

Boundary-Layer Wind Tunnel



Outside view on the Boundary-Layer Wind Tunnel

FORCE Technology's Boundary-Layer Wind Tunnel is used for a variety of aerodynamics studies. This wind tunnel has maximum wind speed of 24 m/s when empty.

The ceiling of the wind tunnel can be adjusted to different heights at model position allowing for compensation of blockage effects due to large models.

Special equipment is available to test ships, offshore installations, bridge sections and building constructions.

Basic Principle

The tunnel consists of an inlet section, a working section and a fan section. The air is sucked through the wind tunnel and returned through the building in which the wind tunnel is situated. In the inlet section, the air passes through a honeycomb, two fine-meshed nets and a contraction, which generates a uniform flow velocity with little turbulence.

Simulating the Atmospheric Wind

Since the investigated structures are exposed to the atmospheric wind in nature the turbulence characteristics have to be simulated properly in order to estimate the correct extreme wind loading for structural design.

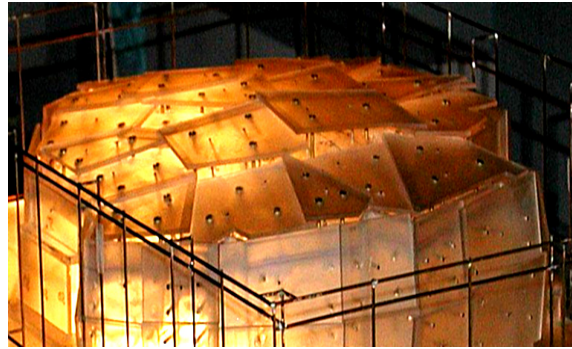
To meet this demand the long working section is necessary to build up a balanced turbulent boundary-layer representing the natural wind properties at model scale.

Main Dimensions of the Wind Tunnel

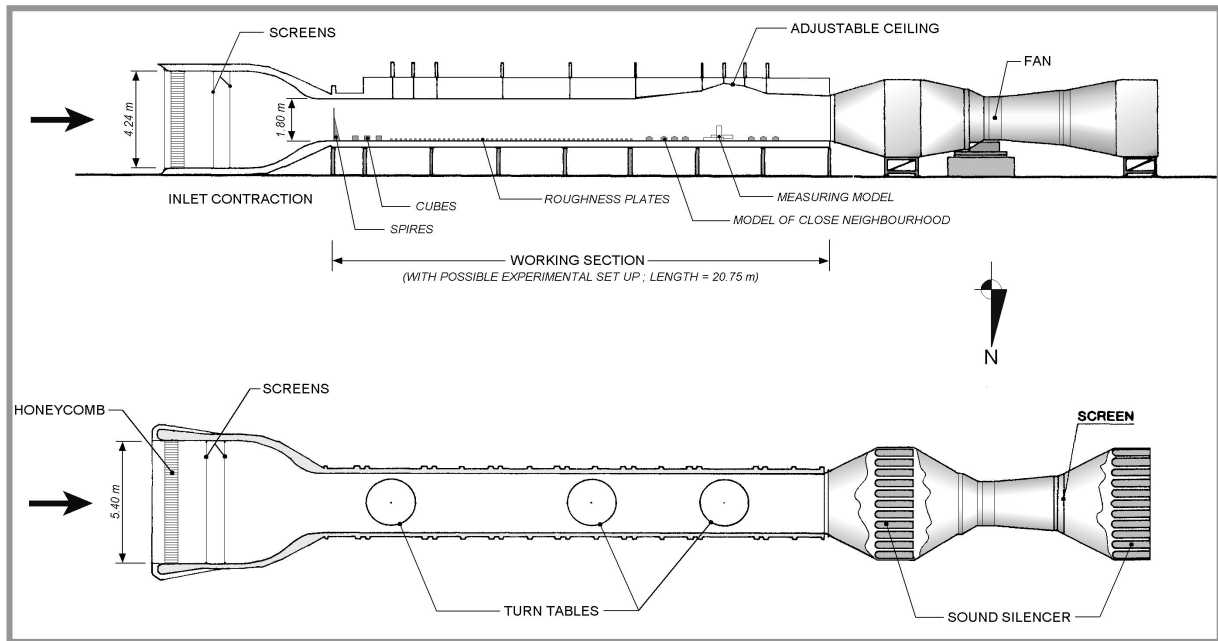
Length:	20.8	m
Width:	2.6	m
Height (adjustable):	1.8 – 2.3	m



Smoke dispersion test to study funnel performance



With pressure sensors equipped model to determine design wind loads



Principle sketch of FORCE Technology's Boundary-Layer Wind Tunnel

Purpose	Equipment
Wind Pressure	Differential pressure scanning system PSI 8400 with in-house developed acquisition software PT-PSI for high frequency measurements.
Vortex Induced Vibration	Special equipment for passive and active measurements of vortex induced vibration on offshore structure elements.
Smoke Dispersion	Mixing of buoyant gas, tracer gas and smoke to visualise and measure exhaust gas dispersion and noxious gas concentrations.
Airflow Measurement	High-frequent hot-wire anemometry; Laser Doppler Anemometry (LDA).
Airflow Visualisation	Neutral buoyant bubble illumination technique; Smoke visualisation.



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Subject to changes without notice

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