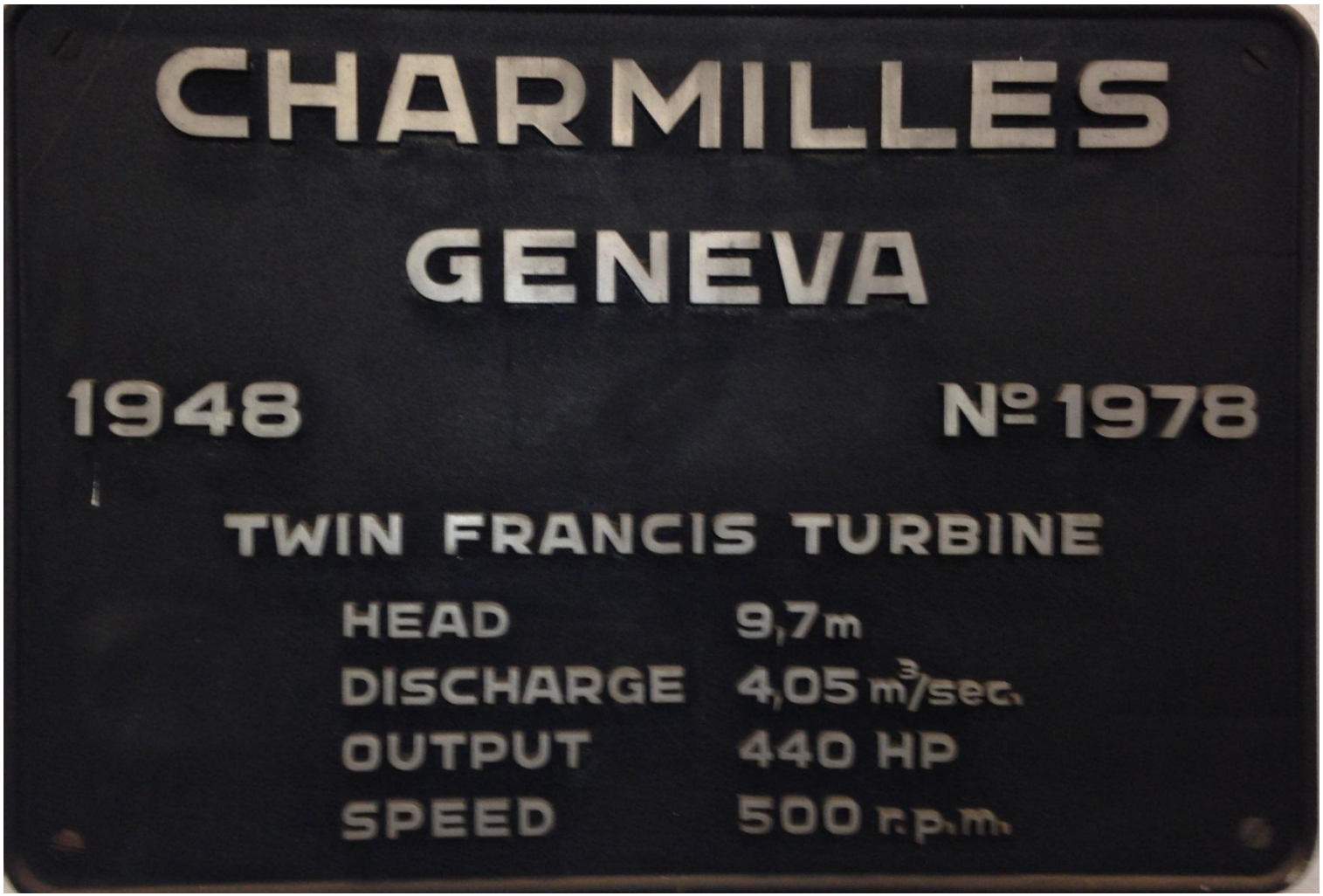

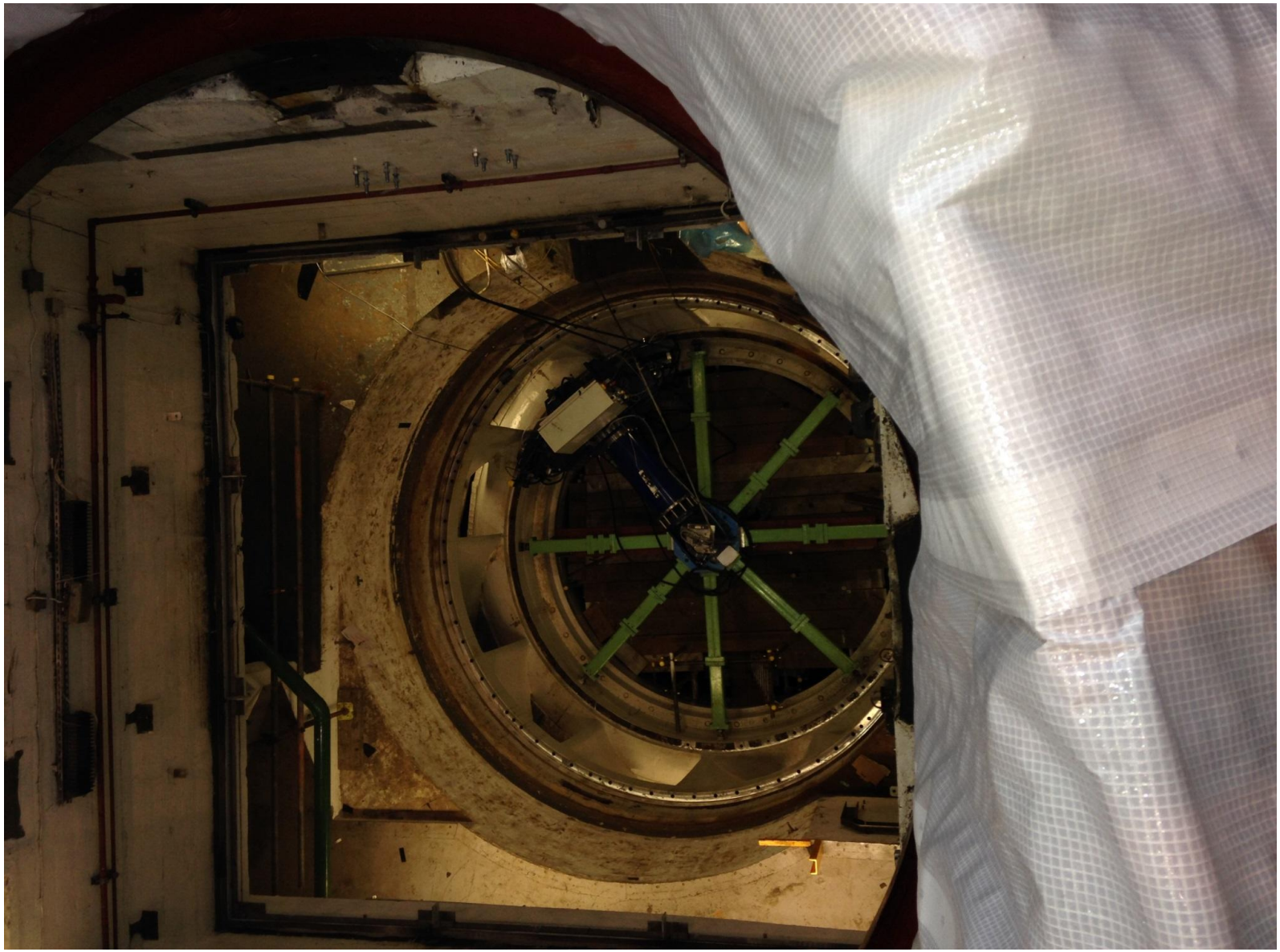

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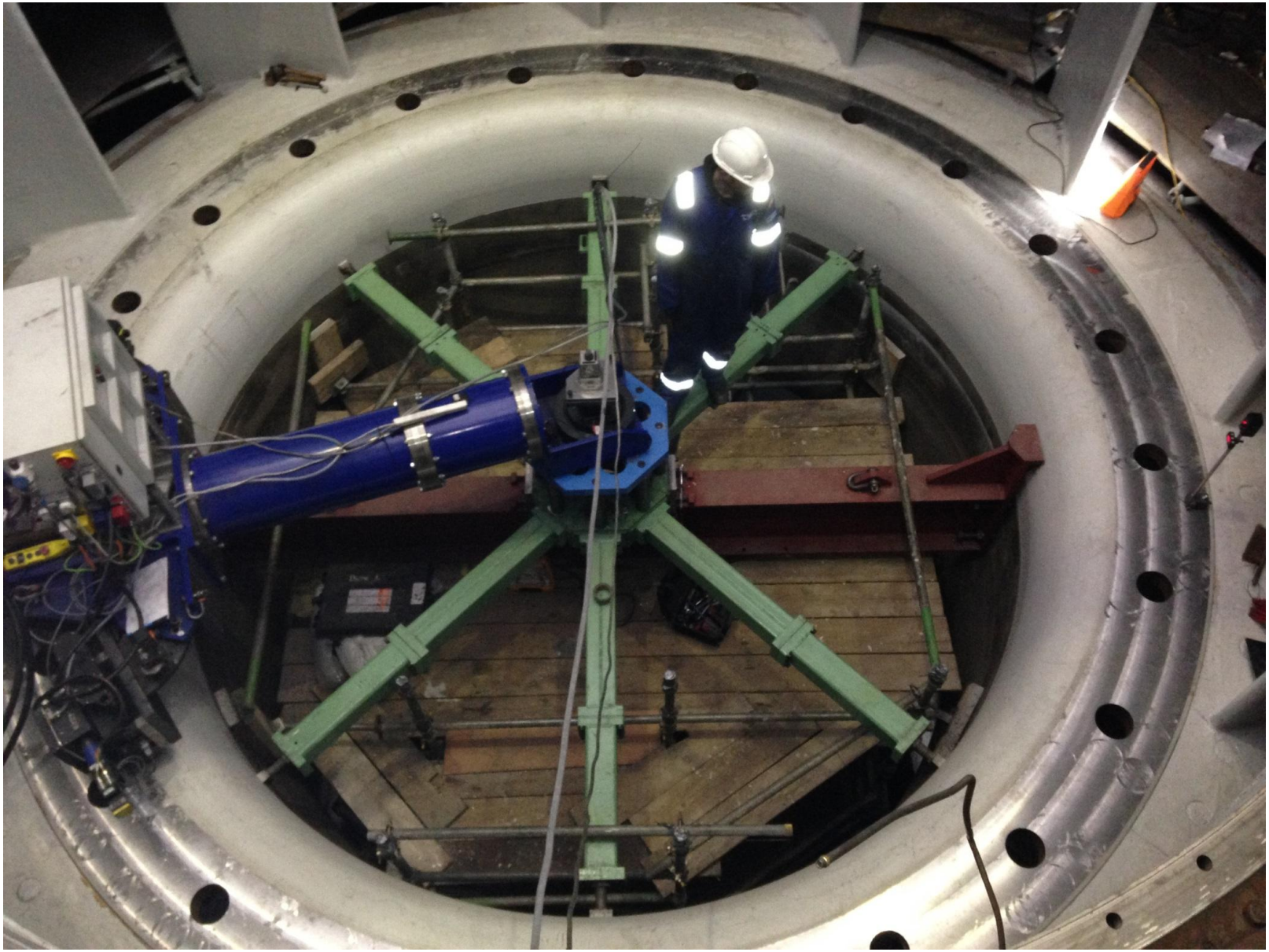

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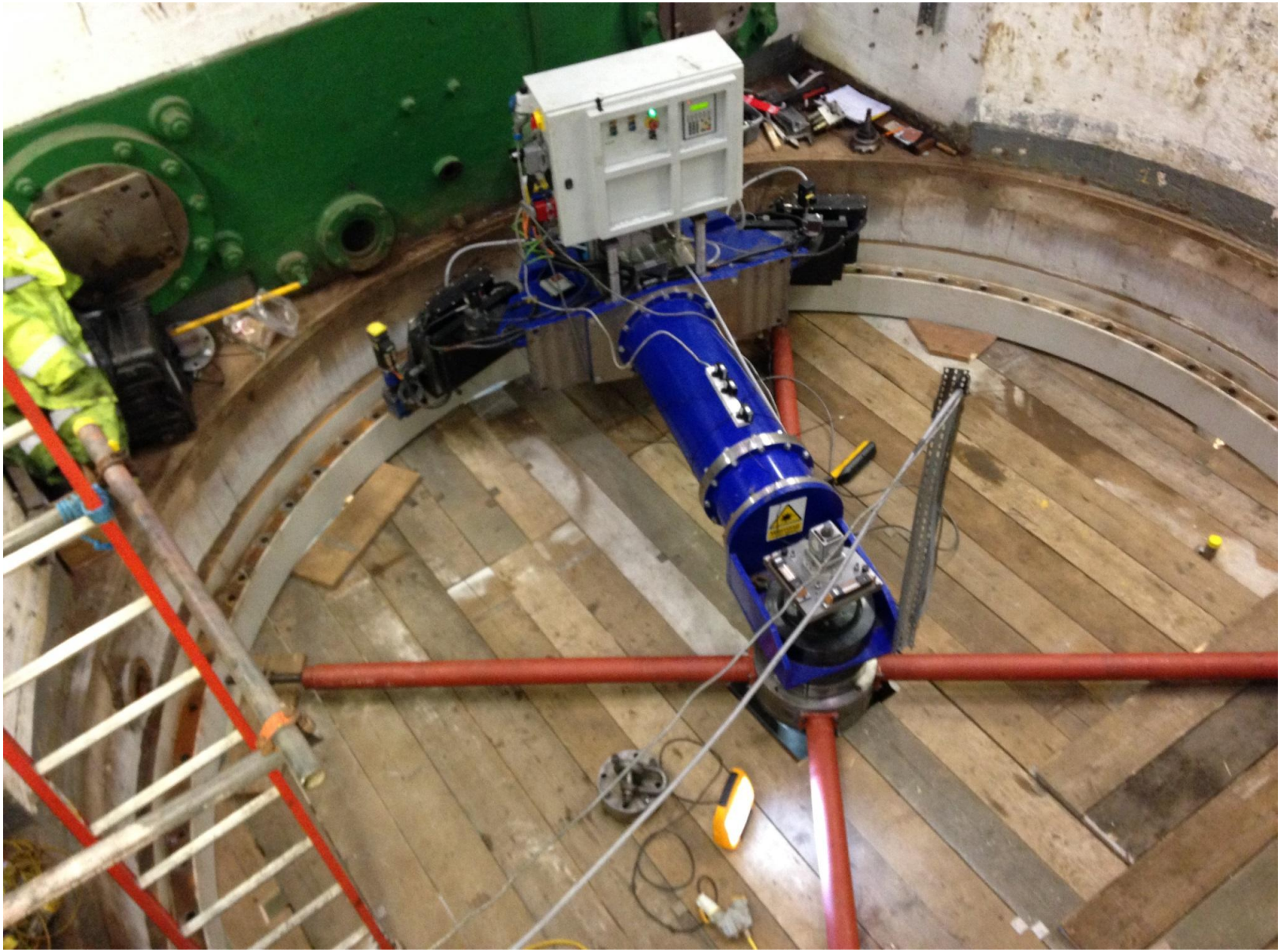

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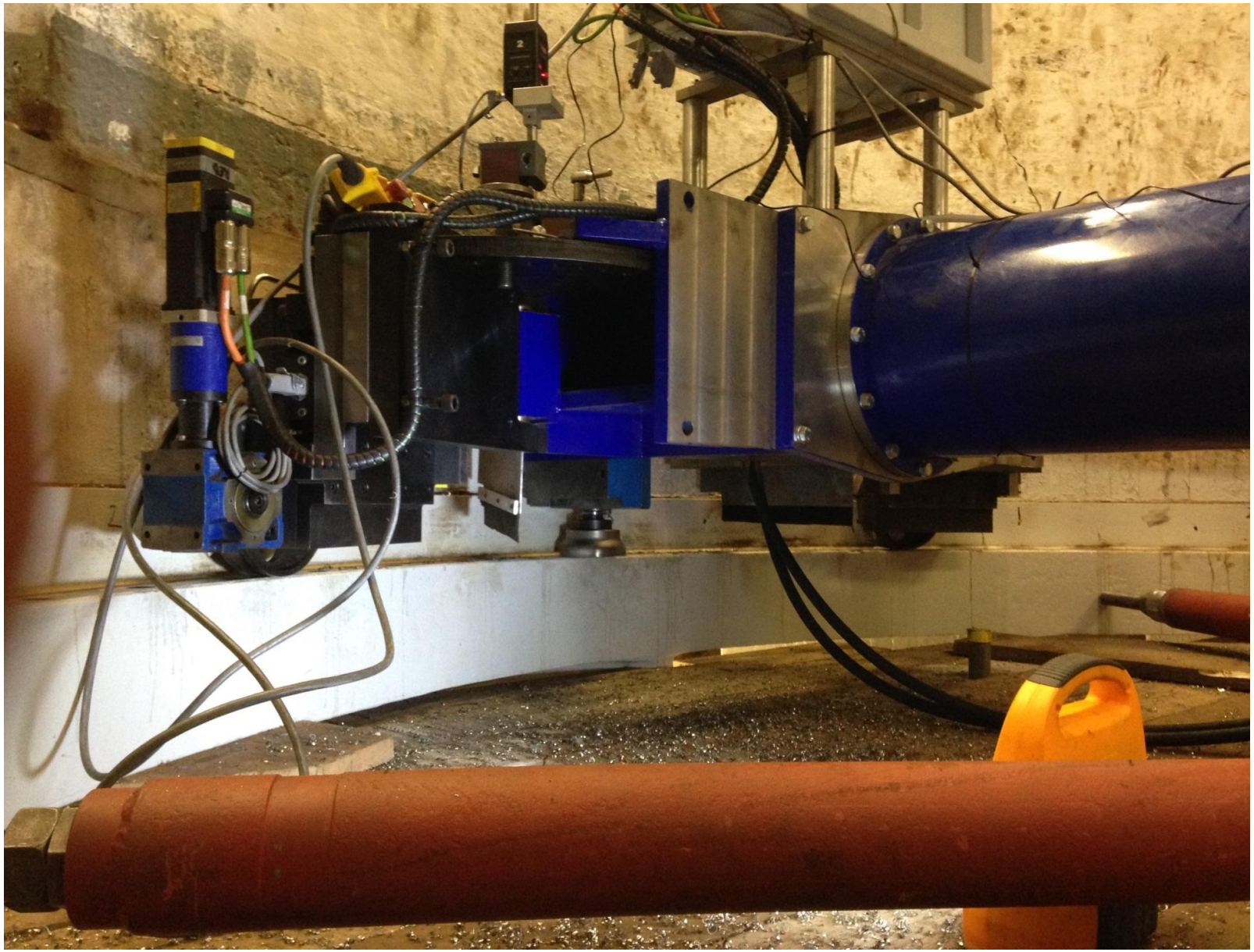

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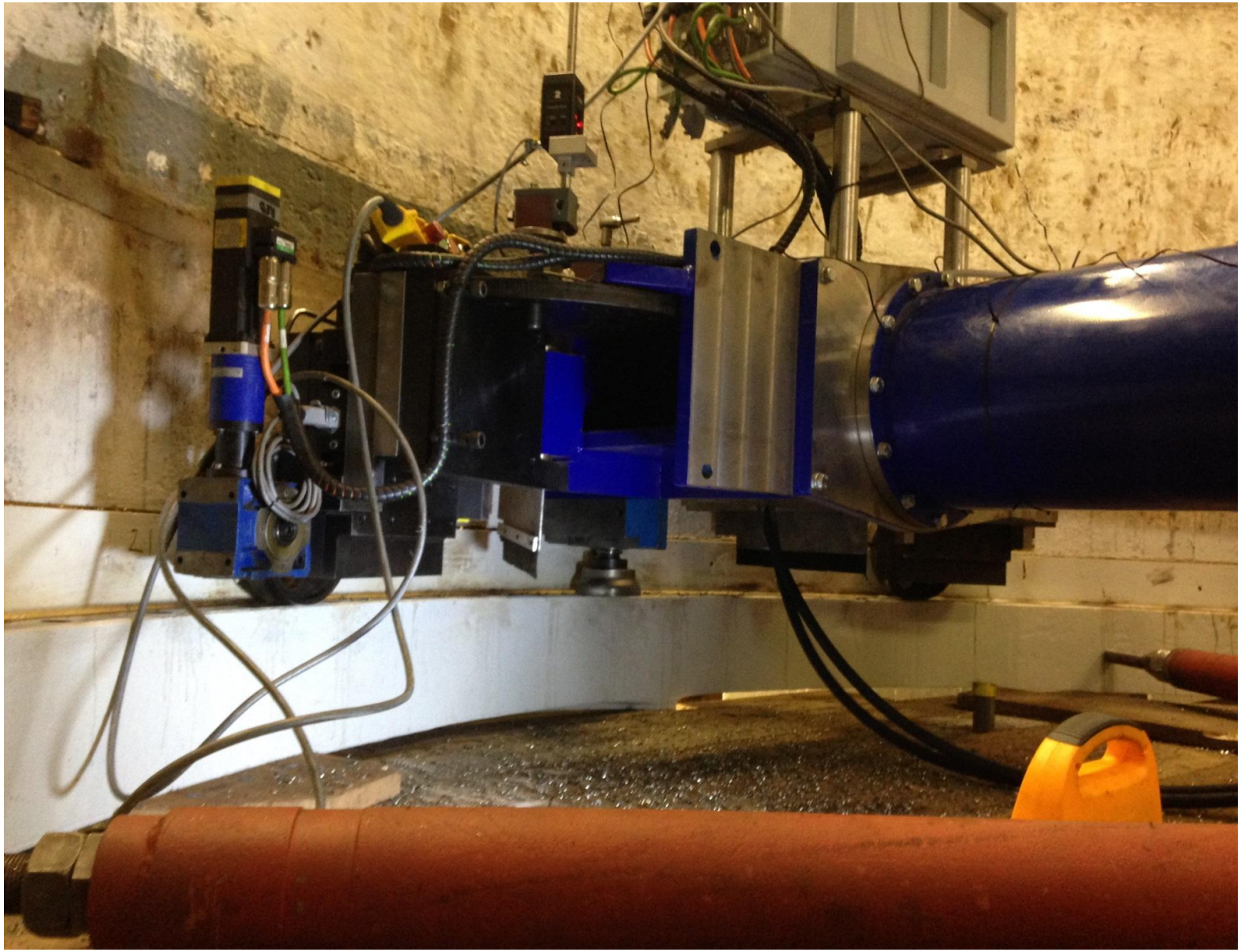

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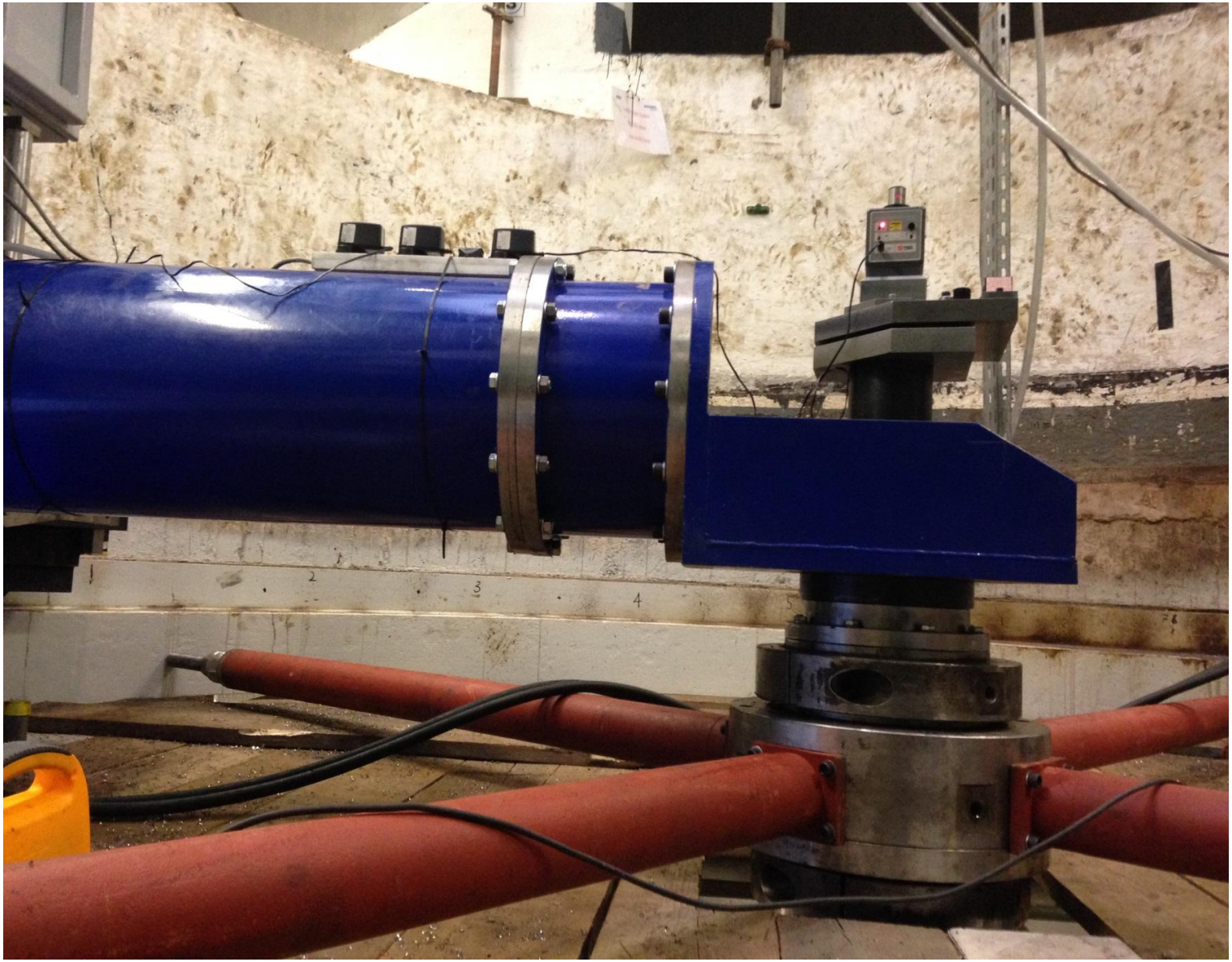

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