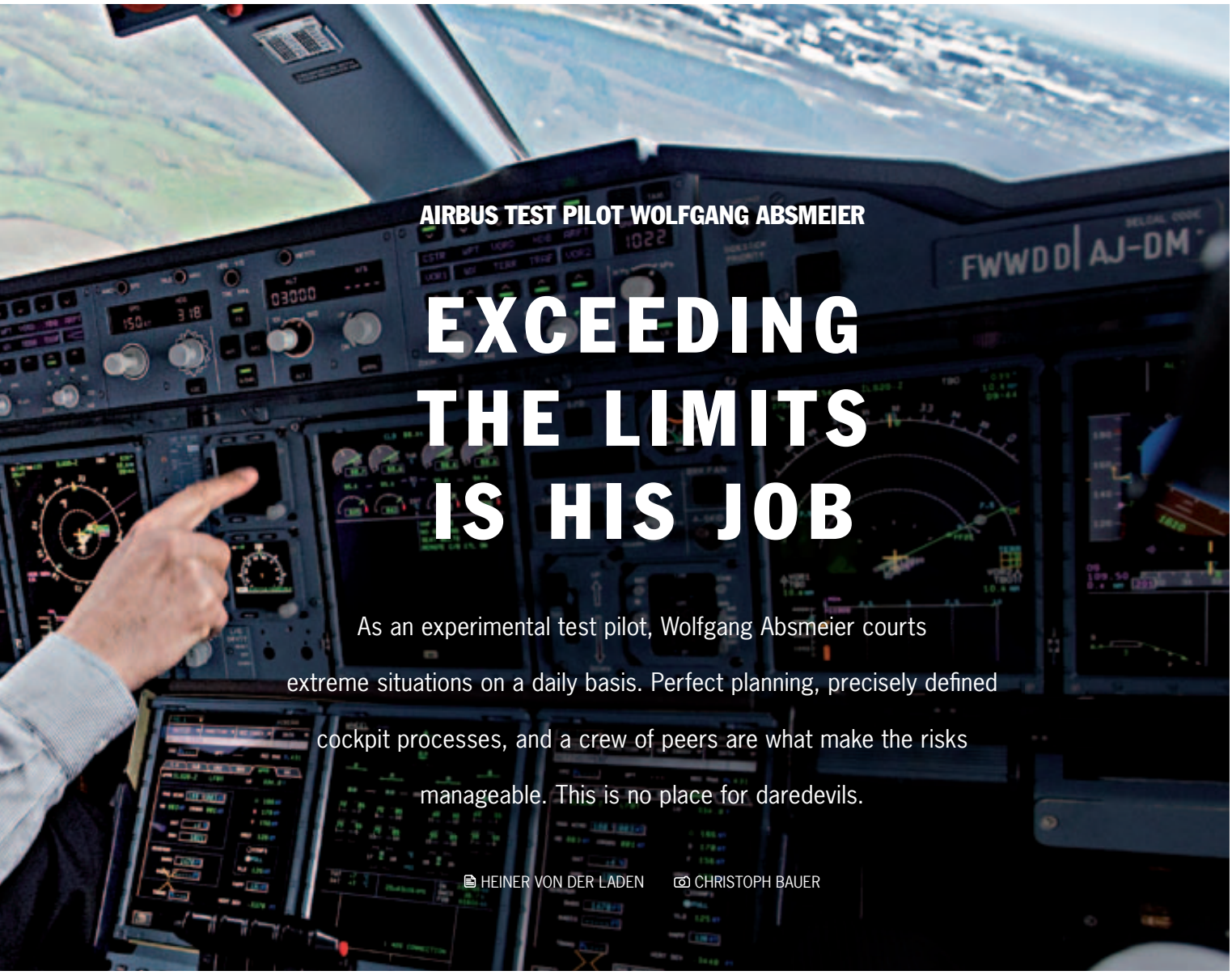

AIRBUS TEST PILOT WOLFGANG ABSMEIER

EXCEEDING THE LIMITS IS HIS JOB

As an experimental test pilot, Wolfgang Absmeier courts extreme situations on a daily basis. Perfect planning, precisely defined cockpit processes, and a crew of peers are what make the risks manageable. This is no place for daredevils.

HEINER VON DER LADEN CHRISTOPH BAUER

What would chill the blood of any passenger is just part of a day's work for Captain Wolfgang Absmeier. Right before touching down on the runway, he hears the following automated message on the cockpit's loudspeaker: "Runway too short." At the last minute he activates the thrust lever to boost the four engines of the Airbus A380 up to full power. The plane's nose tilts upward and the landing is aborted because the runway is too short for the largest commercial airplane in the world. Barely above the ground the plane starts its ascent, climbing ever higher before the pilot completes a wide curve to start the landing procedure again. Known as a "missed approach," this process is defined for nearly every airport.

The backdrop for this maneuver is the small and unassuming airport in Tarbes near the French Pyrenees, about ten kilometers north of the pilgrimage site of Lourdes. "To know where a limit lies, you've got to exceed it," says Absmeier right after his missed approach. It's his job to exceed limits. He's a test pilot. Just half an hour ago he took off from the headquarters of his employer, the Airbus aircraft manufacturing company, in Toulouse. The day's agenda calls for a systems test of the Runway Overrun Warning (ROW) system. "We want to exhaust the system's possibilities in today's tests," says Absmeier. "It's there to warn us if the runway is too short for the plane, and its data is updated eight times a second." In the future, Airbus will be equipping all of its aircraft models with the innovative ROW/ROP warning and protection system, which lets pilots calculate precisely how long the plane will roll and whether the runway is long enough. It even takes weather conditions such as rain into account.

Although commercial air travel is considered very safe, it's still very important to improve the landing process in every possible way. "Twenty-five percent of all accidents are runway overruns," says the →

experienced captain. If a plane rolls on past the runway, that can have disastrous consequences. But what happens if it's no longer possible to abort the landing? The answer comes in short order. Absmeier has hardly brought his A380 with the French license plate number F-WWDD out of a right-hand curve and back up to cruise elevation when he begins the next approach down to Tarbes with the command: "Hold on tight!" This time the plane touches down at the earliest possible point, right at the start of the asphalt.

The brakes slam on and once again we have to catch our breath. But we made it! Here too an intelligent on-board system is in place to ensure safety. If it's too late to abort the landing or if the pilot is forced to land in an emergency, the Runway Overrun Protection (ROP) system triggers the strongest possible braking action. Our test has raised a lot of dust on the ground. Absmeier doesn't waste any precious time, and directs the Airbus right to the runway for takeoff again. He wants to get back into the air quickly to cool down the brakes. It goes without saying that this company pilot is not a daredevil. Nor does he rely solely on his own experience, which includes many years as a professional soldier and pilot of Phantom fighter planes.

Unclad cabin in the Airbus A380 test plane: Cables and tubing lie exposed.

Every test flight is perfectly prepared and painstakingly planned. "We always have three or four solutions at the ready, which we've tested intensively in the simulator on the ground," says Absmeier. Whenever extreme tests are coming up, the factory team carefully approaches them step by step until reaching the limit. This requires cool temperaments that keep a close eye on even the slightest risks, and that unfailingly respond to exceptional circumstances in the way they have been trained. Their education itself, with only four highly specialized schools for test pilots in the world, follows strict standards as well. The students, who are experienced military and commercial pilots, have to sit through training there once again before being allowed to take the controls in flight experiments.

Even when Absmeier exceeds the limits, he always has safety reserves at hand. The runway at Tarbes is of course long enough for a routine landing by the Airbus A380. For the test flight, however, the on-board computer was primed with data that appeared to shorten the distance by 1,000 meters in order to simulate an extreme situation. There was also sufficient space for the test landing. A further safety factor has a very human aspect. It lies in the fact that the captain doesn't necessarily have the last word on board. "If the co-pilot has reservations, the captain may not demand blind obedience but instead has to take those thoughts seriously and reconsider his decision," says Absmeier. This approach is a result of what the international aviation industry learned from major accidents in the 1960s and 1970s, for certain solitary decisions back then led to the loss of life. Absmeier wishes that what is now a matter of course in the cockpit could be extended to other areas such as hospital operating rooms. "It might be helpful to patients at times if head surgeons listened to their assistants…"

Following the test landings in Tarbes, Absmeier heads back to his home airport in Toulouse. At an elevation of just 180 meters, it becomes clear that he's using the remaining few minutes for another test. It's a simulation of sudden closure of the assigned runway at the last minute. Although the airport is still about three kilometers away, the runway is clearly visible to the naked eye. An illuminated "X" on the ground is the signal for "prohibited landing." Now it's time to see whether the A380, with a landing weight of 344 metric tons today and an 846 m^2 wing area on which 90 cars could comfortably park, is agile enough for evasive action. The automatic systems kick in. As if on a slalom course, they send the plane sharply to the right. They then bring it right back onto a stable straight-ahead course that enables it to land safely on a parallel runway.

Absmeier, his co-pilot Guy Magrin, and test engineer Gerard Desbois exchange satisfied nods. They know that they cannot permit the slightest error. Operational excellence is the prerequisite for everything else. "A plane like this has to spend 12 to 16 hours a day in the air for

At the cabin's control station, test engineer Robert Lignée and his co-worker process data from 6,000 sensors and images from the outside cameras.

30 years," notes Absmeier. Airbus supplied 588 planes to customers in 2012 alone, and in its efforts to prevent failure leaves nothing to chance. It sends its test crews and planes on trial programs to Dubai for the extremely hot conditions there and to Canada in winter where all systems have to prove themselves at extreme temperatures below freezing. "We have to fly in every type of weather," says Absmeier. Keflavík's airport in Iceland is used on account of its extreme side winds. And in Dubai "we see whether a fully loaded A380 can take off properly at 50 degrees Celsius on a four-kilometer runway." It's good to know that there are people like Wolfgang Absmeier who test our safety in the air with a mindset that can only be described as grounded.

The pilot and his colleagues have now switched to another plane—from the enormous A380 to the medium-sized, long-range A350. Before its scheduled delivery to customers in the second half of 2014, this brand-new jet must also prove itself in testing—and exceed its limits in the process. ←

A380

The A380 is the largest commercial aircraft of all time. Its cabin can be configured for 400 to 800 or more passengers. By carrying a higher number of people on a smaller number of flights, the plane can substantially ease the pressure on very busy airports that are reaching their capacity limits due to the increasing volume of air travel. Its shorter idle times also reduce transit costs.

Length: 72.72 m; height: 24.09 m;
wingspan: 79.75 m;
maximum takeoff weight: 560 t