

SLM SOLUTIONS: Case report on 3D build of hydraulic valve block; **THALES:** Expertise: submarines & lasers.
WHERE OUR SUPPLIERS ARE EXHIBITING: So that you can plan ahead. **WHAT'S IN MY INBOX** – Pasta!



Images of the design phase:

Case Report

Hydraulic valve block for high performance

VTT Technical Research Centre of Finland Ltd is the largest multidisciplinary research organisation in Northern Europe and offers R&D services to industry. To support manufacturing using 3D metal printing the Research Centre worked in conjunction with **Nurmi Cylinders** to design and customise a 3D printed hydraulic valve block.

The result was a valve block 66% smaller than the original model design space, and 76% smaller than the traditionally manufactured valve block – all resulting in savings in weight space and material.

The valve block which is used to control hydraulic cylinders that move under loads applied via hydraulic fluid, can be found for example in cranes used in construction work. In traditional manufacturing processes, internal channels are created with straight (circular) drilling in a solid block of metal. More often than not extra holes need to be drilled and later plugged but have the potential for leaking. With SLM processes, the CAD design allows optimization of internal channels to improve flow while no extra drilling of holes is required.

VTT's testing over two years has paved the way for a more time efficient, cost effective procedure resulting in a light-weight, smaller but substantially robust hydraulic valve block.

Other key benefits lie in a design that can be replicated just as efficiently, or by transferring the design specifications via the internet, the hydraulic block can be produced in any other location wherever SLM facilities exist still complying with the original requirements.

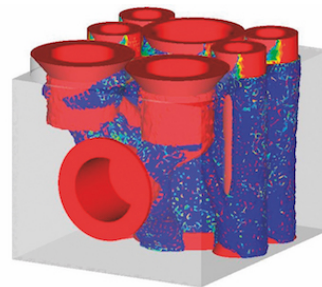


Figure 1:
Topology optimization result
(element density colour plot)



Figure 2:
Interpretation and remesh of
topology optimization results

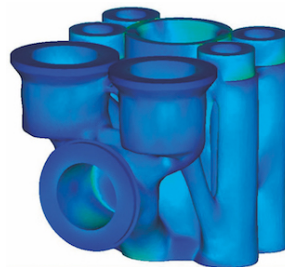


Figure 3:
Analysis of smooth
optimization design

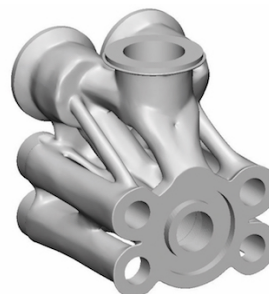
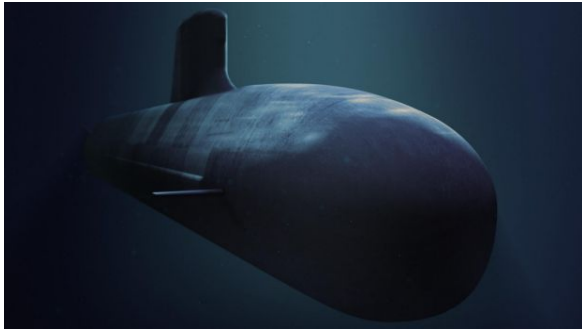


Figure 4:
Final smooth CAD file ready
for 3D printing

For more information about SLM Solutions and 3D printing of hydraulic valve blocks contact:
Raymax Lasers on 02 9979 7646



Thales has featured in the Australian news in 2016. As a shareholder of DCNS alongside the French government, the company won the Defence contract for the renewal of Australia's submarine fleet – the SEA 1000 program. The submarine construction will provide 2,800 jobs in the building of the Shortfin Barracuda, a conventionally-powered version of its new Barracuda nuclear attack sub.



Shortfin Barracuda – French submarine

More recently, Thales won the contract to upgrade of the sonar system in the current Collins class submarines. Thales is the world leader in sonars for submarines and supply all sonar services to the French submarine fleet. The Collins class upgrades will enable Australia to play a key role delivering leading edge sonar capability for Australian submarines.

Thales is also a leader in design, development and manufacture of lasers suitable for science, industry, space and defence. The high energy nanosecond lasers and high intensity, ultra-short Ti:Sa femtosecond lasers offer exceptional technical performance in a reliable easy-to-use system.



A 200TW installed in South West Jiaotong University China to study the dynamic response of condensed material when it is subject to rapid compression.

Raymax Applications is the Australian distributor of Thales laser systems. Call us on 02 9979 7646

WHERE OUR SUPPLIERS ARE EXHIBITING:

SLM SOLUTIONS:

June 15 - 29, 2017 International Paris Air Show, Paris, France
May 9 – 12, 2017 AUSTECH, Melbourne, Australia
February 14 - 16, 2017 Tire technology Expo 2017, Hannover, Germany
December 06 - 07 2016 Aviation Forum, Hamburg, Germany
December 01 - 03 2016 Rubbertech China, Shanghai, China
November 15 -18 2016 formnext 2016, Frankfurt, Germany

THALES:

29 November to 3 December 2016
EXPO NAVAL 10th International Naval & Maritime Exhibition and Congress for Latin America.

LASERLINE:

Lamiera 17 – 20 May, 2017 Milano, Italy
Blechexpo 7 – 10 November 2017 Stuttgart, Germany

WHAT'S IN MY INBOX!

Just when we thought we had it right – now this!

Paleo practitioners, Atkins advocates and the anti-gluten brigade have got it all wrong, according to the latest research from the University of Sydney's Charles Perkins Centre. The ideal diet to fight obesity while boosting levels of the 'fountain of youth' hormone is low in protein and high in carbohydrates! Enjoy!

