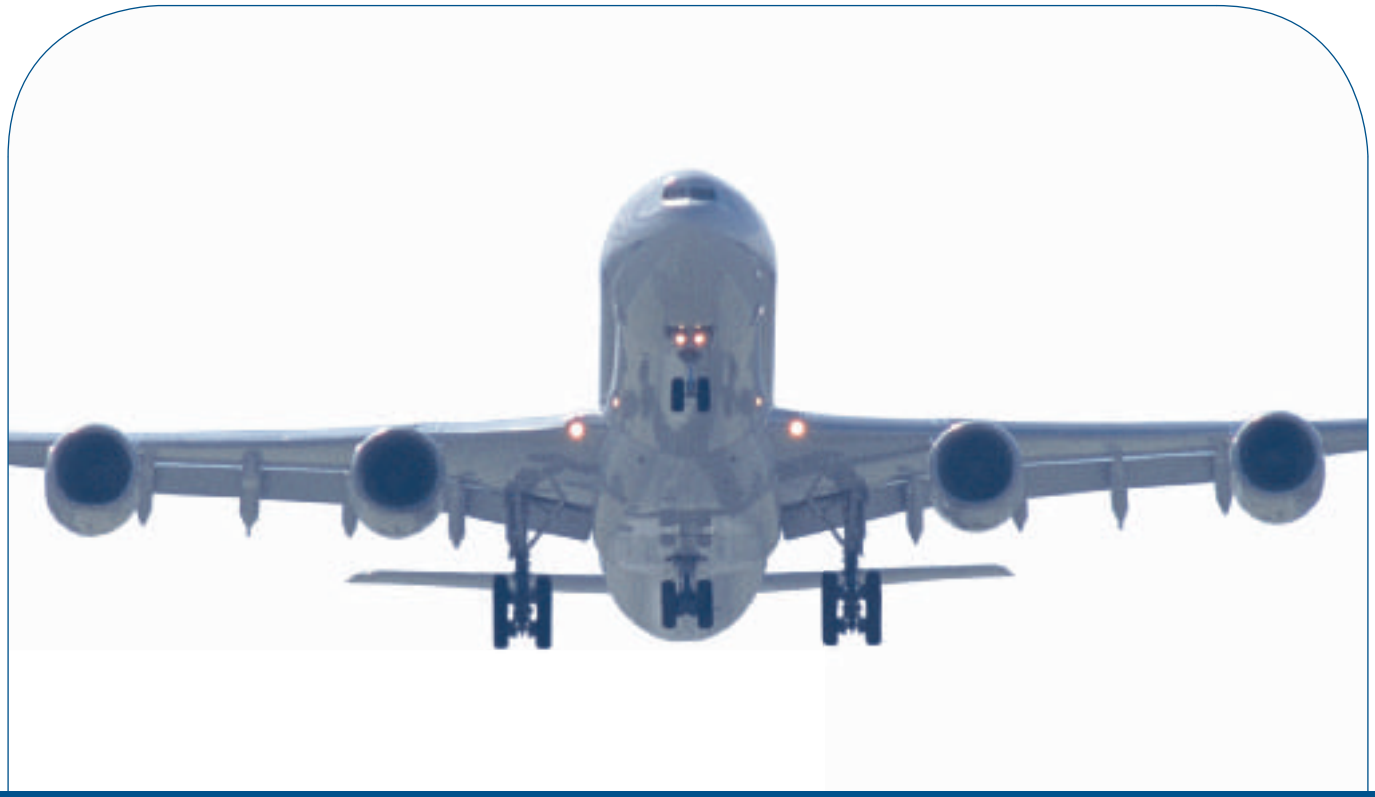
High-Performance Materials for Aerospace



... 718 • X • 625 • 188 • X-750 • Waspaloy • C-263 • Rene 41 • Ti 6Al-4V • Ti-6Al-2Sn-4Zr-2Mo • CP-Ti (Grade 1)...

A company of ThyssenKrupp Stainless

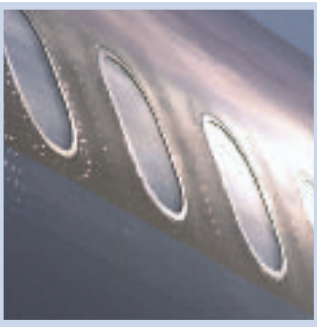
ThyssenKrupp VDM

ThyssenKrupp

ThyssenKrupp VDM – your reliable partner in high-performance materials

ThyssenKrupp VDM can draw on over 75 years' experience as a producer of high-performance alloys for extremely demanding applications and process environments. Strategic mergers and acquisitions have made the company one of the world leaders in the production of nickel, titanium and cobalt alloys and special stainless steels. Its production sites in Germany and the USA can draw on extensive metallurgical know-how and long standing experience in the production of long and flat products in aerospace grade materials. A globally operating sales organization with 14 subsidiaries, working in coordination with strategically situated service centres, ensures optimum customer proximity and a very significant footprint in all key regions and markets.

For several years now, ThyssenKrupp VDM has pursued an extensive investment programme geared towards modernizing and expanding its production facilities so as to maintain its leading position in the high-performance alloys market while stepping up its activities in the aerospace engineering sector. Our objectives are to meet our customers' requirements, be able to carry out every step in the production chain in-house, respond flexibly to customer needs and guarantee maximum delivery reliability.

In aerospace engineering, safety is always the top priority. Vibrations, tremendous temperature differences and mechanical loads place enormous demands on all components. These are manufactured with utmost precision from practice proven materials. Only pre-material that meets all the stringent requirements of international standards and customer specifications for quality and processes are used in the production of aircraft components.

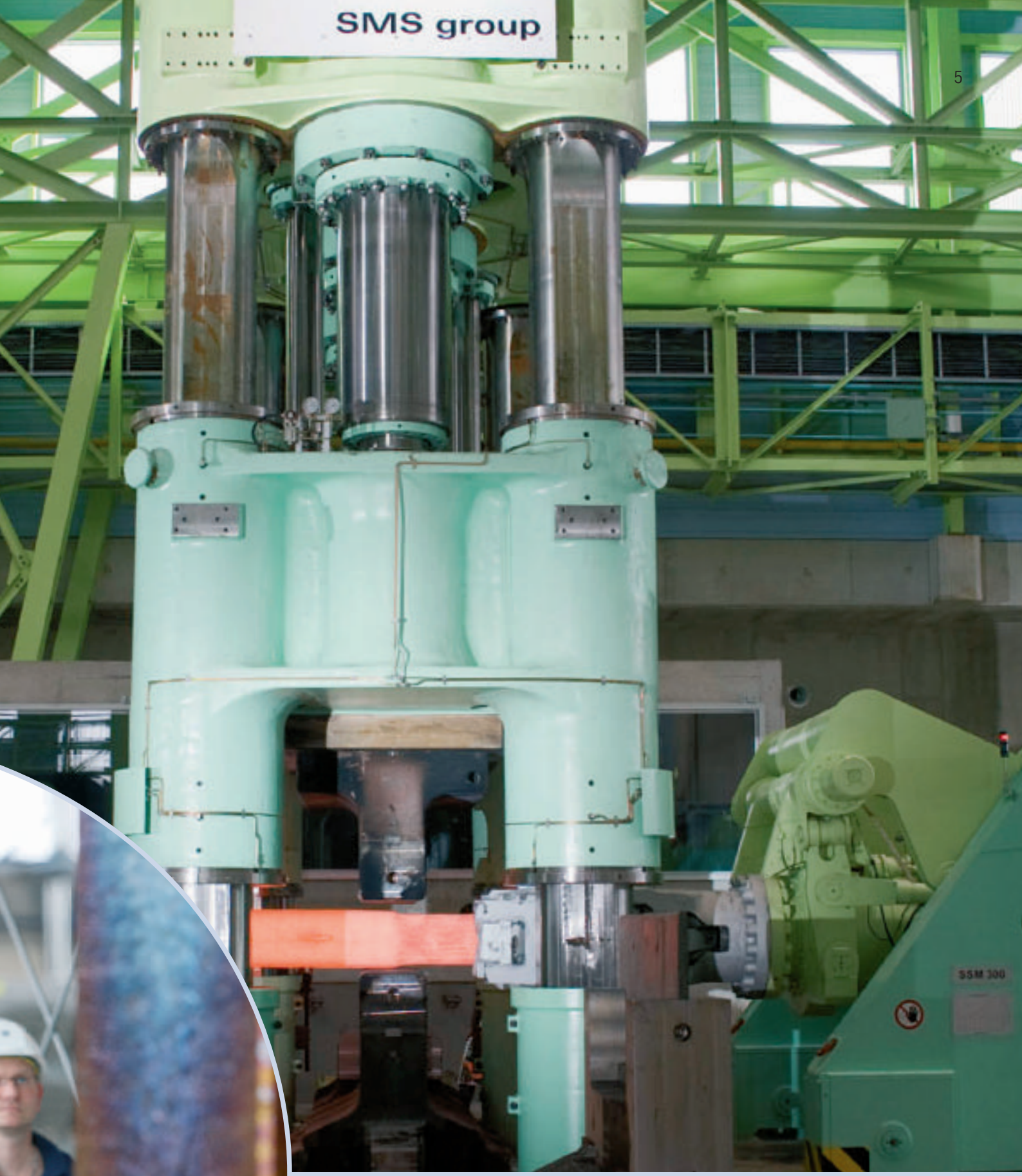
ThyssenKrupp VDM assumes full responsibility for its products and processes, employees and partners. Our comprehensive metallurgical know-how and long standing experience, a closed production chain and a seamless quality assurance system guarantee constant product quality.

ThyssenKrupp VDM – your reliable partner for future-proof material supplies

An ultramodern and extremely versatile range of facilities, including VIM and EB furnaces, a number of ESR/VAR remelting units and various production lines means ThyssenKrupp VDM is optimally equipped to meet present and future market demands and challenges. Tailored to the requirements of a robust production process, all our equipment features state-of-the-art process data acquisition for maximum productivity and reproducible product quality. With the integrated production chain completed by our new forging line, especially for ingots, billets and forged bars, all major production steps are now carried out under our own roof: an indispensable prerequisite for a robust and stable manufacturing process. This enables us to guarantee products of highest purity and homogeneity and optimum processability.

Our affiliation with the ThyssenKrupp Group ensures financial strength and flexibility for future-oriented investments. The production capacities and capabilities at ThyssenKrupp VDM have been significantly expanded in recent years. Our investments are the basis for solid growth, both for our customers and for ourselves, through ensured high product quality and delivery reliability.

The continuous optimization process in place at all levels of the value chain is geared towards the long-term goal of achieving the lowest possible production costs so as to guarantee maximum economic efficiency for our customers.


SMS group
SSM 300

Alloys & specifications

Nickel, iron & cobalt-base alloys			Long products					Flat products		
			Billet	Bar	Shapes	Wire	Tubes	Plate	Sheet	Strip
Nickel alloys (age hardenable)										
C-263	Nicrofer 5120 CoTi	AMS 5872, AMS 5886, DMD 442-22, GE B 50A774, MSRR7038	●	●	●	●		●	●	
René 41		AMS 5712, AMS 5713, AMS 5545, GE B50T59, GE B50TF75, GE B50TF76, GE B50TF109, GE B50TF110, GE B50TF210, GE C50T71, GE C50TF11	●	●	●					
Waspaloy	Nicrofer 5919 CoTi	AMS 5704, AMS 5706, AMS 5707, AMS 5708, AMS 5709, ASTM-B-637, DMD 426-22, SPS-M-175, MTS1100, GE C50TF90	●	●	●					
X-750	Nicrofer 7016 Ti Nb	AMS 5542, AMS 5598, AMS 5747, AMS 5667, AMS 5668, AMS 5670, AMS 5671, ASTM-B-637, GE B50T1232, GE B50YP44	●	●	●					
80A	Nicrofer 7520 Ti	ASTM-B-637, DIN 17480, DIN 17742, BS-2-HR-1	●	●	●					
706		AMS 5605, AMS 5606, AMS 5701, AMS 5702, AMS 5703	●	●	●					
718	Nicrofer 5219 Nb	AMS 2281, AMS 5596, AMS 5597, AMS 5662, AMS 5663, AMS 5664, ASTM-B-637, DMD 424-22, GE B14H89, GE B50TF69, GE B0TF14, GE B50TF15, LA 143, RBO 170-153, RBO 170-287, SPS-M-275, SPS-M-637, AIMS 02-02-002, MTS 1424	●	●	●			●	●	●
722		AMS 5541, AMS 5714, GE B50T73	●	●	●					
901	Nicrofer 4416	AMS 5660, AMS 5661, SPS-M-259	●	●	●					
903		ES-9-254, GE B50TF151	●	●	●					
Nickel alloys (non-hardenable)										
333	Nicrofer 4626 MoW	AMS 5593, AMS 5717, ASTM-B-719, RA 24	●	●	●			●	●	
400	Nicorros	AMS 4730, AMS 4544, AMS 4674, AMS 4675 ASTM-B-127, ASTM-B-164, QQ-N-281	●	●	●	●		●	●	●
600	Nicrofer 7216	AMS 5540, AMS 5580, AMS 5665, AMS 5687, AMS 5961, AMS 7232, ASTM-B-163, ASTM-B-166 – 168, ASTM-B-366, ASTM-B-516/517, ASTM-B-564, ASTM-B-751, DMD 422, MIL-N-6710	●	●	●	●		●	●	●
601	Nicrofer 6023	AMS 5715, AMS 5870, ASTM-B-163, ASTM-B-166 – 168, DIN 17742, DIN 17750 – 17753	●	●	●	●		●	●	●
617	Nicrofer 55020 Co	AMS 5887 – 5889, ASTM-B-166 – 168, ASTM-B-546, ASME-SB-166, ASME-SB-168, ASME-SB-564, ROLLS ROYCE C-51	●	●	●	●		●	●	●
625	Nicrofer 6020 hMo	AMS 5581, AMS 5599, AMS 5666, AMS 5837, ASTM-B-366, ASTM-B-443/444, ASTM-B-446, ASTM-B-564, ASTM-B-704/705, ASTM-B-751, ASME-SB-443/444, ASME-SB-446, LA 168, LA 243, LA 260, LA 398, DIN 17744, DIN 17750-17753, EMS 55425, MTS 1187, CCT_00260, MIL-DTL-24799	●	●	●	●		●	●	●
B-2	Nimofer 6928	ASTM-B-333, ASTM-B-335, GE B50T38	●	●	●	●		●	●	●
C-276	Nicrofer 5716H MoW	AMS 5750, ASTM-B-366, ASTM-B-462, ASTM-B-472, ASTM-B-564, ASTM-B-574/575, ASTM-B-619, ASTM-B-626, ASME-SB-366, ASME-SB-574/575, ASME-SB-619, ASME-SB-622, ASME-SB-626	●	●	●	●		●	●	●
75	Nicrofer 7520	DIN 17742, DIN 17750 - 17753, LA 006	●	●	●			●	●	●
HB		ASTM-B-335, GE B50T38, RBO 170-002	●	●	●					

Nickel, iron & cobalt-base alloys			Long products					Flat products		
			Billet	Bar	Shapes	Wire	Tubes	Plate	Sheet	Strip
Nickel alloys (non-hardenable)										
HN		AMS 5607, AMS 5771	●	●	●					
HS		AMS 5711, AMS 5873	●	●	●					
HW		AMS 5755			●					
HX		AMS 5536, AMS 5754, ASTM-B-572, DMD 491-23, GE B14H74, GE B50A436, GE B50A463, GE B50TF31, GE B50TF24, PWA 1038, LA 261	●	●	●	●		●	●	●
Cobalt, chromium, nickel alloys										
188	Conicro 4023 W	AMS 5608, AMS 5772, AMS 5801, DMD 408-22, GE B50A712, GE B50TF74A, LA 148	●	●	●			●	●	●
L-605	Conicro 5010 W	AMS 5537, AMS 5759, ASTM-F-90, ASTM-F-1091, DIN 65021, DIN 65038, DMD 415-22, GE B50A460, GE B50T26, GE B50TF1, LA 070, LA 88, MIL-C-24252	●	●	●	●		●	●	
N-155		AMS 5532, AMS 5768, AMS 5769, ASTM-B-639	●	●	●					
PRP-35N		AMS 5758, AMS 5844, AMS 5845, SPS-M-646	●	●	●					
Austenitic iron-base alloys (age hardenable)										
A286	Cronifer 1525 Ti	AMS 5726, AMS 5731, AMS 5732, AMS 5734, AMS 5735, AMS 5737, AMS 5895, ASTM-A-453, ASTM-A-638, GE B50T12, GE B50T81, GE B50T1181, SPS-M-118, SPS-M-250, ASME SA453, C-28A	●	●	●					●
Nickel, iron and nickel, iron, cobalt alloy										
GSA	Pernifer 2918	AMS 7726, AMS 7727, AMS 7728, AMS-I-23011, ASTM-F-15, MIL-I-23011	●	●	●	●		●	●	●
Ni 36	Pernifer 36	ASTM-F-1684, Boeing D 33028-2	●	●	●	●	●	●	●	●
(Ni 33)	Pernifer 33 Co		●	●	●	●	●	●	●	●

Titanium & titanium alloys* *complete list of available specifications on request			Long products					Flat products		
			Billet	Bar	Shapes	Wire	Tubes	Plate	Sheet	Strip
Unalloyed										
CP-Ti (Grade 1)	RT 12	ASTM-B-348	●	●			●	●	●	●
CP-Ti (Grade 2)	RT 15	AMS 4902, AMS 4921, AMS 4942, ASTM-B-348	●	●			●	●	●	●
CP-Ti (Grade 3)	RT 18	AMS 4900, ASTM-B-265, ASTM-B-337/338, ASTM-B-348, ASTM-F-67	●	●				●		
CP-Ti (Grade 4)	RT 20	AMS 4901, AMS 4921, ASTM-B-348, ASTM-F-67	●	●				●		
Alpha-Beta titanium alloys										
Ti-6Al-2Sn-4Zr-2Mo	LT 24	AMS 4975, AMS 4976	●	●						
Ti 6Al-4V	LT 31	AMS 4911, AMS 4928, AMS 4965, AMS 4967, ASTM-B-348, ASTM-F-136	●	●				●	●	
Ti-6Al-4V ELI		AMS 4930, ASTM-F-136	●	●				●		
Ti-6Al-6V-2Sn	LT 33	AMS 4971, AMS 4978	●	●						
Ti-4Al-4Mo-2Sn-Si	LT 34		●	●				●		
Beta titanium alloys										
Ti-15V-3Cr-3Sn-3Al	LT 43	AMS 4914	●	●				●		

We currently hold the following approvals:

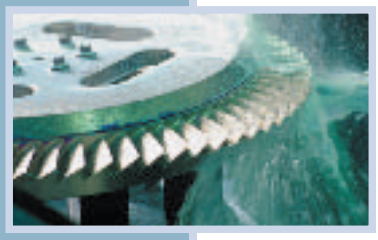
Quality system approvals

- General Electric Aircraft Engines
- Lloyds
- MT Aerospace
- Perry Johnson Registrars
- SPS
- Pratt & Whitney LCS Approval
- ISO 9001 Nadcap
- AS 9100
- GE S-400
- RR SABRe 9000
- Snecma Laboratory Approval

Customer approvals

Nickel alloys
- AHG
- Airbus
- BAE Systems Aircraft Business Unit
- Boeing Rocketdyne
- Böhler Schmiedetechnik
- Carlton Forge
- Exameca
- GE Aviation
- McDonnell Douglas
- McWilliams Forge
- Leistritz Turbinenkomponenten
- MTU Aero Engines
- Northrop Grumman
- Otto Fuchs
- Pratt & Whitney
- Rolls-Royce
- Snecma
- T.I. Reynolds Rings
- Turbomeca

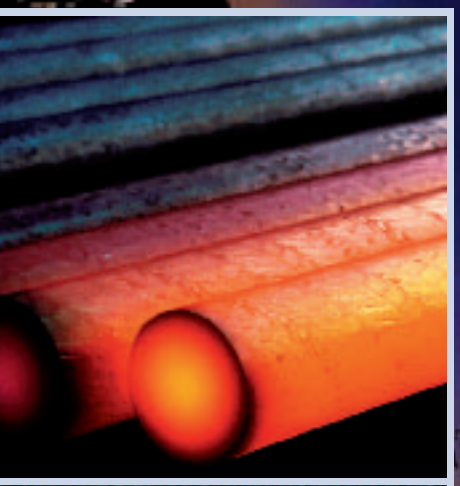
Titanium and titanium alloys
- Agusta
- Airbus
- Boeing
- McDonnell Douglas
- Messier Bugatti
- Messier Dowty
- MT Aerospace
- MTU Aero Engines
- Rolls-Royce
- Snecma
- Turbomeca

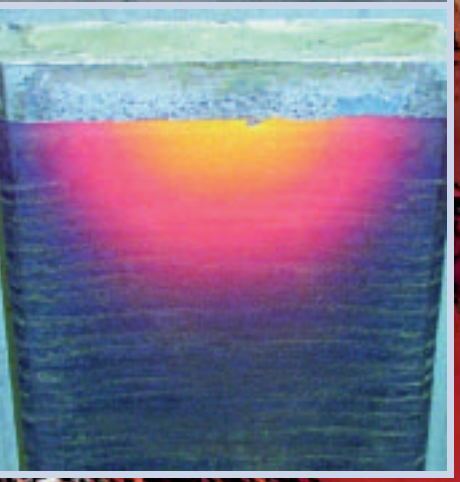


ThyssenKrupp VDM – your reliable partner for innovative solutions

The challenges of the future are typically shaped by continuously increasing market demands, ever more exacting customer requirements and broader application ranges. In this complex scenario we rely on our experience and the innovative spirit of our experts in research and development, process design and technology. We break new ground to enhance the performance potential of our materials while optimizing their application possibilities for our customers.

Efficient networking with industrial partners, universities and institutes is an indispensable precondition for the successful development of new technologies. We maintain a constant dialogue with our customers and various research institutes. This enables us to create innovative solutions to the most difficult challenges.





ThyssenKrupp VDM – your reliable partner for maximum performance

Nickel and titanium alloys are the most important materials for critical engine components and are subject to extreme loads. Ever tighter specifications for the materials translate into higher demands on people and manufacturing processes. The entire production chain is monitored by our own quality management system in line with international aerospace guidelines and customer specifications. This comprehensive quality management system ensures the defined quality of our products. In 2009, ThyssenKrupp VDM was the first company worldwide to receive the Crystal Award from Lloyd's Register in Cologne for more than 20 years of successful quality management.

We also meet the highest demands in terms of service quality and reliability. As a leading provider of customized solutions for a wide variety of materials supply for the aerospace industry, ThyssenKrupp VDM is proud to have enjoyed decades of partnership with numerous customers. We develop reliable, flexible solutions for the various stages of the supply chain. ThyssenKrupp VDM is the right partner – always and everywhere.

Our ultimate objective is to provide fast and reliable supplies of nickel and titanium alloys and customized solutions that maximize economic efficiency.

ThyssenKrupp VDM is at home in the high performance materials business, as is demonstrated by our market positions. We are the uncontested Number One in the European market for nickel alloys and can also be found in the forefront of the global market.

Our experienced sales team will be by your side – from the consulting stage through to product delivery. Talk to us!

ThyssenKrupp VDM GmbH
Plettenberger Str. 2
58791 Werdohl
P.O. Box 1820
58778 Werdohl
Germany
Phone: +49 2392 55-0
Fax: +49 2392 55-2217
E-mail: aerospace.vdm@thyssenkrupp.com
www.thyssenkruppvdm.com

JP/SchH_07/2009