

Landing Gear **Link**



The House Magazine of
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A330 First Flight



The first Airbus A330 taking off for its maiden flight

The first Airbus A330 has made its maiden flight.

The A330, the world's largest twin engine widebody aircraft flew for the first time on 2nd November. The flight lasting five hours and 15 minutes was considered highly successful.

Jean Pierson, Airbus Industrie's Managing Director commented, "The widebody twin market is THE most important single market segment throughout the foreseeable future. The A330 has been specifically designed to meet the needs of our customers in every geographical area of the world. It matches their needs for capacity and comfort and provides the ideal match of performance, capability and economic excellence. This is

vital to ensure the operators' financial well being."

During the first flight, the A330 was successfully flown through most of its range of operating speeds, weights and configurations, with the landing gear in both extended and retracted positions. Take-off weight was 182 tonnes (maximum take off weight is 212 tonnes) and speeds ranged from near stall to 330 knots with the aircraft reaching an altitude of 41,000 feet.

The A330 is designed for maximum flexibility of operations. For medium to long haul international services the aircraft will carry 335 passengers in two classes or 295 passengers in three classes. For high density 'shuttle' operations the

aircraft can carry up to 440 passengers.

Following the first flight, the A330 enters a 12 month certification programme. Altogether six aircraft will be involved in a flight test programme that will lead to certification in October 1993. Airline deliveries are due to begin in November 1993.

Also featured in this edition of **LINK**:-

- Page 2. Northwest Cancels Airbus Order. Financial Update. EFA Flies On.
- Page 3. Safety Update.
- Page 4. CASA 3000 Proposal. Investors In People.
- Page 5. Long Service Awards. Fork Lift Training Comes In House.
- Page 6. Maglev Springs Into Reality. Cutting The Cost Of Inventory.
- Page 7. Focus On Facilities.
- Page 8. Appointments. TI Group Organisation.

Northwest Cancels Airbus Order

During December, we all heard the news that Northwest Airlines had cancelled its order for 74 Airbus aircraft worth £2.3 billion.

Although this is not the first airline to cancel or delay deliveries during the present recession and unlikely to be the last, this cancellation was significant. Northwest

was the single biggest customer of the A340 with 24 firm orders, all of which were cancelled. 50 A320s were also cancelled. This cancellation has caused Airbus to revise delivery schedules leading to a major impact on our 1993 sales.

The Airbus range of aircraft continues to attract new orders. International Lease Finance Corp.

(ILFC) has recently placed orders for 28 aircraft and a further 8 options. These will not take effect, however, until after 1995.

Total orders for Airbus aircraft remain impressive. Orders to date, including aircraft delivered, total 813 A320/321s and 256 A330/340s.

Sales Hit By Programme Cutbacks

Shown is an update of our financial performance between August and November 1992.

The main feature is the effect on our sales of programme cutbacks from all our major customers.

SALES

Between April and July 1992 the sales we achieved were 99% of our target. The months of August, September, October and November were respectively 5%, 22%, 14% and 18% below target reflecting the effect of the depressed state of the aerospace industry on our major programmes. Overall in the period April to November 1992 our sales were £5.3 million, (9%) below target.

PROFIT

Profit in the period August to November 1992 was severely affected by the shortfall in sales and the cost of the redundancy announced in October.

INVENTORY DAYS

We have consistently beaten our inventory days target throughout the financial year.

ORDER INTAKE

The major orders received during the period August to November 1992 were as follows:-

ORDERS

PROGRAMME	ORDER VALUE
AV8B	£2,842,000
A310	£1,844,000
A320	£875,000
Tornado	£382,000

SALES

	TARGET	ACHIEVED
August 1992	£6,608,000	£6,274,000
September 1992	£8,808,000	£6,871,000
October 1992	£10,127,000	£8,669,000
November 1992	£7,561,000	£6,192,000
April to November 1992	£60,429,000	£55,067,000

INVENTORY

	TARGET	ACHIEVED	RESULT
August 1992	173 days	163.8 days	5.3% improvement
September 1992	165 days	163.4 days	1.0% improvement
October 1992	163 days	159.9 days	1.9% improvement
November 1992	162 days	159.1 days	1.8% improvement

EFA Flies On

In the last issue of LINK we considered the future of the EFA programme faced with the possibility of a German withdrawal. We are pleased to report in this issue that the German Government has reconsidered its decision and has confirmed its intention to remain a partner of the programme. The formal decision does have to be ratified by a vote of the German Government in 1995, after their next election.

Cost reductions of up to 30% have been identified based on different equipment fits for some countries. However, the landing gear requirement is expected to remain unchanged and is, of course, required for every aircraft.

Development work on the programme continues working towards a first flight of the aircraft in early 1993.

A significant milestone was

achieved recently when an EFA nose gear underwent lightning strike tests. These tests were performed during November 1992 as part of the Qualification Programme. Testing was carried out at Lightning Test and Technology, Culham near Abingdon, formerly part of UKAEA.

Low level testing was used to check for "indirect" effects on electrical harnesses and sensors due to voltages induced by the electromagnetic fields associated with lightning phenomena. To assess the "direct" effects of lightning strike on the landing gear such as burning, eroding and structural deformation, four high level "strikes" were carried out. A current of 200,000 Amps lasting less than 500 microseconds was used to simulate a natural lightning strike to various critical points of the landing gear.

Safety Update



Employees undergoing training in the handling and storage of hazardous substances.

In the last issue of LINK we reported on our Safety Policy and the role of the Safety Committee.

Since that time the following developments have taken place.

NO-SMOKING POLICY

A no-smoking policy has been introduced in the "Red" and "White" blocks and in company pool cars. By popular request No.1 Assembly has been designated a no-smoking area on a 2 months trial basis.

SAFETY GLASSES

Following successful trials it has been decided to introduce a new style of safety glasses which give better protection and are more comfortable to wear. The new style will be phased in as existing stocks are used up.

ENVIRONMENTAL PROTECTION

In November we submitted an application, required by the 1990 Environmental Protection Act, to Tewkesbury Borough Council. The application was a 140 page document and listed the substances, particularly solvents, which we discharge into the atmosphere. We had to detail the measures we take to monitor and control these emis-

sions. We have been advised our application has been accepted.

MEASURES OF PERFORMANCE

Monthly statistics are now produced showing the number of works accidents reported to the Occupational Health Department and the days absence due to works accidents.

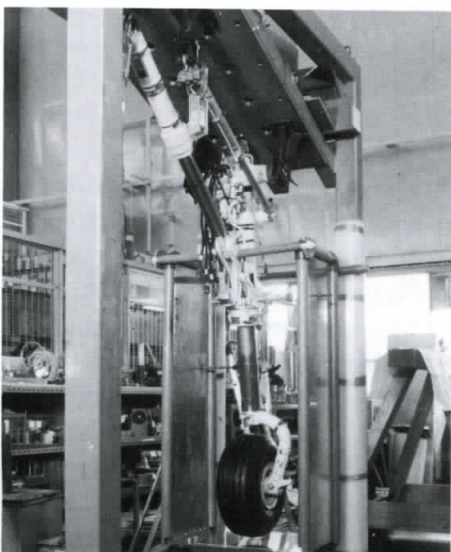
E.C. DIRECTIVES

Over the next few months the Safety Committee will be looking at what action we need to take to comply with six new European Community directives on Health and Safety covering the following areas:-

- Management of Health and Safety at Work.
- Work Equipment.
- Manual Handling.
- Workplace Conditions.
- Personal Protective Equipment.
- Display Screen Equipment.

A large part of the new regulations reflect basic common sense and simplify and update existing legislation. However there are some new approaches and we need to ensure that we take these into account in applying our safety policy.

Despite suffering some obvious scorch marks at the four strike points, leaving the test unit looking a little the worse for wear, no major detrimental effects were discovered and the testing was a success.



The EFA nose gear in the lightning strike rig at Culbam

CASA 3000 Proposal

In November, following almost 3 months concentrated effort, we submitted a proposal for the Nose and Main Landing Gear for the new CASA 3000 aircraft.

CASA (Construcciones Aeronauticas SA) in Spain will now spend some months evaluating our proposal against those of our competitors.

The CASA 3000 aircraft is a 70 to 78 seats fast turboprop. It combines capacity and speed with the economies of turboprops whilst keeping comfort levels similar to those offered by jets. CASA expect to sell in excess of 300 aircraft.

CASA's design objectives for the aircraft include:-

- Low acquisition cost
- Operating costs 20% lower than a similar size jet
- 99.85% despatch reliability - highest maintainability and reliability
- Passenger appeal - excellent comfort levels
- Long range capability - 1000/1200 nautical miles
- Fast cruise speed - 350 Knots

Our aim has been to offer a landing gear to match these objectives. So we've gone for a rugged, minimum part design to keep the cost down. We've maximised the

landing gear performance during take-off, landing and taxiing to give a high level of passenger comfort. We've also used our extensive in-service experience to build in high reliability and give low operating costs.

The proposal itself comprised 8 separate volumes reflecting the different aspects of CASA's request.

The proposal information included detailed responses from many different departments around the company including Marketing, Contracts, Estimating, Finance, Quality, Product Support, Production Control, Programme Manage-

ment, Design, Development and Manufacturing Engineering.

To achieve a 'winning' offer in the timescale was a complex process involving close cooperation and teamwork between all departments. It required constant communication and exchange of ideas so that all possible solutions and options were considered.

Congratulations go to the team involved for a job well done.

As the weeks go by there will be a continuous exchange of information with CASA to reinforce our position as the number one choice.



An artists impression of the new CASA 3000 turboprop.

Investors In People

Earlier this year we applied to be recognised as an Investor In People (I.I.P.). This is a national standard which aims to help companies improve their performance by taking a planned approach to:-

- Setting and communicating business goals.
- Developing people to meet these goals.

We decided to apply for I.I.P. status because it re-inforced initia-

tives we had already launched such as our training policy. It is a way of finding out how well we are doing by comparing ourselves with a national standard.

To achieve I.I.P. status we have to be assessed by the Gloucestershire Training and Enterprise Council. They will look at the following four areas:-

- Our commitment to develop all employees to meet business objectives.

- The way we review the training and development needs of employees.
- The action taken to train and develop employees.
- Our evaluation of training and development to assess achievement and improve future effectiveness.

We are currently working towards being ready to be assessed by March 1993.

Long Service Awards

Andy Stevens presented last year's 25 years service awards following a buffet lunch at the Hatherley Manor Hotel on Friday 11th December. The gifts chosen by the award winners ranged from gold watches to cameras.

The picture shows Andy with the award winners after the presentation.



Fork Lift Training Comes In House

Since September this year our requirements for training and testing Fork Lift Truck Drivers have been met by our own qualified Trainer, Mark Hill.

Mark, who works in the stores, was keen to develop his skills in this area.

He underwent intensive external training and testing to the Road Transport Training Board Standards which included burning the mid-night oil preparing his classroom lessons.

Mark told **LINK** about the quality standards we are seeking to achieve. "We have to train our fork lift truck drivers to use the trucks and equipment in a careful and effective way. We have to ensure the safety of both pedestrians and drivers while at the same time avoiding damage to components when stacking and moving them around site".

As part of the control needed to be demonstrated by drivers, a cup of water is placed on each fork and the truck is driven around a slalom course, with the forks raised to 15 feet high without spilling water.

Try this with a cup of water on your car dashboard if you wish to gauge the degree of skill required!

Our drivers had to pass a detailed practical and theory test and will have to undergo refresher training and medical checks in the future.

Congratulations on coming up to the mark!!



Pictured above receiving their certificates after successfully completing their Fork Lift Training Course are (from left to right) Mike Pearson, Chris Pugh, Chris O'Connor, Terry Freeman, Cliff Parker, Ray Knight, Rod McLoughlin, Kelvin Bishop, Chris Evans, Dave Bradley, Dave Green, Mark Hill and Steve Trigg.

Maglev Springs Into Reality

Maglev is a magnetically levitated high speed train. We are collaborating with NABCO of Japan to design, manufacture and develop the landing gear/suspension system.

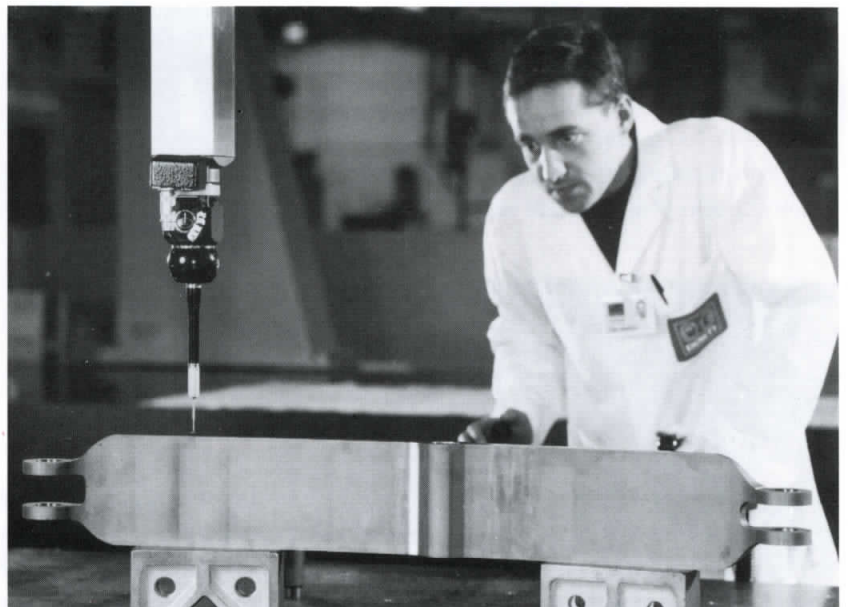
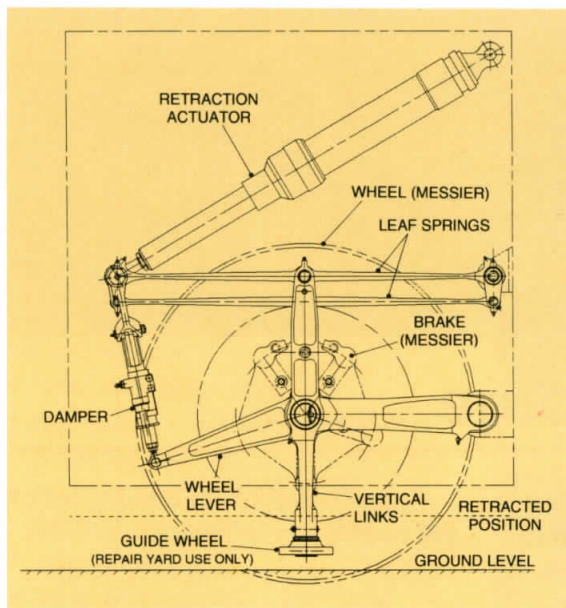
The present contract covers a pre-prototype phase of four units for development testing here and

at NABCO. Initial manufacture has commenced here with first build on schedule for July 1993 leading to test completion by the end of December 1993.

In parallel Sumitomo of Japan is also developing a landing gear system in competition with the DALG/NABCO team.

The next phase of the programme is a prototype contract which will be awarded in 1994. The testing of the prototype will be carried out in conjunction with the carriage test programme.

Selection for the production phase will be in the latter half of the 1990s.



The main components of the suspension system.

The first leaf spring to be produced undergoing inspection.

Cutting The Cost Of Inventory

One of our key business measures is Inventory Days. In our regular financial update, LINK lists our targets and results month by month.

Inventory Days is the measure we use to describe the value of our total Inventory in terms of the number of days worth of Sales it represents. However in order to look at the Inventory in specific locations it is easier to consider monetary values.

Finance issue monthly figures showing where Inventory is located. Below is shown a summary of these figures for November 92.

Why should we reduce Inventory? It represents money which is tied up in our business when it could be working for us. Balance sheets show inventory as an asset, however it is possible to have too much of a good thing.

Reducing Inventory frees money to invest in other areas of the business, like new machinery and equipment.

What are we doing to reduce it? Each area of the company is responsible for controlling and reducing their Inventory. Each month Andy Stevens chairs a meeting to discuss progress and promote ideas for further reductions. Some examples of current measures are:-

- Review of Manufacturing and Procurement Lead-times.
- Re-methodisation of high value/

volume items.

- Reviewing of economical batch sizes.
- Prevention of over-deliveries and early deliveries from our suppliers.
- Improving procedures which control or affect Inventory.
- Closer monitoring.

In future editions of **LINK** we will be examining the main Inventory locations to find out more about what causes Inventory, and what we can do to reduce it.

LOCATIONS

INVENTORY VALUE

	Nov '92
Production Stocks	£ 5,411,000
Work In Progress	£11,247,000
Product Support (Spares) Stocks	£13,105,000
Non-Production Stocks	£ 2,767,000
Total	£32,530,000

Focus On Facilities

A number of new department names have emerged as we have restructured. One of these is 'Facilities' which in the past has been known as 'Works Engineers' and 'Maintenance'.

John Herring, Facilities Manager, has been seconded to the position of Site Development Manager for the present. This enables him to concentrate full-time on the future development of our site. Tony Wood from the Production Control Department has been appointed Acting Facilities Manager during the period of John's secondment.

LINK spoke to John to find out what happens in the daily life of the Facilities Department.

Why has the new name 'Facilities' been chosen? John explained, "We wanted a name which reflects that the department's role extends beyond pure works engineering. There is more to Facilities than just looking after the nuts and bolts of the site".

One of the department's key functions is to maintain our plant, buildings and grounds. This can range from the upkeep of car parks and buildings, to machine tools and process equipment. But it also includes responsibility for the purchase and use of utilities which many of us take for granted, such as electricity, fuel oil, boilers and power distribution.

Facilities also help to ensure that we comply with the tightening laws on environmental, health and safety issues. "We monitor our levels of emissions into the air and water," John explained. "This means checking that we don't discharge contaminated water into the Hatherley Brook or pollute the air with emissions from our exhaust stacks".

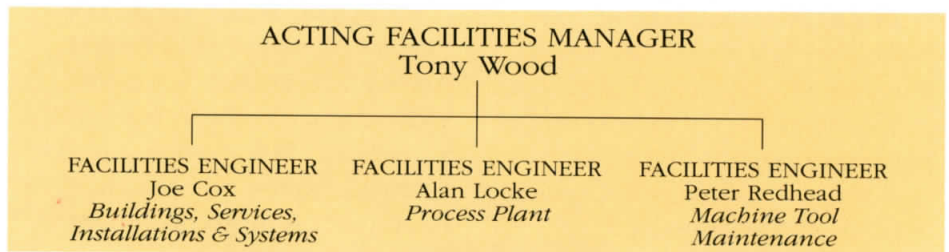
On the health and safety side, numerous testing procedures are carried out to ensure the safety of our employees. Cranes and pressure vessels are inspected regu-

larly. Water systems are monitored and treated against legionella. Personal breathing equipment, which is used in our Paint Shop, is also tested. Amongst other health related tasks, they also make sure that all our rubbish, from paper to chemicals, is properly and safely disposed of.

Facilities is now organised into three main teams - Buildings, Services, Installations and Systems under Joe Cox, Process Plant under Alan Locke and Machine Tool Maintenance under Peter Redhead.

volvement and co-operation of the people who were themselves being moved.

John hopes to see this "customer" involvement extend further. "We need to encourage people to take ownership of, and responsibility for, their assets. Facilities do not own the machines and buildings they maintain. People can help us and themselves by looking after these on a day-to-day basis. This will help us to achieve our aim of carrying out more preventative maintenance as opposed to



In early December the whole department moved to the old progress office at the side of No.1 Machine Shop. So what do Facilities hope to achieve in their new form?

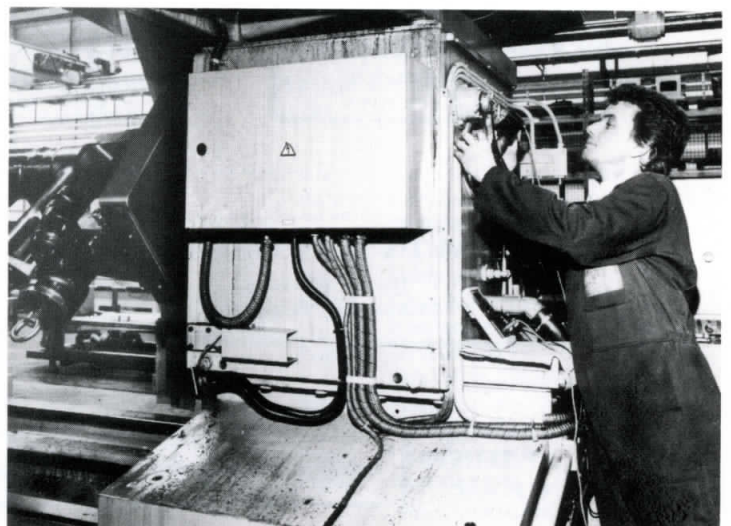
The most visible activity at the moment is the redevelopment of the site. The red block has been refurbished, the white block is undergoing renovation and the consolidation of Medium Landing Gear into No.1 Machine Shop is now complete. Much of this has been achieved thanks to the in-

breakdown work, which will be better for the business".

A task team has also been set up to work towards achieving a preventative maintenance approach with N.C. Machines. The team is analysing why our machines break down by looking at symptoms and causes.

John sums up the department's aim when he says, "We are working towards achieving a more proactive approach to maintaining our site's facilities".

Tim Protheroe, N.C. Electronic Engineer, carries out maintenance work on a Woblenberg machine



Appointments



IAN COSH joined us on 2nd November last year as Marketing Manager. After a period of service in the Royal Navy, Ian held senior marketing positions with Smiths Industries, STC Navigation Systems, and Cossar Electronics.



RICHARD WALL joined our Finance Department as Project Accountant on 28th September. Richard is a qualified chartered accountant. Before joining us he spent 12 months working at TI Headquarters in Abingdon in the Corporate Audit department.



SIMON LUXMOORE was appointed Manager - Design Department on 1st December. Simon joined Dowty Group in August 1989 and worked in the Management Development Department at Arle Court before transferring to this site as Project Manager.

TI Group Organisation

Since we became part of the TI Group, the shape and size of the Dowty organisation has changed with its new position as part of the larger group.

TI Group comprises 125 companies on 5 continents. It has 300 manufacturing and customer facilities in 115 countries with 30,000 employees and has an annual

turnover of £1.5 billion.

The diagram below indicates how we fit into the TI organisation.

