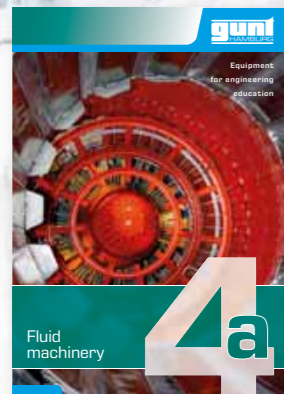


Introduction to the field

Fluid mechanics plays a fundamental and key role in engineering education. Lectures and laboratory exercises on fluid mechanics are part of the standard curriculum for a wide range of engineering disciplines, such as mechanical and plant engineering, energy and process engineering, environmental engineering,

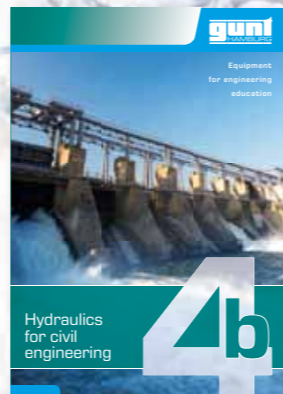
shipbuilding, civil engineering, agriculture, food technology etc. The fundamental principles of fluid mechanics are also an indispensable part of the teaching programme in vocational education and training for many technical professions.



- mechanical engineering
- system engineering
- aeronautics
- automotive engineering
- propulsion technology
- energy technologies



- mechanical engineering
- aeronautics
- applied sciences
- shipbuilding
- energy technologies
- process technology



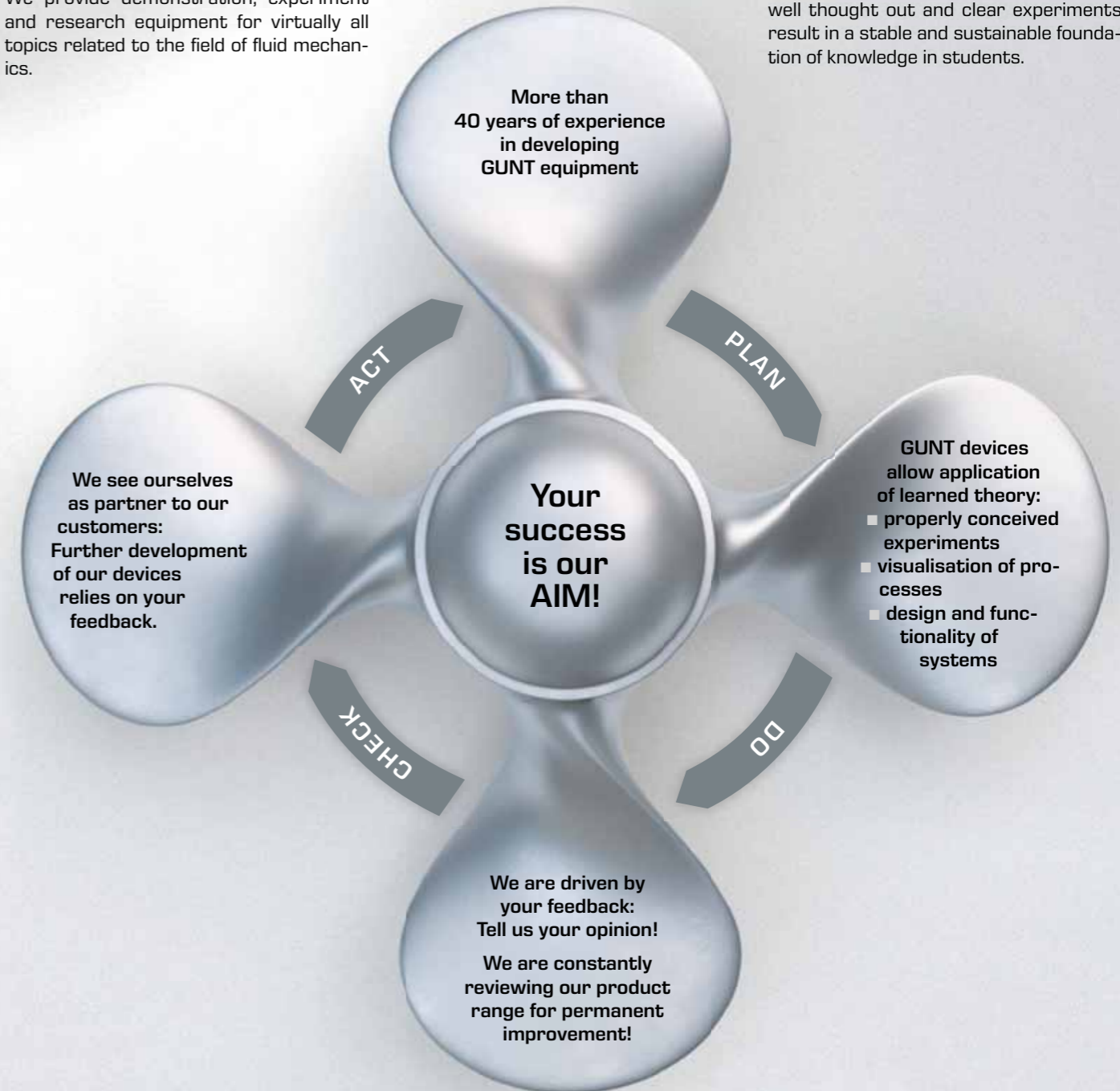
- hydraulic engineering
- supply engineering
- shipbuilding
- marine technology
- environmental engineering
- geosciences

What can GUNT do for you ...

...to support and enrich your lectures and lessons?

We provide demonstration, experiment and research equipment for virtually all topics related to the field of fluid mechanics.

You know – as a lecturer and academic in colleges and universities – and **we** know – as a developer and manufacturer – that well thought out and clear experiments result in a stable and sustainable foundation of knowledge in students.



Introduction to the field

GUNT devices cover – basically – the educational content of a common university curriculum in the subject area of fluid mechanics. To help you find the best device for your specific

needs, each chapter of this catalogue begins by allocating the learning content from the curriculum to the corresponding GUNT device.

The chapters are largely structured in line with the structure of the standard curriculum. Nevertheless, the allocation of individual GUNT experimental units to the curricular elements is not completely “clear-cut” since with various devices the over-

all range of experiments is more broad and more variable. This means that you may use GUNT devices for more than is specifically required by the curriculum.

Main area	Elements, keywords
Physics and properties of fluids	<ul style="list-style-type: none"> ■ material properties of liquids and gases ■ density, temperature, pressure ■ heat capacity, gas constant, enthalpy, steam pressure ■ viscosity, surface tension, capillarity
Fluids at rest	<ul style="list-style-type: none"> ■ basic equation of hydrostatics, connected vessels, hydraulic press ■ compressive forces on boundary surfaces ■ buoyancy
Fundamentals of fluid dynamics	<ul style="list-style-type: none"> ■ friction effects, flow patterns ■ laws of conservation, control volume ■ continuity equation ■ momentum equation, principle of angular momentum
Steady flow of incompressible fluids	<ul style="list-style-type: none"> ■ cavitation ■ flow in pipe systems: laminar, turbulent ■ pressure losses in straight pipes, in pipe fittings, in valves and fittings ■ discharge processes
Steady flow of compressible fluids	<ul style="list-style-type: none"> ■ energy equation of gaseous fluids ■ velocity of sound, Mach number, critical velocity of sound ■ movement with velocity of sound ■ pressure and velocity distributions in pipe flow

Main area	Elements, keywords
Steady flow around bodies	<ul style="list-style-type: none"> ■ boundary layer, resistance of bodies in flow, pressure distribution ■ aerofoil: lift, forces, torques, aerodynamic coefficients
Flow measurement technology	<ul style="list-style-type: none"> ■ measuring pressure, velocity, temperature, flow rate and level
Free jets	<ul style="list-style-type: none"> ■ geometry of the outlet opening ■ velocity profile
Selected examples of transient flows	<ul style="list-style-type: none"> ■ transient flow in pipes and surge chambers ■ water hammer
Fluid energy machines	<ul style="list-style-type: none"> ■ turbomachines, positive-displacement pumps ■ pumps, turbines, fans
Numerical methods / flow simulation	<ul style="list-style-type: none"> ■ Finite Element Method (FEM) ■ application of Computational Fluid Dynamics (CFD)
Components in piping systems	<ul style="list-style-type: none"> ■ straight pipes, pipe fittings ■ shut-off valves and fittings, pumps