

▲ Module YE+2 and YE+3 lowered into the cavern 97m below ground level

The 15 segments of the CMS detector have been lowered into the cavern by VSL (Switzerland) Ltd., by means of a gantry crane equipped with hydraulic strand lowering units.

CERN (European Center of Nuclear Research) awarded the contract for the rental and operation of the gantry crane to VSL in late 2004.

Scope of work performed

Lowering of 15 segments of the CMS detector, weighing between 250t and 1.950t. Lowering distance 97m.

Equipment:

4 lifting/lowering units type SMU 580/550 completed by automatic coilers and a computerized level control unit.

The scope of contract included design, rental, erection, operation and dismantling of the gantry crane and of the custom made attachment pieces for the 15 loads, which weighed between 250 t and 1,920t.

The gantry had 28m span and 25m free height. It consisted of a portal frame made up of standard tower segments and 200 t of custom made steel structures.

Four hydraulic lowering units of 580t capacity each were installed in weather protected places on top of the portal frame, together with hydraulic coilers containing each 10t of strands. The hydraulic pumps with additional oil coolers were placed on open platforms, adjacent to the protected places.

The controls were situated in a container, on top of the gantry, to monitor the forces in the 4 hydraulic strand lowering units, the tilt to guarantee the horizontality of the load and numerous functions of the equipment itself.



▲ Gantry with weather protections



▲ Section YE+1, weighing 1.350t

OWNER
CERN European Center for Nuclear Research

MAIN CONTRACTOR
VSL Heavy Lifting Department

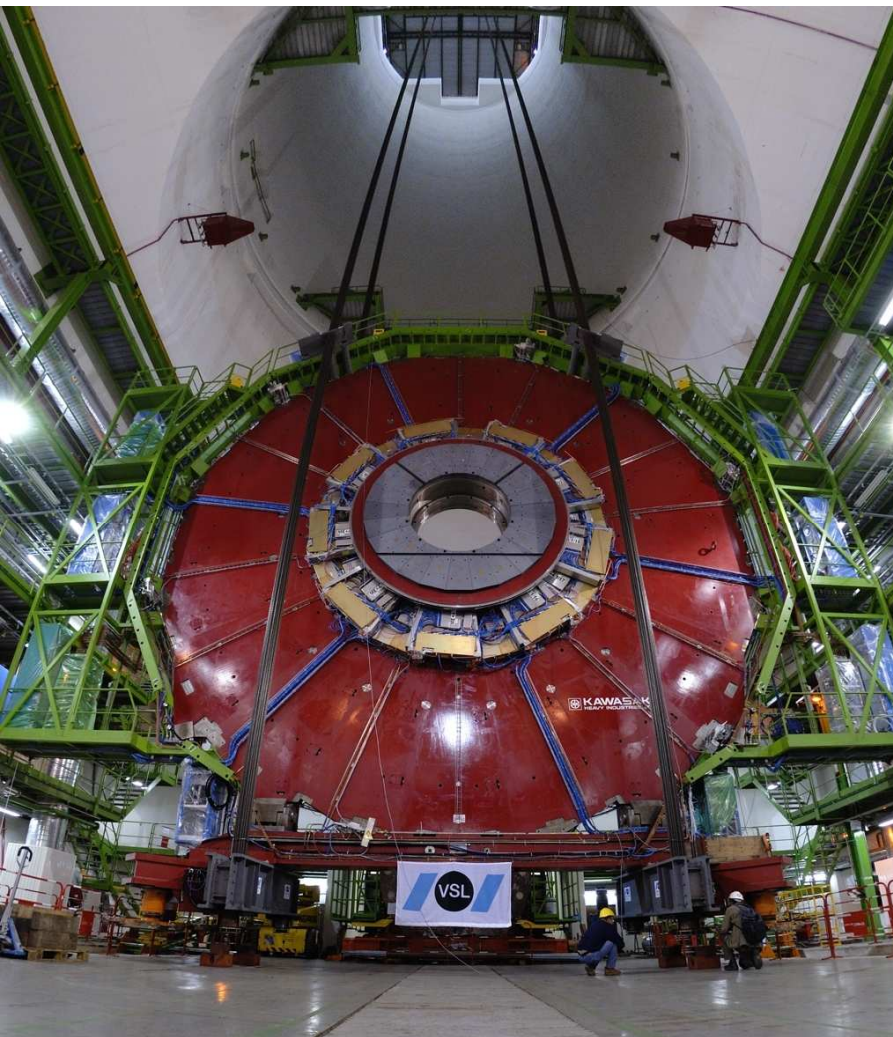
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2008

The gantry crane was tested and commissioned in October 2006. Tests included a static load test with 2.400 t, which is 125% of the heaviest load. Furthermore a test load of 250 t was lowered 97m into the cavern to check the correct functioning of the equipment.

The lowering operations started in early November 2006. Due to assembly work of CERN in the cavern, lowering operations could not be done in a continuous way. The last segment arrived in the cavern in early February 2008.

The average speed of lowering was 10 m / hour, hence the lowering of a segment, independently of its weight, took about 10 hours.

To our great pleasure VSL-HL has been awarded on April 24, 2008, the Crystal Award by CERN's CMS Collaboration - their highest industry award for extraordinary contractor achievements.



▲ Touchdown Section YE+3



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